Beara Breifne Way Trail Plan

Natura Impact Report (NIR)

CONSULTATION DRAFT 01

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Prepared by Woodrow APEM Group

For Outdoor Recreation Northern Ireland (ORNI)

on behalf of Fáilte Ireland

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1 INTRODUCTION AND BACKGROUND

1.1 Background

Woodrow APEM Group was commissioned by the Client, Fáilte Ireland, to collate information to inform an Appropriate Assessment (AA) by the Competent Authority (in this instance, Fáilte Ireland[1]). This work assesses the potential for impacts upon Natura 2000 Sites (also known as European Sites) as a result of the Beara Breifne Way Trail Plan 2021/2022. This proposal will be hereafter referred to as the "Proposed Plan". The proposed trail is a *circa* 738km long distance walking trail, running from Dursey Sound in Co. Cork to Blacklion in Co. Cavan. There are 12 Sections to this trail, which span over 10 different counties.

The trail has a source-pathway-receptor connection to 39 designated European Sites. As such, the number of European sites considered varies from the directly intersected designated sites considered in the SEA document. Of the ecologically connected Natura 2000 sites, 31 are Special Areas of Conservation (SACs) for the protection of habitats and species, of which 4 have uncertain source-pathway-receptor links to the trail, and 8 connected sites which are Special Protection Areas (SPAs) designated for the protection of birds. While the trail is not located in Northern Ireland, there is 1 Ramsar site located 1.6km upstream of the trail at the closest point. Other than taking into consideration the aforementioned Ramsar site, there are no other UK National Sites connected to the proposal. ***For ease going forward, this report will refer to all relevant Designated Sites potentially & confirmed to be connected to the proposed trail, including the Ramsar site in NI, as 'European Sites'.***

European Sites include Special Areas of Conservation (SACs) for the protection of Annex I habitats and Annex II species under the EU Habitats Directive (92/43/EEC, 1992) and Special Protection Areas (SPAs) for the protection of Annex I bird species and supporting wetland habitat under the EU Birds Directive (79/409/EEC, 1979). The Proposed Development is not "directly connected with or necessary to the management" of a European Site (in the context of Article 6(3) of Directive 92/43/EEC (The Habitats Directive)). These SACs and SPAs are designated for their Qualifying Interest (QI) habitats and species which are protected by the European Habitats Directive and European Birds Directive. It is government policy in Northern Ireland to apply the procedures under the Habitats Regulations in respect of Ramsar

[1] http://www.pointofsinglecontact.ie/browse-by-sector/travel-and-tourism/tourist-accommodation.html (Accessed September 2021)

sites (Strategic Planning Policy Statement for Northern Ireland (SPPS) Planning for Sustainable Development[2] and NI Planning Policy Statement - PPS2: Natural Heritage)[3].

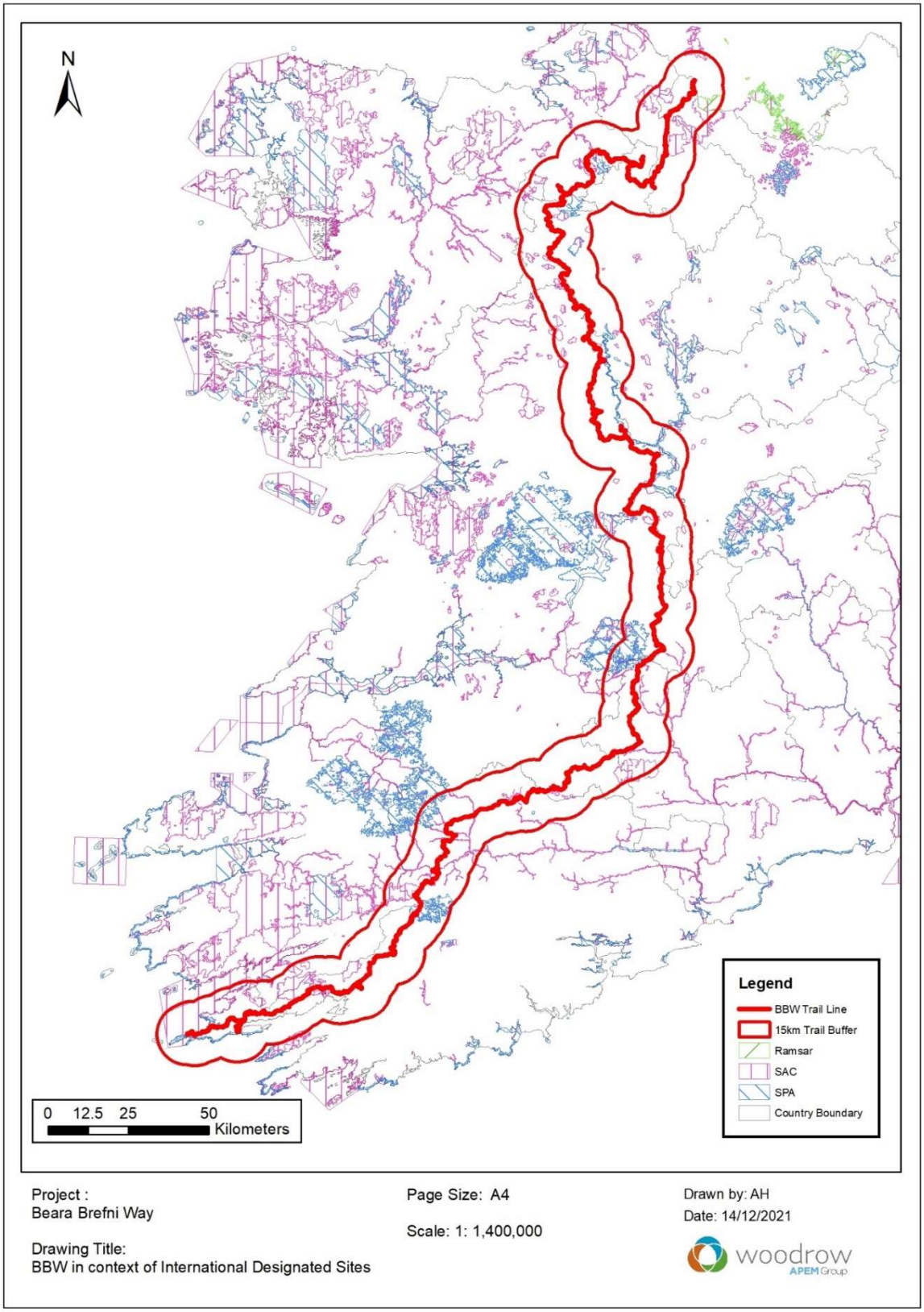
See Figure 1 below for the geographic location of the Proposed Plan. See Figure 2 below for the location of the Proposed Plan in relation to European Sites in the vicinity. The Trail is referred to under the acronym BBW within this report.

[2] https://www.midandeastantrim.gov.uk/downloads/SPPS.pdf (Accessed September 2021)

[3] https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS02%20Natural%20Heritage.pdf (Accessed September 2021)

Figure 1: BBW Trail Route Location

Figure 2: Internationally designated sites within 15km of the trail*



**Note: For ease, due to the significant length of this trail proposal a 15km buffer is shown on Figures within this report, however the focus of this NIR is on European Designated Sites / UK National Sites which have connectivity to the proposal (i.e., where there are potential source-pathway-receptors identified these have been considered within this NIR).*

1.2 Aims & Objectives of Beara Breifne Way - Trail Plan 2021/2022

The Beara Breifne Way Trail Plan is the successor to a 2019 Tourism Masterplan for Beara Breifne Way. The Masterplan was commissioned by Fáilte Ireland to guide future investment and development along its route, so that Beara Breifne Way realises its potential as an internationally attractive destination and visitor experience.

In many respects the 2021/2022 Trail Plan constitutes the next stage or out-workings of the 2019 Masterplan. Its primary aim is to improve the Trail by investigating and considering recommendations in respect of the following:

(i) Trail upgrades,
(ii) Trail reroutes, particularly in the interest of facilitating off-road journeys or safeguarding the more sensitive environmental aspects of the route; and
(iii) Allowing for future trail linkages to maximise synergy with other tourism assets.

The above work should seek to provide sufficient information and detail on the route which would help to inform a Local Authority or future developer to secure implementation at the local level. The Key objectives of this Plan are to:

1. Identify key opportunities and significant constraints along the Trail to help to ensure the sustainable development of future proposals along the Beara Breifne Way route.
2. Create an internationally compelling tourism proposition of scale and singularity with appeal to both the domestic and overseas markets.
3. Deliver economic and social impacts directly to rural, non-traditional tourism areas in a viable manner, thereby contributing to sustainable job creation, increased revenues and encouraging thriving local communities.
4. Support a network of clusters of tourism businesses in the ten counties along the trail corridor.
5. Protect the natural and historic environment along the Trail route, and encourage respect, education and understanding of the natural history, built history and importantly the anthropogenic history of the Beara Breifne Way route for all of its visitors and local communities.
6. Promote the sustainable use of the Trail in the interest of the environment and amenity of the local inhabitants.

2 Legislative Context

2.1 Requirement for a Screening of the Proposed Plan

The Habitats Directive was transposed into Irish law by the European Communities (Natural Habitats) Regulations 1997 and European Communities (Birds and Natural Habitats) Regulations 2011 (the Habitats Regulations), and in a planning context, through Part XAB of the Planning and Development Acts 2000-2018 (as amended).

Regulation 42(1) of the 2011 Regulations requires that: *"A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site".*

Section 177U of Part XAB of the Planning and Development Act requires that: *"A screening for Appropriate Assessment of a draft Land use plan or application for consent for proposed development shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European Site"*.

2.2 Requirement for a Natura Impact Report

Under Regulation 42(6) of the European Communities (Birds and Natural habitats) Regulations 2011 and part 177U (part XAB) of the Planning and Development Act 2000, an Appropriate Assessment is required in order to determine the potential for impact on the integrity European Sites.

This Natura Impact Report provides an assessment of the proposal, taking into consideration any potential impacts upon the features of conservation interest which are Qualifying Interests for the European Sites, and provides mitigation proposals which aim to avoid adverse effects upon the integrity of any European Sites. This allows for an audit trail through Article 6 of the EU Habitats Directive to facilitate an Appropriate Assessment by a Competent Authority.

2.3 Structure / Layout of the report

This Natura Impact Report provides the information necessary for the Competent Authority to undertake a strategic Appropriate Assessment of the proposal. A local authority is unlikely to carry out an AA of their own development as the Competent Authority in such instances is likely to be An Bord Pleanála. A local authority must screen proposed developments for AA to determine whether a Section 177AE application to An Bord Pleanála is required.

Developments or works by other groups or individuals may require planning permission or, if not, may require Ministerial consent within European sites. Local authorities are likely to be responsible for deciding whether there are restrictions or exemptions in the case of exempted development by a group or individual.

The report sections, paragraphs and tables relate in sequence to the process of assessing the potential impact of the project in the context of sequential requirements of Article 6 of the EU Habitats Directive.

2.3.1 Main sources of consultation and information

The following information sources were consulted:

- Department of Environment, Heritage and Local Government (DoEHLG 2009). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities;
- EPA online Map Viewer[4].
- Environmental Sensitivities Mapping Tool[5]
- European Community Habitats Directive (92/43/EEC) – The Habitats Directive (European Commsion 1992);
- European Communities (Natural Habitats) Regulations 1997 (European Commission 1997);
- European Commission Environment DG (European Commission 2001). 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;

[4] EPA Map Viewer https://gis.epa.ie/EPAMaps/ (Accessed September 2021)
[5] https://airomaps.geohive.ie/ESM/ (Accessed September 2021)

- European Commission (2021) Commission Notice - Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC;
- Council Directive 2009/147/EC on the conservation of wild birds;
- Hunt *et al.* (2003) *Upland Path Management - Standards for delivering path projects in Scotland's mountains*, 2nd Edition;
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC (European Commission 2000);
- National Parks and Wildlife Services online Designation Map Viewer[6];
- National Parks and Wildlife Service data (GIS datafiles[7]); and,
- Office of the Planning Regulator (OPR) (2021) OPR Practice Note PN01 Appropriate Assessment Screening for Development Management.

2.4 Stages of Appropriate Assessment

Article 6(3) and (4) sets out a step-by-step procedure for assessing plans or projects that are likely to have impact on Natura 2000 sites. This involves three main stages and is laid out in methodological guidance from the European Commission (European Commission 2021[8]).

Stage one: screening

The first part of the procedure consists of a pre-assessment stage ('screening') to ascertain whether the plan or project is directly connected with, or necessary to, the management of a Natura 2000 site, and, if this is not the case, then whether it is likely to have a significant effect on the site(s) (either alone or in combination with other plans or projects) in view of the site's conservation objectives. Stage one is governed by the first part of the first sentence of Article 6(3).

[6] NPWS Designation Map Viewer NPWS Designations Viewer (arcgis.com) (Accessed September 2021)
[7] NPWS Maps and Data https://www.npws.ie/maps-and-data (Accessed September 2021)
[8] Commission notice Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC 2021/C 437/01 Available at: EUR-Lex - 52021XC1028(02) - EN - EUR-Lex (europa.eu) (Accessed September 2021)

Stage two: The appropriate assessment

If likely significant effects cannot be excluded, the next stage of the procedure involves assessing the impact of the plan or project (either alone or in combination with other plans or projects) against the site's conservation objectives and ascertaining whether it will affect the integrity of the Natura 2000 site (European Site), considering any mitigation measures. It will be for the competent authorities to decide whether or not to approve the plan or project in light of the findings of the appropriate assessment. Stage two is governed by the second part of the first sentence and the second sentence of Article 6(3).

Stage three: Derogation from Article 6(3) under certain conditions

The third stage of the procedure is governed by Article 6(4). It only comes into play if, despite a negative assessment, the developer considers that the plan or project should still be carried out for imperative reasons of overriding public interest. This is only possible if there are no alternative solutions (following an examination of alternative solutions), the imperative reasons of overriding public interest are duly justified, and must ensure that suitable compensatory measures are adopted to ensure that the overall coherence of Natura 2000 is protected.

Once the assessment of alternative solutions is complete, a record should be made of all the alternatives that have been considered, the results of their assessment and the agencies and other bodies that were consulted. The purpose is to determine whether or not it can be objectively concluded that there are no alternative solutions. If alternative solutions have been identified that will either avoid any adverse impacts or result in less severe impacts on the site, it will be necessary to assess their potential impact through an appropriate assessment. On the other hand, if it can be reasonably and objectively concluded that there are no alternatives, it will be necessary to proceed to the next step in the Article 6(4) procedure.

Examining imperative reasons of overriding public interest (IROPI)

In the absence of alternative solutions with no adverse effect on the integrity of the Natura 2000 site concerned or in the presence of solutions having even more negative environmental effects on the site, the competent authorities must examine whether there are imperative reasons of overriding public interest, including those of a social or economic nature, that would justify the realisation of the plan or project in question.

3 Stage 1 Screening

3.1 Assessment Criteria – Article 6(30) - Screening

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

The first stage of the screening process is determining whether the project or plan is directly connected with or necessary for the management of European designated sites.

This plan relates to the refinement of the existing Beara Breifne Way Trail, and it is not directly connected to or necessary for the management of European designated sites.

3.2 Elements of the Trail Plan with Potential to Give Rise to Effects on European Sites

There is potential for the plan to result in impacts on designated sites which are ecologically or hydrologically connected to the Plan route. In addition, although the BBW Trail currently exists, there is the potential for upgrading of the Trail to make access into European Sites more possible– unmitigated this has the potential to result in greater levels of visitor pressure and thereby potential disturbance to wildlife / trampling of habitats.

The trail route has some potential for connectivity or intersection with 32 SACs and 8 SPAs.

The elements of the plan with potential to give rise to adverse effects are outlined below:

- Enhancing an existing trail to ensure that it is *"an internationally compelling tourism proposition of scale and singularity with appeal to both the domestic and overseas markets*" (Beara Breifne Way Trail Plan (2021)), thereby increasing visitor numbers along the trail route.
- Alterations to existing trail infrastructure such as changes to trail surfaces and building new trail sections in areas where a defined, way-marked trail is currently absent. These have been highlighted within the Strategic Environmental Assessment (SEA) and are listed below.
- Viewpoints / Signature/ Discovery Points – may act as concentration points for adverse effects that can be associated with increased visitor pressure. Anthropogenic impacts might include trampling, disturbance and pollution pressures.

The elements of the plan with potential to give rise to positive effects are outlined below:

- Providing a defined way-marked trail can ensure walkers are directed along a particular path, avoiding sensitive areas / vulnerable features of protected sites / habitats.
- A designed new build trail has the potential to address existing erosion issues e.g., where there is trail braiding and widening, by minimising the footprint of the trail corridor.

3.2.1.1 Increased Visitor Numbers

The objective of the BBW Trail Plan to *"create an internationally compelling tourism proposition of scale and singularity with appeal to both the domestic and overseas markets*" (Beara Breifne Way Trail Plan (2021)) will result in increased visitor numbers to the trail route and surrounding region. Increased visitor numbers have the potential to result in pressures on sensitive habitats and species along the trail through erosion, trampling of vegetation, disturbance of species, particularly QI species of Natura 2000 sites, and potential for increased littering of the areas visited. Pressures from increased visitor numbers may be particularly relevant at visitor points and access points to the trail as these are the most likely locations for higher visitor traffic.

3.2.1.1.1 Trail Builds/ Upgrades

In the absence of mitigation, the plan will result in physical changes to trail surfacing in some areas where existing trail is deemed unfit for purpose. This includes the installation of new trail surfaces (bog bridges, boardwalks, fencing, gravel, stone pitching and stone stepping) or changes to the existing management regime (e.g., mowing currently unmown grass). Currently there is no new lighting proposed anywhere along the BBW Trail. The installation of a new trail, without appropriate mitigation, could contribute to sediment run-off into watercourses where trail runs adjacent to streams or rivers.

Similarly, construction or improvement of trail sections has the potential to result in trampling, erosion or sediment run-off when works include excavation activities.

Areas of new build intersect with 16 SACs and 7 SPAs within the Ireland and none within Northern Ireland. European Sites intersecting with alterations to trail surfacing are outlined in Table 1.

As outlined within the SEA, in basic terms, the biodiversity sensitivity of the trail is highest in the south and lowest in the north. Beara Way in the south traverses 3 SACs, 1 SPA and 2 pNHAs while Leitrim Way in the north traverses 1 pNHA. Within this environmental context the required level of trail surface intervention amounts to c.28 km in Beara Way compared to c.4.54 km in Leitrim Way.

Likely significant effects on biodiversity generally include the potential for loss of habitats, noise and disturbance to wildlife. These are summarised below for each of the sections.

1. Beara Way - Stone stepping is proposed for two Annex 1 blanket bogs, one in the Kenmare River SAC and one north of Castletownbere. A beacon with lectern and seating is proposed for Dursey Island which is within the Beara Peninsula SPA.

2. Slí Gaeltacht Mhuscraí – New surfacing, infrastructure works and a tourism beacon are proposed as the trail proceeds through Mullaghanish to Musheramore Mts SPA, which supports hen harrier. According to a 2015 survey, numbers have fallen by 80% since 2005 to several pairs. Increased usage of a trail here could heighten the potential for disturbance to these protected birds. The trail also passes through Conigar Bog NHA where 235m of stone stepping is proposed, together with a beacon. A tourism shelter is proposed within Aghaneenagh Ancient Woodland, c. 20m from Blackwater River (Cork/Waterford) SAC.

3. North West Cork Way - This entire section is located in the Munster Blackwater sensitive area for the catchment of The Freshwater Pearl Mussel. Fortunately, however, this section requires the least amount of surface intervention with only 38m of gravel and fencing recommended.

4. Ballyhoura Way - The route passes through the Ballyhoura Mts SAC and pNHA, which comprises Annex 1 Blanket bogs (Code: 7130 4010) and Wet and Dry Heath. New build, including stone stepping and bog bridges, is proposed here.

5. Multeen Way – An element of new gravel build and fencing is proposed in the Slievefelim to Silvermines Mts SPA, where no existing trail exists. Some of these works are proposed for Annex 1 Habitats Dry heaths, Wet heath (Code: 4030 4010).

6. Ormond Way - Ormond Way transects 3 SACs, 1 SPA and has hydrological connections to 4 SACs and 2 SPAs. Some new gravel build is proposed for Lough Derg-North East Shore SAC near Portumna. There are also proposals to provide circa 200m of stone stepping and new build gravel with fencing at Annex 1 Alpine & Boreal heaths habitat, north of Milestone. Furthermore, there are proposals to provide enhancements for a viewing platform at the existing boardwalk located within Scohaboy Bog NHA and a beacon within River Shannon Callows SAC/pNHA and Middle Shannon Callows SPA.

7. Hymany Way - Out of all the sections, Hymany Way is subject to the highest length of boardwalk construction (2.4kms). Boardwalks, together with an element of new gravel build is proposed for Castle Ffrench West Bog NHA and Crit Island West NHA, with the latter also incorporating a small component of bog bridges. A beacon, with benches, is proposed at the point of the Shannon Crossing by O'Sullivan Beare, which is situated within River Shannon Callows SAC/pNHA and Middle Shannon Callows SPA.

8. Suck Valley Way – The Trail transects Corliskea/Trien Cloonfelliv Bog SAC and pNHA and Aughrim (Aghrane) Bog NHA but no works are proposed.

9. Lung Lough Gara Way - This section is to receive a considerable degree of surface intervention. It requires the highest level of bog bridge construction of all sections (2.6kms). Fortunately, however, no European or National sites are affected. The exception is a gravel upgrade proposal to an existing trail within a raised active bog at Aghalour Bog West, located south of Loughglinn. At the time of completion of this report it has been noted that this section has been temporarily re-routed due to landowner issues.

10. Miners Way & Historical Trail – The trail transects Bricklieve Mountains and Keishcorran SAC/pNHA, where several hundred metres of stone stepping is proposed for the Annex 1 Blanket bogs, Wet heath Habitat (Code: 7130 4010) that exist here. A beacon is also proposed at Carrowkeel in this SAC/pNHA. Some upgrade to existing gravel and stone pitching is proposed for Annex 1 Blanket bogs, Dry heath, Wet heath (Habitat Code: 7130 4030 4010) at Kilronan Mountains. Approximately 800m of surface intervention (new gravel build with terram, stone stepping, boardwalk) is proposed for a possible ancient woodland (Knockranny) located south of Lough Meelagh.

11. Leitrim Way – No natural environmental designations are affected by this section of trail. At certain points, the trail passes within 100m of the Cuilcagh - Anierin Uplands SAC and pNHA, with its Annex 1 habitats of Blanket bogs, Dry heath, and Wet heath.
12. Cavan Way - Surface intervention is proposed in Corratirrim SAC/pNHA, which comprises several Annex 1 habitats. This includes proposals for gravel and stone stepping on wet heath, with stone stepping recommended for areas of dry heath and limestone pavement.

Likely significant effects on Waterbodies (identified within the SEA) include:

Beara Way, together with the Slí Gaeltacht Way, have the highest aquifer vulnerability of all sections, with thin subsoils and rock near the surface along the majority of the route. The main threat to ground and surface water quality occurs at the construction stage as a result of the potential for spillages / pollution and the possibility of sediment mobilisation during any 'breaking of ground'.

Three sections (Ballyhoura Way, Lung Lough Gara Way and the Miners Way) require surface interventions and new infrastructure which may have an effect on areas where the groundwater is considered to be 'at risk of not achieving good ecological status'.

Several kilometres of new gravel build and fencing, together with mainly replacement footbridges, is proposed along the bank of the River Aherlow east of Galbally (Ballyhoura Way) which is a salmonid regulated watercourse. In addition, gravel surfacing is proposed within 200m of the River Lee (Slí Gaeltacht Mhuscraí) which is also a salmonid regulated watercourse. Where works occur in close proximity to watercourses, there is potential for adverse impacts on water quality and water-dependent species, including potential for adverse impacts on downstream designated sites.

Table 1: Designated Sites intersected by proposed trail improvement works according to trail section

Section	European Designated Site Intersected By Trail Alterations (Trail version 16th Nov 2021)	Trail Alteration Type (Version 16th Nov 2021)	New Build Type (Version 16th Nov 2021)	Current State
1. Beara Way	Beara Peninsula SPA	New Build	Stone stepping, Bog Bridge	Bare earth (soil/mud), Grass (not maintained)
	Caha Mountains SAC	New Build, New build plus fence	Stone stepping	Bare earth (soil/mud)
	Glengarriff Harbour and Woodland SAC	Upgrade	Gravel	Gravel
	Kenmare River SAC	New build	Stone stepping	Grass (not maintained)
2. Slí Gaeltacht Mhuscraí	Glengarriff Harbour and Woodland SAC	Upgrade	Gravel	Gravel
	Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC	New build	Bog bridge, Boardwalk, Gravel plus terram	Grass (not maintained)
	Mullaghanish to Musheramore Mountains SPA	Upgrade, New build plus fence , New Build	New Build sections: Gravel, Bog bridge, Stone stepping,	Upgrade sections: Bedrock/stone pitching, Bog bridge New Build Plus Fence sections: Grass (not maintained) New Build sections: Vehicle access - not sealed surface , Grass (not maintained) ,

				Bog bridge , Bedrock/stone pitching , No existing trail
3. North West Cork Way	Blackwater River (Cork/Waterford) SAC	Indirect, adjacent works: New build plus fence	N/A	No existing trail
	Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC	New build	Bog bridge, Boardwalk, Gravel plus terram	Grass (not maintained)
	Mullaghanish to Musheramore Mountains SPA	Upgrade, New build plus fence , New Build	New Build sections: Gravel, Bog bridge , Stone stepping	Upgrade sections: Bedrock/stone pitching, Bog bridge New Build Plus Fence sections: Grass (not maintained) New Build sections: Vehicle access - not sealed surface , Grass (not maintained) , Bog bridge, Bedrock/stone pitching , No existing trail
4. Ballyhoura Way	Ballyhoura Mountains SAC	New build, Upgrade (Adjacent to SAC)	Stone stepping, Gravel (upgrade)	No existing trail, Built/ maintained trail (non-vehicular) (upgrade)
5. Multeen Way	Slievefelim to Silvermines Mountains SPA	New build plus fence, New Build	Stone stepping	No existing trail
6. Ormond Way	Lough Derg, North-east Shore SAC	New build	Gravel	No existing trail

	Middle Shannon Callows SPA	Upgrade	Mown grass,	Upgrade Sections: Mown grass, Grass (not maintained)
	River Shannon Callows SAC	Upgrade	Mown grass	Grass (not maintained)
	Slievefelim to Silvermines Mountains SPA	New build plus fence, New Build	Stone stepping	No existing trail
7. Hymany Way	Lough Derg, North-east Shore SAC	New build	Gravel	No existing trail
	Middle Shannon Callows SPA	Upgrade	Mown grass,	Upgrade Sections: Mown grass, Grass (not maintained)
	River Shannon Callows SAC	Upgrade	Mown grass	Grass (not maintained)
8. Suck Valley Way	No alterations proposed within designated sites in this trail section	-	-	-
9. Lung Lough Gara Way[9]	Bricklieve Mountains and Keishcorran SAC	New build	Stone stepping, Bog bridge	Grass (not maintained), Bare earth (soil/mud)
10. Miner's Way & Historical Trail	Bricklieve Mountains and Keishcorran SAC	New build	Stone stepping, Bog bridge	Grass (not maintained), Bare earth (soil/mud)
	Ushin River SAC	Indirect, adjacent to SAC. New build plus fence	N/A	No existing trail

[9] *Note: At the time of completion of this report this section has been temporarily re-routed.*

11. Leitrim Way	Corratirrim SAC	New build	Gravel plus terram, Stone stepping	Eco-grid, Grass (not maintained)
	Cuilcagh - Anierin Uplands SAC	Indirect, adjacent to SAC. Mostly New build, some upgrade work	Gravel, Stone stepping, Boardwalk, Gravel plus terram, Bog bridge	Mostly No existing trail
12. Cavan Way	Corratirrim SAC	New build	Gravel plus terram, Stone stepping	Eco-grid, Grass (not maintained)

Table 2: Summary of Internationally Designated Sites with connectivity to the trail route (Source: Environmental Sensitivites and Opportunities Report (Woodrow., 2022)

Trail Number and Name	Designation Type	Number of Designated Sites within Study Area	Number of Designated Sites with Hydrological/ Ecological Connections	Designated Site with a source-pathway-receptor to the Beara Breifne Trail	Pathway	Links
Ballyhoura Way	SAC	9	4* (1 uncertain: Moanour Mountain SAC)	Ballyhoura Mountains SAC002036	Intersected by trail	https://www.npws.ie/protected-sites/sac/002036
				Blackwater River (Cork/Waterford) SAC002170	Intersected by trail	https://www.npws.ie/protected-sites/sac/002170
				Lower River Suir SAC002137	Tributary watercourses feeding into SAC intersected by trail	http://www.npws.ie/protected-sites/sac/002137
				Moanour Mountain SAC002257	Close proximity to trail (500m) could cause disturbance to QI but unlikely given that QI is habitat rather than species	http://www.npws.ie/protected-sites/sac/002257
	SPA	2	0	-	-	-
Beara Way	SAC	18	3	Caha Mountains SAC000093	Intersected by trail	Caha Mountains SAC | National Parks & Wildlife Service (npws.ie)

				Glengarriff Harbour and Woodland SAC000090	Intersected by trail	Glengarriff Harbour and Woodland SAC | National Parks & Wildlife Service (npws.ie)
				Kenmare River SAC002158	Intersected by trail	Kenmare River SAC | National Parks & Wildlife Service (npws.ie)
	SPA	5	1	Beara Peninsula SPA004155	Intersected by route	http://www.npws.ie/protected-sites/spa/004155
Cavan Way	SAC	8	1	Corratirrim SAC000979	Intersected by trail	https://www.npws.ie/protected-sites/sac/000979
	RAMSAR	1	0	-	-	-
Hymany Way	SAC	39	6* (1 uncertain (Redwood Bog SAC)	All Saints Bog and Esker SAC000566	Upstream of trail	http://www.npws.ie/protected-sites/sac/000566
				Glenloughaun Esker SAC002213	Watercourse (Ballinure 26) crossing trail flows into SAC	https://www.npws.ie/protected-sites/sac/002213
				Lough Derg, North-east Shore SAC002241	Downstream of trail	http://www.npws.ie/protected-sites/sac/002241
				Lower River Shannon SAC002165	Downstream of Lough Derg	http://www.npws.ie/protected-sites/sac/002165

				Redwood Bog SAC002353	Close proximity to trail could cause some disturbance (500m) however located on other side of the river and designated for habitats rather than species so less likely to be disturbed by noise etc.	http://www.npws.ie/protected-sites/sac/002353
				River Shannon Callows SAC000216	Intersected by trail	http://www.npws.ie/protected-sites/sac/000216
	SPA	10	4* (1 uncertain (River Little Brosna Callows SPA))	Lough Derg (Shannon) SPA004058	Trail intersects river running into SPA (Lower River Shannon)	http://www.npws.ie/protected-sites/spa/004058
				Middle Shannon Callows SPA004096	Intersected by trail	http://www.npws.ie/protected-sites/spa/004096
				River Little Brosna Callows SPA004086	SPA is upstream of route but proximity to trail could result in disturbance of SCIs.	http://www.npws.ie/protected-sites/spa/004086
				River Suck Callows SPA004097	Rivers crossed by trail run into SPA plus proximity to trail could cause disturbance of SCIs	http://www.npws.ie/protected-sites/spa/004097
Leitrim Way	SAC	6	0	-	-	-
	SPA	1	0	-	-	-

	RAMSAR	1	0	-	-	-
Lung Lough Gara Way[10]	SAC	24	3* (2 uncertain (Cloonchambers Bog SAC, Coolcam Turlough SAC))	Cloonchambers Bog SAC000600	Upstream of trail but reasonably close to trail, potential for disturbance of QIs	Cloonchambers Bog SAC | National Parks & Wildlife Service (npws.ie)
				Coolcam Turlough SAC000218	Limestone landscape in the area (evidenced by Turloughs). No surface hydrological connection but potential for hydrological connection due to groundwater flow	https://www.npws.ie/protected-sites/sac/000218
				Tullaghanrock Bog SAC002354	Watercourses flowing into SAC intersected by trail	http://www.npws.ie/protected-sites/sac/002354
	SPA	3	0	-	-	-
Miner's Way & Historical Trail	SAC	10	3	Bricklieve Mountains and Keishcorran SAC001656	Intersected by trail	https://www.npws.ie/protected-sites/sac/001656
				Lough Arrow SAC001673	Trail intersects rivers running into SAC (Derrylea 35, Gortaghlough, Annaghcor, Cartronroe, Drunderry 35) and crosses lake at the outflow to the northwest	http://www.npws.ie/protected-sites/sac/001673

[10] *Note: At the time of completion of this report this section has been temporarily re-routed.*

					where it flows into the Unshin River SAC	
				Unshin River SAC001898	Intersected by trail	http://www.npws.ie/protected-sites/sac/001898
	SPA	2	1	Lough Arrow SPA004050	Trail intersects rivers running into SPA (Derrylea 35, Gortaghlough, Annaghcor, Cartronroe, Drunderry 35) and crosses lake at the outflow to the northwest where it flows into the Unshin River SAC	http://www.npws.ie/protected-sites/spa/004050
Multeen Way	SAC	10	3	Lower River Shannon SAC002165	Trail intersects or runs close to watercourses upstream of SAC	http://www.npws.ie/protected-sites/sac/002165
				Lower River Suir SAC002137	Tributary watercourse (Losset 16) feeding into SAC intersected by trail, other tributaries running near to but not intersected by trail	http://www.npws.ie/protected-sites/sac/002137
				Philipston Marsh SAC001847	Tributary (Cappawhite (Stream)) which runs along the northern edge of the SAC is intersected by trail	http://www.npws.ie/protected-sites/sac/001847
	SPA	1	1	Slievefelim to Silvermines Mountains SPA004165	Intersected by trail	http://www.npws.ie/protected-sites/spa/004165

North West Cork Way	SAC	5	1	Blackwater River (Cork/Waterford) SAC002170	Intersected by trail	https://www.npws.ie/protected-sites/sac/002170
	SPA	2	0	-	-	-
Ormond Way	SAC	28	8* (1 uncertain (Liskeenan Fen SAC))	All Saints Bog and Esker SAC000566	Upstream of the trail	http://www.npws.ie/protected-sites/sac/000566
				Arragh More (Derrybreen) Bog SAC002207	Intersected by trail	https://www.npws.ie/protected-sites/sac/002207
				Kilcarren-Firville Bog SAC000647	Intersected by trail	https://www.npws.ie/protected-sites/sac/000647
				Liskeenan Fen SAC001683	Close proximity to trail (500m) could cause disturbance to QI but unlikely given that QI is habitat rather than species	https://www.npws.ie/protected-sites/sac/001683
				Lough Derg, North-east Shore SAC002241	Downstream of trail	http://www.npws.ie/protected-sites/sac/002241
				Lower River Suir SAC002137	Tributary watercourses (Owenbeg Trib 1, Clodiagh [Tipperary]) feeding into SAC intersected by trail, other tributaries (Gortnaskehy 16, Shevry) run nearby trail.	http://www.npws.ie/protected-sites/sac/002137

				River Shannon Callows SAC000216	Intersected by trail	http://www.npws.ie/protected-sites/sac/000216
				Scohaboy (Sopwell) Bog SAC002206	Watercourse (Sopwell) flowing into SAC is intersected by trail	http://www.npws.ie/protected-sites/sac/002206
	SPA	8	3* (1 uncertain (Slievefelim to Silvermines Mountains SPA)	Lough Derg (Shannon) SPA004058	Trail intersects river running into SPA (Lower River Shannon), Also downstream of other sections of the Ormond Way trail	http://www.npws.ie/protected-sites/spa/004058
				Middle Shannon Callows SPA004096	Intersected by route	http://www.npws.ie/protected-sites/spa/004096
				Slievefelim to Silvermines Mountains SPA004165	Proximity to trail resulting in potential disturbance of SCIs	http://www.npws.ie/protected-sites/spa/004165
Slí Gaeltacht Mhuscraí	SAC	12	3	Blackwater River (Cork/Waterford) SAC002170	Intersected by trail	https://www.npws.ie/protected-sites/sac/002170
				Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC000365	Intersected by trail	https://www.npws.ie/protected-sites/sac/000365

				St. Gobnet's Wood SAC000106	Intersected by trail	http://www.npws.ie/protected-sites/sac/000106
	SPA	2	1	Mullaghanish to Musheramore Mountains SPA 004162	Intersected by trail	http://www.npws.ie/protected-sites/spa/004162
Suck Valley Way	SAC	33	5* (2 uncertain (Cloonchambers Bog SAC, Williamstown Turloughs SAC))	Aughrim (Aghrane) Bog SAC002200	Intersected by trail	https://www.npws.ie/protected-sites/sac/002200
				Ballygar (Aghrane) Bog SAC002199	Same subcatchment as trail	https://www.npws.ie/protected-sites/sac/002199
				Cloonchambers Bog SAC000600	Upstream of trail but reasonably close to trail, potential for disturbance of QIs	https://www.npws.ie/protected-sites/sac/000600
				Corliskea/Trien/Cloonfeliv Bog SAC002110	Intersected by trail	https://www.npws.ie/protected-sites/sac/002110
				Williamstown Turloughs SAC002296	No direct hydrological connection, potential for groundwater connectivity means site has not been ruled out at the stage	http://www.npws.ie/protected-sites/sac/002296
	SPA	5	1	River Suck Callows SPA004097	Rivers crossed by trail run into SPA	http://www.npws.ie/protected-sites/spa/004098

3.3 Zone of Influence of the Plan

The proposed plan is an approximately 738km long distance walking trail stretching from Dursey Sound in Co. Cork to Blacklion in Co. Cavan. The route is currently passable utilising existing national waymarked trails. Under the previous 2019 Tourism Masterplan for Beara Breifne Way and current BBW-Trail Plan, areas of trail requiring upgrades have been identified and are subject to on-the-ground environmental assessment at a project level.

The zone of influence of this plan has been established on a case-by-case basis using the Source-Pathway-Receptor model (OPR, 2021). The potential impacts on European Sites are dependent on the nature and source of the impacts, the sensitivity of receptors and the causal links and conduits, rather than a standard arbitrary distance. In many cases the potential Zone of Influence is considerably less than 15 km (for example when considering noise or dust) while in other cases the potential Zone of Influence could be greater than 15 km, for example if there is a direct hydrological connection. Therefore, given the potential types of impacts associated with a trail, all Natura 2000 sites within 15 km have considered, as well as all sites with a hydrological connection or the potential to significantly impacted by adverse effects such as increased disturbance or trampling (e.g., from potential increases in visitors), irrespective of distance.

The Beara Breifne Way Trail Plan study area intersects with or is hydrologically connected with 138 Natura 2000 sites. These are listed in Error! Reference source not found.2 and shown in Figure 2. This includes 115 SACs and 23 SPAs. Of the 115 SACs within the study area, 27 are considered to have a source-receptor pathway with the trail route, with a further 4 SACs included due to potential source-receptor pathways which could not be firmly established at this strategic level of assessment. Of the 23 SPAs within the zone of influence of the trail, 8 are considered to have a source-receptor pathway with the trail route. These are listed in Table 3 and shown in Figure 3.

3.3.1 *European sites potentially affected by the BBW Operational Programme*

Table 2: All European sites that occur within the 15km of the Study Area or are hydrologically connected to the trail but outside the 15km buffer.

Site Name	Site Code	Designation Type	County	Relevant Trail Section
All Saints Bog and Esker SAC	000566	SAC	Offaly	Hymany Way Ormond Way
Anglesey Road SAC	002125	SAC	Tipperary	Multeen Way Ormond Way
Ardgraigue Bog SAC	002356	SAC	Galway	Hymany Way Ormond Way
Arragh More (Derrybreen) Bog SAC	002207	SAC	Tipperary, Galway	Hymany Way Ormond Way
Aughrim (Aghrane) Bog SAC	002200	SAC	Galway	Hymany Way Suck Valley Way
Ballinturly Turlough SAC	000588	SAC	Roscommon	Hymany Way Suck Valley Way
Ballyduff/Clonfinane Bog SAC	000641	SAC	Tipperary	Hymany Way Ormond Way
Ballygar (Aghrane) Bog SAC	002199	SAC	Galway	Hymany Way Suck Valley Way
Ballyhoura Mountains SAC	002036	SAC	Limerick, Cork	Ballyhoura Way
Ballynamona Bog And Corkip Lough SAC	002339	SAC	Roscommon	Hymany Way
Bandon River SAC	002171	SAC	Cork	Slí Gaeltacht Mhuscraí

Barroughter Bog SAC	000231	SAC	Galway	Hymany Way Ormond Way
Bellanagare Bog SAC	000592	SAC	Roscommon	Lung Lough Gara Way Suck Valley Way
Blackwater River (Cork/Waterford) SAC	002170	SAC	Limerick, Cork	Ballyhoura Way North West Cork Way Slí Gaeltacht Mhuscraí
Boleybrack Mountain SAC	002032	SAC	Cavan, Leitrim	Cavan Way Leitrim Way
Bolingbrook Hill SAC	002124	SAC	Tipperary	Multeen Way Ormond Way
Bricklieve Mountains and Keishcorran SAC	001656	SAC	Sligo	Lung Lough Gara Way Miner's Way & Historical Trail
Caha Mountains SAC	000093	SAC	Cork, Kerry	Beara Way Slí Gaeltacht Mhuscraí
Callow Bog SAC	000595	SAC	Roscommon	Lung Lough Gara Way Miner's Way & Historical Trail Suck Valley Way
Camderry Bog SAC	002347	SAC	Galway	Hymany Way Suck Valley Way
Carrigeenamronety Hill SAC	002037	SAC	Limerick, Cork	Ballyhoura Way
Carrowbehy/Caher Bog SAC	000597	SAC	Roscommon	Lung Lough Gara Way

				Suck Valley Way
Carrownagappul Bog SAC	001242	SAC	Galway	Hymany Way Suck Valley Way
Castlesampson Esker SAC	001625	SAC	Roscommon	Hymany Way
Cladagh (Swanlinbar) River	UK0030116	SAC	Fermanagh	Cavan Way
Cleanderry Wood SAC	001043	SAC	Cork	Beara Way
Cloonakillina Lough SAC	001899	SAC	Mayo	Lung Lough Gara Way
Cloonchambers Bog SAC	000600	SAC	Roscommon	Lung Lough Gara Way Suck Valley Way
Cloonee And Inchiquin Loughs, Uragh Wood SAC	001342	SAC	Kerry	Beara Way
Cloonmoylan Bog SAC	000248	SAC	Galway	Hymany Way Ormond Way
Cloonshanville Bog SAC	000614	SAC	Roscommon	Lung Lough Gara Way Miner's Way & Historical Trail Suck Valley Way
Coolcam Turlough SAC	000218	SAC	Galway, Roscommon	Lung Lough Gara Way Suck Valley Way
Corliskea/Trien/Cloonfelliv Bog SAC	002110	SAC	Roscommon, Galway	Lung Lough Gara Way Suck Valley Way
Corratirrim SAC	000979	SAC	Cavan	Cavan Way Leitrim Way
Croaghill Turlough SAC	000255	SAC	Galway	Lung Lough Gara Way

				Suck Valley Way
Cuilcagh - Anierin Uplands SAC	000584	SAC	Leitrim, Cavan	Cavan Way Leitrim Way Miner's Way & Historical Trail
Cuilcagh Mountain	UK0016603	SAC	Fermanagh	Cavan Way Leitrim Way
Curraghlehanagh Bog SAC	002350	SAC	Galway	Hymany Way Suck Valley Way
Derrinea Bog SAC	000604	SAC	Roscommon	Lung Lough Gara Way Suck Valley Way
Derrinlough (Cloonkeenleananode) Bog SAC	002197	SAC	Galway	Suck Valley Way
Derryclogher (Knockboy) Bog SAC	001873	SAC	Cork	Beara Way Slí Gaeltacht Mhuscraí
Derrycrag Wood Nature Reserve SAC	000261	SAC	Galway	Hymany Way Ormond Way
Doocastle Turlough SAC	000492	SAC	Mayo, Sligo	Lung Lough Gara Way
Drongawn Lough SAC	002187	SAC	Kerry	Beara Way
Drumalough Bog SAC	002338	SAC	Roscommon	Lung Lough Gara Way Suck Valley Way
Dunbeacon Shingle SAC	002280	SAC	Cork	Beara Way
Errit Lough SAC	000607	SAC	Roscommon	Lung Lough Gara Way Suck Valley Way

Farranamanagh Lough SAC	002189	SAC	Cork	Beara Way
FerbaneBog SAC	000575	SAC	Offaly	Hymany Way
Fin Lough (Offaly) SAC	000576	SAC	Offaly	Hymany Way
Flughany Bog SAC	000497	SAC	Mayo, Sligo	Lung Lough Gara Way Miner's Way & Historical Trail
Four Roads Turlough SAC	001637	SAC	Roscommon	Hymany Way Suck Valley Way
Galtee Mountains SAC	000646	SAC	Tipperary, Limerick	Ballyhoura Way Multeen Way
Glanlough Woods SAC	002315	SAC	Kerry	Beara Way Slí Gaeltacht Mhuscraí
Glanmore Bog SAC	001879	SAC	Kerry	Beara Way
Glen Bog SAC	001430	SAC	Limerick	Ballyhoura Way
Glengarriff Harbour and Woodland SAC	000090	SAC	Cork	Beara Way Slí Gaeltacht Mhuscraí
Glenloughaun Esker SAC	002213	SAC	Galway	Hymany Way
Island Fen SAC	002236	SAC	Offaly	Ormond Way
Keeper Hill SAC	001197	SAC	Tipperary	Multeen Way Ormond Way
Kenmare River SAC	002158	SAC	Kerry, Cork	Beara Way
Kilcarren-Firville Bog SAC	000647	SAC	Tipperary	Hymany Way Ormond Way

Kilduff, Devilsbit Mountain SAC	000934	SAC	Tipperary	Ormond Way
Kilgarvan Ice House SAC	000364	SAC	Kerry	Beara Way Slí Gaeltacht Mhuscraí
Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC	000365	SAC	Kerry	Beara Way North West Cork Way Slí Gaeltacht Mhuscraí
Killeglan Grassland SAC	002214	SAC	Roscommon	Hymany Way Suck Valley Way
Kilsallagh Bog SAC	000285	SAC	Galway	Lung Lough Gara Way Suck Valley Way
Lisduff Fen SAC	002147	SAC	Offaly	Ormond Way
Lisduff Turlough SAC	000609	SAC	Roscommon	Hymany Way Suck Valley Way
Liskeenan Fen SAC	001683	SAC	Tipperary	Hymany Way Ormond Way
Lisnageeragh Bog and Ballinastack Turlough SAC	000296	SAC	Galway	Hymany Way Suck Valley Way
Lough Arrow SAC	001673	SAC	Roscommon, Sligo	Leitrim Way Lung Lough Gara Way Miner's Way & Historical Trail
Lough Corrib SAC	000297	SAC	Galway	Hymany Way Suck Valley Way

Lough Croan Turlough SAC	000610	SAC	Roscommon	Hymany Way Suck Valley Way
Lough Derg, North-east Shore SAC	002241	SAC	Galway, Tipperary	Hymany Way Ormond Way
Lough Funshinagh SAC	000611	SAC	Roscommon	Hymany Way Suck Valley Way
Lough Gill SAC	001976	SAC	Leitrim	Cavan Way Leitrim Way Miner's Way & Historical Trail
Lough Lurgeen Bog/Glenamaddy Turlough SAC	000301	SAC	Galway	Hymany Way Suck Valley Way
Lough Ree SAC	000440	SAC	Roscommon	Suck Valley Way
Lower River Shannon SAC	002165	SAC	Tipperary, Limerick	Ballyhoura Way Hymany Way Multeen Way North West Cork Way Ormond Way
Lower River Suir SAC	002137	SAC	Tipperary, Limerick	Ballyhoura Way Multeen Way Ormond Way
Maulagowna Bog SAC	001881	SAC	Kerry	Beara Way
Moanour Mountain SAC	002257	SAC	Tipperary	Ballyhoura Way Multeen Way

Monawilkin SAC	UK0016619	SAC	Fermanagh	Cavan Way
Mongan Bog SAC	000580	SAC	Offaly	Hymany Way
Moyclare Bog SAC	000581	SAC	Offaly	Hymany Way
Mucksna Wood SAC	001371	SAC	Kerry	Beara Way
Mullaghanish Bog SAC	001890	SAC	Cork	North West Cork Way Slí Gaeltacht Mhuscraí
Mullygollan Turlough SAC	000612	SAC	Roscommon	Lung Lough Gara Way Suck Valley Way
Old Domestic Building, Curraglass Wood SAC	002041	SAC	Kerry	Slí Gaeltacht Mhuscraí
Old Domestic Building, Dromore Wood SAC	000353	SAC	Kerry	Beara Way
Philipston Marsh SAC	001847	SAC	Tipperary	Ballyhoura Way Multeen Way Ormond Way
Pilgrim's Road Esker SAC	001776	SAC	Offaly	Hymany Way
Pollnaknockaun Wood Nature Reserve SAC	000319	SAC	Galway	Hymany Way Ormond Way
Redwood Bog SAC	002353	SAC	Tipperary	Hymany Way Ormond Way
Reen Point Shingle SAC	002281	SAC	Cork	Beara Way
Ridge Road, SW of Rapemills SAC	000919	SAC	Offaly	Hymany Way Ormond Way

River Moy SAC	002298	SAC	Sligo, Roscommon, Mayo	Lung Lough Gara Way
River Shannon Callows SAC	000216	SAC	Galway, Roscommon, Offaly, Tipperary	Hymany Way Ormond Way
Rosturra Wood SAC	001313	SAC	Galway	Hymany Way Ormond Way
Scohaboy (Sopwell) Bog SAC	002206	SAC	Tipperary	Ormond Way
Shankill West Bog SAC	000326	SAC	Galway	Hymany Way Suck Valley Way
Sharavogue Bog SAC	000585	SAC	Offaly	Ormond Way
Sheep's Head SAC	000102	SAC	Cork	Beara Way
Silvermine Mountains SAC	000939	SAC	Tipperary	Multeen Way Ormond Way
Silvermines Mountains West SAC	002258	SAC	Tipperary	Multeen Way Ormond Way
St. Gobnet's Wood SAC	000106	SAC	Cork	North West Cork Way Slí Gaeltacht Mhuscraí
Templehouse And Cloonacleigha Loughs SAC	000636	SAC	Sligo	Lung Lough Gara Way Miner's Way & Historical Trail
The Gearagh SAC	000108	SAC	Cork	Slí Gaeltacht Mhuscraí
Tullaghanrock Bog SAC	002354	SAC	Roscommon	Lung Lough Gara Way Suck Valley Way

Union Wood SAC	000638	SAC	Sligo	Miner's Way & Historical Trail
Unshin River SAC	001898	SAC	Sligo	Lung Lough Gara Way Miner's Way & Historical Trail
Urlaur Lakes SAC	001571	SAC	Mayo, Roscommon	Lung Lough Gara Way Suck Valley Way
West Fermanagh Scarplands	UK0030300	SAC	Fermanagh	Cavan Way
Williamstown Turloughs SAC	002296	SAC	Galway	Lung Lough Gara Way Suck Valley Way
All Saints Bog SPA	004103	SPA	Offaly	Hymany Way Ormond Way
Beara Peninsula SPA	004155	SPA	Cork	Beara Way
Bellanagare Bog SPA	004105	SPA	Roscommon	Lung Lough Gara Way Suck Valley Way
Deenish Island and Scariff Island SPA	004175	SPA	Kerry	Beara Way
Dovegrove Callows SPA	004137	SPA	Offaly	Hymany Way Ormond Way
Four Roads Turlough SPA	004140	SPA	Roscommon	Hymany Way Suck Valley Way
Iveragh Peninsula SPA	004154	SPA	Kerry	Beara Way
Kilcolman Bog SPA	004095	SPA	Cork	Ballyhoura Way
Lough Arrow SPA	004050	SPA	Sligo, Roscommon	Leitrim Way Lung Lough Gara Way

				Miner's Way & Historical Trail
Lough Croan Turlough SPA	004139	SPA	Roscommon	Hymany Way Suck Valley Way
Lough Derg (Shannon) SPA	004058	SPA	Clare, Galway, Tipperary	Hymany Way Ormond Way
Lough Gara SPA	004048	SPA	Sligo, Roscommon	Lung Lough Gara Way Miner's Way & Historical Trail Suck Valley Way
Middle Shannon Callows SPA	004096	SPA	Tipperary, Roscommon, Offaly, Galway,	Hymany Way Ormond Way
Mongan Bog SPA	004017	SPA	Offaly	Hymany Way
Mullaghanish to Musheramore Mountains SPA	004162	SPA	Cork	North West Cork Way Slí Gaeltacht Mhuscraí
River Little Brosna Callows SPA	004086	SPA	Offaly, Tipperary	Hymany Way Ormond Way
River Suck Callows SPA	004097	SPA	Galway, Roscommon	Hymany Way Suck Valley Way
Sheep's Head to Toe Head SPA	004156	SPA	Cork	Beara Way
Slieve Aughty Mountains SPA	004168	SPA	Galway	Hymany Way

				Ormond Way
Slievefelim to Silvermines Mountains SPA	004165	SPA	Tipperary, Limerick	Multeen Way Ormond Way
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	004161	SPA	Cork, Limerick	Ballyhoura Way North West Cork Way
The Bull and The Cow Rocks SPA	004066	SPA	Cork	Beara Way
The Gearagh SPA	004109	SPA	Cork	Slí Gaeltacht Mhuscraí

Figure 3: Natura 2000 sites with ecological links to the trail route

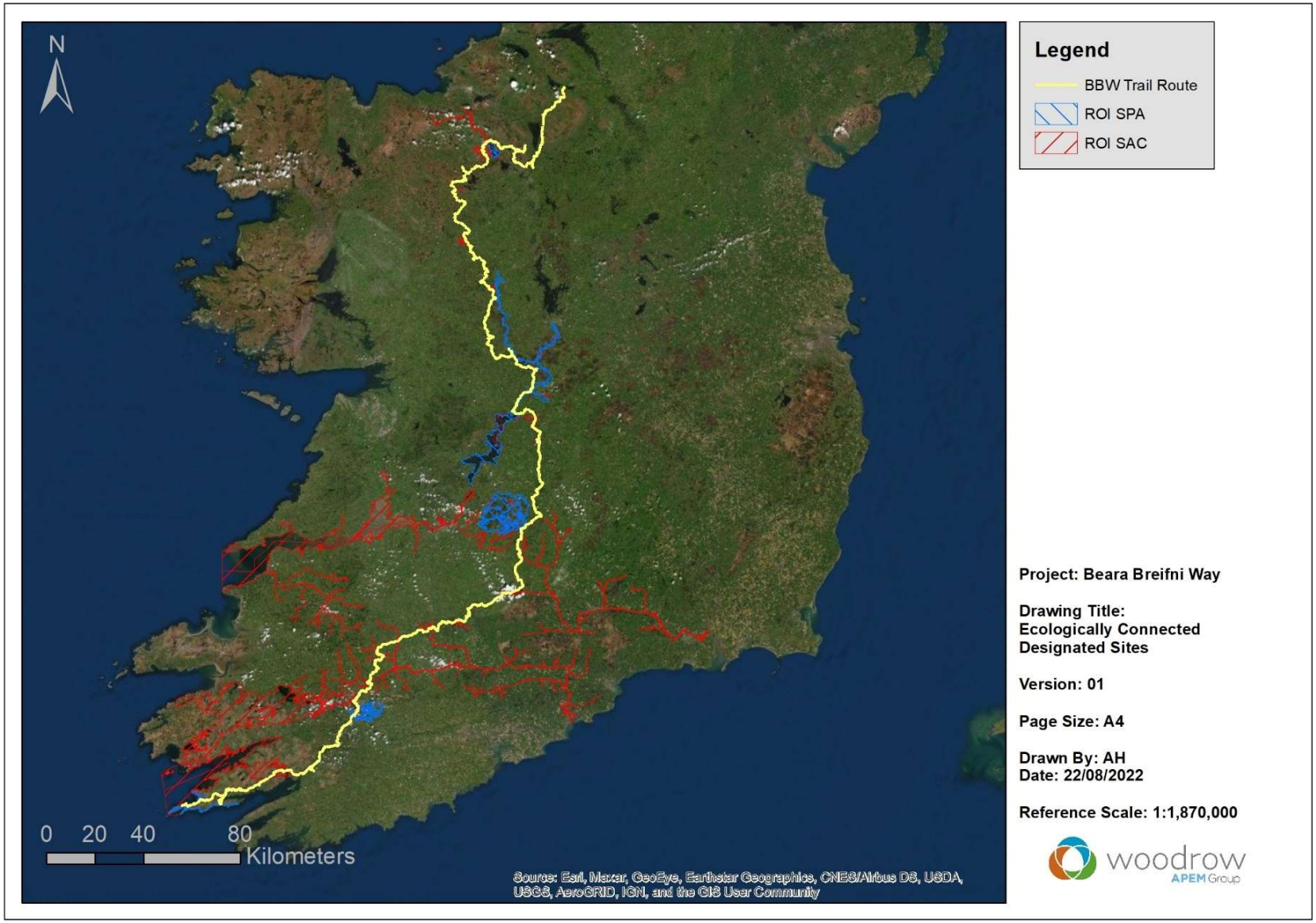


Table 3: All European sites that occur within the Study Area and are ecologically or hydrologically connected to the trail.

Site Name and Site Code	Source-Pathway Receptor	Relevant Trail Section	Distance to Trail
SAC			
All Saints Bog and Esker SAC 000566	SAC is upstream of trail route	Hymany Way	5.8km southeast
		Ormond Way	8.7km northwest
Arragh More (Derrybreen) Bog SAC 002207	Intersected by trail	Ormond Way	Runs along the western border of the SAC
Aughrim (Aghrane) Bog SAC 002200	Intersected by trail	Suck Valley Way	Intersects trail at most westerly point in the SAC
Ballygar (Aghrane) Bog SAC 002199	Located in same Subcatchment- potential for hydrological linkage	Suck Valley Way	0.4km south
Ballyhoura Mountains SAC 002036	Intersected by trail	Ballyhoura Way	Intersected by trail
Blackwater River (Cork/Waterford) SAC 002170	Intersected by trail	Suck Valley Way	Intersects SAC at Johnsbridge and near Ballingrath
		North West Cork Way	Intersects SAC by Drishane castle and south of Clongeel
		Slí Gaeltacht Mhuscraí	Intersects the SAC at Millstreet
Bricklieve Mountains and Keishcorran SAC 001656	Intersected by trail	Miner's Way & Historical Trail	Intersected by trail

Caha Mountains SAC 000093	Intersected by trail	Beara Way	Southern part of SAC intersected by the trail
Corliskea/Trien/Cloonfelliv Bog SAC 002110	Intersected by trail	Suck Valley Way	Trail intersects eastern part of SAC
Corratirrim SAC 000979	Intersected by trail	Cavan Way	Intersected by trail
Glengarriff Harbour and Woodland SAC 000090	Intersected by trail	Beara Way	Intersected by trail
Glenloughaun Esker SAC 002213	Watercourse (EPA name: Ballinure 26) crossing trail flows into SAC	Hymany Way	0.3km south
Kenmare River SAC 002158	Intersected by trail	Beara Way	Intersects trail, also runs adjacent to trail as it runs along the Beara peninsula
Kilcarren-Firville Bog SAC 000647	Intersected by trail	Ormond Way	Intersects north-eastern part of the SAC
Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC 000365	Intersected by trail	Slí Gaeltacht Mhuscraí	Runs along the border of SAC by Coomacheo Wind Farm
Liskeenan Fen SAC 001683	Close proximity to trail (within 500m) could cause disturbance to QI habitats or species due to increased visitors to the general area but considered unlikely	Ormond Way	0.4km east southeast
Lough Arrow SAC 001673	Trail intersects rivers upstream of SAC (The EPA names for these streams	Miner's Way & Historical Trail	Runs 0.01km from the north western boundary of the SAC

	are: Derrylea 35, Gortaghlough, Annaghcor, Cartronroe, Drunderry 35) and crosses the lake SAC at the outflow to the northwest where the lake flows into the Unshin River SAC		
Lough Derg, North-east Shore SAC 002241	Downstream of trail	Hymany Way	1.2km south
		Ormond Way	0.9km north
Lower River Shannon SAC 002165	Trail intersects or runs close to watercourses upstream of SAC	Hymany Way	Intersected by trail
		Multeen Way	1.5km west at closest point
Lower River Suir SAC 002137	Tributary watercourses (EPA names: Losset 16, Owenbeg Trib 1, Clodiagh [Tipperary]) feeding into SAC are intersected by trail, other tributaries of the SAC flow adjacent to but are not intersected by trail	Ballyhoura Way	0.5km at nearest point
		Multeen Way	5.9km southeast
		Ormond Way	1.3km east at closest point
Moanour Mountain SAC 002257	Close proximity to trail (within 500m) could cause disturbance to QI habitats or species due to increased visitors to the general area but considered unlikely	Ballyhoura Way	0.4km north

Philipston Marsh SAC 001847	Tributary (Cappawhite (Stream)) which runs along the northern edge of the SAC is intersected by trail	Multeen Way	0.6km west
River Shannon Callows SAC 000216	Intersected by trail	Hymany Way	Intersects trail between Portumna and Shannon Grove
		Ormond Way	Intersects SAC at Portumna bridge area
Scohaboy (Sopwell) Bog SAC 002206	Watercourse (EPA name: Sopwell) flowing into SAC is intersected by trail	Ormond Way	0.3km west
St. Gobnet's Wood SAC 000106	Intersected by trail	Slí Gaeltacht Mhuscraí	Intersects southern edge of SAC, runs within 10m of the northern part of the SAC
Tullaghanrock Bog SAC 002354	Watercourses flowing into SAC intersected by trail	Lung Lough Gara Way	1km east
Unshin River SAC 001898	Intersected by trail	Miner's Way & Historical Trail	Intersects trail as it flows into Lough Arrow SAC
SPA			
Beara Peninsula SPA 004155	Intersected by trail	Beara Way	Intersected by route
Lough Arrow SPA 004050	Intersected by trail	Miner's Way & Historical Trail	Trail intersects rivers running into SPA (Derrylea 35, Gortaghlough, Annaghcor,

			Cartronroe, Drunderry 35) and crosses the lake at the outflow to the northwest where it flows into the Unshin River SAC
Lough Derg (Shannon) SPA 004058	Downstream of trail route. Trail intersects river running into SPA (Lower River Shannon)	Hymany Way	Trail intersects river running into SPA (Lower River Shannon)
		Ormond Way	Trail intersects river running into SPA (Lower River Shannon)
Middle Shannon Callows SPA 004096	Intersected by route	Hymany Way	Intersected by route
		Ormond Way	Intersected by route
Mullaghanish to Musheramore Mountains SPA 004162	Intersected by route	Slí Gaeltacht Mhuscraí	Intersected by route
River Little Brosna Callows SPA 004086	Upstream	Hymany Way	SPA is upstream of route but proximity to trail (approximately 600m) could result in disturbance of SCIs.
River Suck Callows SPA 004097	Rivers crossed by trail run into SPA plus proximity to trail (within 100m at points) could cause disturbance of SCIs	Hymany Way	Rivers crossed by trail run into SPA plus proximity to trail could cause disturbance of SCIs
		Suck Valley Way	Rivers crossed by trail run into SPA
Slievefelim to Silvermines Mountains SPA 004165	Intersected by route	Multeen Way	Intersected by route

		Ormond Way	Proximity to trail resulting in potential disturbance of SCIs

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

This section outlines the Qualifying Interests (QIs) of SACs and Special Conservation Interests (SCIs) of SPAs, which are the notable species/ habitats for which the European Sites have been designated. The existing threats and vulnerabilities for each of these habitats/species are also listed where available according to the NPWS Article 17 Habitats and Species Conservation Assessment Reports (NPWS (2019a, 2019b and 2019c)).

Table 4 lists the Annex I habitats and Error! Reference source not found.5 lists Annex II species for which SACs within and surrounding the Study Area have been selected, and associated threats and vulnerabilities. Table 6 lists Special conservation interests (SCIs) of SPAs within and surrounding the Study Area.

Table 4: Annex I habitats for which cSACs within and surrounding the Study Area have been selected, and associated threats and vulnerabilities. H: High, M: Medium, L: Low

Habitat and Code	Threats and vulnerabilities (NPWS (2019b))
Active raised bogs 7110	The main threats to this habitat are: Peat extraction (H) Drainage (H), Conversion to forest from other land uses, or afforestation (excluding drainage) (M), Burning for agriculture (M), Temperature changes (e.g., rise of temperature & extremes) due to climate change (M)
Alkaline fens 7230	Abandonment of grassland management (H) Intensive grazing or overgrazing by livestock (H) Drainage (M) Modification of hydrological flow (M) Mixed source pollution to surface and ground waters (M) Abstraction from groundwater, surface water or mixed water (M) Droughts and decrease in precipitation due to climate change (M) Increases or changes in precipitation due to climate change (M)
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) 91E0	Other invasive alien species (other than species of Union concern) (H) Problematic native species (M), Clear-cutting, removal of all trees (M), Plant and animal diseases, pathogens and pests (M)
Alpine and Boreal heaths 4060	Intensive grazing or overgrazing by livestock (H) Agricultural activities generating air pollution (H) Sports, tourism and leisure activities (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 1330	Intensive grazing or overgrazing by livestock (H) Sports, tourism and leisure activities (H) Modification of hydrological flow or physical alternation of water bodies for agriculture (excluding development and operation of dams) (M) Agriculture activities not referred to above (M) Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (M) Other invasive alien species (other than species of Union concern) (M)

Blanket bogs (* if active bog) 7130	Intensive grazing or overgrazing by livestock (H) Burning for agriculture (H) Agricultural activities generating air pollution (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (H) Peat extraction (H) Abiotic natural processes (e.g., erosion, silting up, drying out, submersion, salinization) (M) Wind, wave and tidal power, including infrastructure (M) Drainage (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)
Bog woodland 91D0	Abstraction from groundwater, surface water or mixed water (M) Other invasive alien species (other than species of Union concern) (M) Peat extraction (M) Burning for agriculture (M) Clear-cutting, removal of all trees (M)
Calaminarian grasslands of the *Violetalia calaminariae* 6130	Abiotic natural processes (H) Natural succession resulting in species composition change (H) Sports, tourism and leisure activities (M)
Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) 8120	Intensive grazing or overgrazing by livestock (H)
Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* 7210	Abandonment of grassland management (H) Intensive grazing or overgrazing by livestock (H) Abstraction from groundwater, surface water or mixed water (H) Drainage (M) Modification of hydrological flow (M) Mixed source pollution to surface and ground waters (M) Peat extraction (M)
Calcareous rocky slopes with chasmophytic vegetation 8210	Intensive grazing or overgrazing by livestock (M) Agricultural activities generating air pollution (H) Other invasive alien species (other than species of Union concern) (M)
Coastal lagoons *1150	Mixed source marine water pollution (marine and coastal) (H) Modification of hydrological flow (H) Drainage (H) Abiotic natural processes (e.g., Erosion, silting up, drying out, submersion, salinization (M) Accumulation of organic material (M)

	Extraction activities generating marine pollution (M) Sea-level and wave exposure changes due to climate change (M)
Degraded raised bogs still capable of natural regeneration 7120	Peat extraction (H) Drainage (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (M) Burning for agriculture (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M)
Depressions on peat substrates of the *Rhynchosporion* 7150	Peat extraction (H) Drainage (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (M) Burning for agriculture (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M)
Estuaries 1130	Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro- particular pollution (H) Agricultural activities generation marine pollution (H) Marine aquaculture generating marine pollution (H) Other invasive alien species (other than species of Union concern) (H)
European dry heaths 4030	Intensive grazing or overgrazing by livestock (H) Burning for agriculture (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (H) Agricultural activities generating air pollution (H) Wind, wave and tidal power, including infrastructure (M) Abiotic natural processes (e.g., erosion, silting up, drying out, submersion, salinization) (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)
Fixed coastal dunes with herbaceous vegetation (grey dunes) 2130	Extensive grazing or under-grazing by livestock (H) Problems related to invasive alien species other than those covered by EU Regulation 1143/2014 (H) Conversion from one type of agricultural land use to another (excluding drainage and burning) (M) Intensive grazing or overgrazing by livestock (M) Sports, tourism and leisure activities (M) Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (M) Natural succession resulting in species composition change (other

	than by direct changes of agricultural or forestry practices) (M)
Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.*3140	Agricultural activities generating diffuse pollution to surface or ground waters (H) Agricultural activities generating point source pollution to surface or ground waters (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (H) Plants, contaminated or abandoned industrial sites generating pollution to surface or ground water (H) Forestry activities generating pollution to surface or ground waters (H) Peat extraction (M) Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (M) Drainage for use as agricultural land (M) Abstraction of ground and surface waters (including marine) for public water supply and recreational use (M) Other invasive alien species (other than species of Union concern) (M)
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels 6430	Intensive grazing or overgrazing by livestock (M) Drainage for use as agricultural land (M) Invasive alien species of Union concern (M) Other invasive alien species (other than species of Union concern) (M)
Juniperus communis formations on heaths or calcareous grasslands 5130	No threats listed
Large shallow inlets and bays 1160	Mixed source marine water pollution (marine and coastal) (H) Modification of hydrological flow (H) Drainage (H) Abiotic natural processes (e.g., Erosion, silting up, drying out, submersion, salinization (M) Accumulation of organic material (M) Extraction activities generating marine pollution (M) Sea-level and wave exposure changes due to climate change (M)
Limestone pavements * 8240	Conversion into agricultural land (H) Extensive grazing or under-grazing by livestock (M) Extraction of minerals (M) Conversion from other land uses to housing (M) Other invasive alien species (M)
Lowland hay meadows (*Alopecurus pratensis,*	Conversion from one type of agricultural land use to another (H) Application of natural fertilisers on agricultural land (H) Application of synthetic (mineral) fertilisers on agricultural land (M)

Sanguisorba officinalis) 6510	Abandonment of grassland management (e.g., cessation of grazing or of mowing) (M) Livestock farming (without grazing) (M)
Mediterranean salt meadows *(Juncetalia maritimi*) 1410	Intensive grazing or overgrazing by livestock (H) Modification of hydrological flow or physical alternation of water bodies for agriculture (excluding development and operation of dams) (M) Agriculture activities not referred to above (M) Extensive grazing or under-grazing by livestock (M)
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) 6410	Conversion from one type of agricultural land use to another (H) Abandonment of grassland management (e.g., cessation of grazing or of mowing) (H) Extensive grazing or under-grazing by livestock (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (H) Livestock farming (without grazing) (M) Drainage for use as agricultural land (M)
Mudflats and sandflats not covered by seawater at low tide 1140	Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro- particular pollution (H) Agricultural activities generation marine pollution (H) Marine aquaculture generating marine pollution (H)
Natural dystrophic lakes and ponds 3160	Forestry activities generating pollution to surface or ground waters (H) Peat extraction (H) Agricultural activities generating diffuse pollution to surface or ground waters (H) Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (H) Drainage for use as agricultural land (M) Energy production and transmission activities generating pollution to surface or ground waters (M)
Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation 3150	Agricultural activities generating point source pollution to surface or ground waters (H) Agricultural activities generating diffuse pollution to surface or ground waters (H) Forestry activities generating pollution to surface or ground waters (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (H) Modification of hydrological flow (H) Physical alteration of water bodies (M) Plants, contaminated or abandoned industrial sites generating pollution to surface or ground water (M)

	Peat extraction (M) Pollution to surface or ground water due to urban runoffs (M)
Northern Atlantic wet heaths with *Erica tetralix* 4010	Intensive grazing or overgrazing by livestock (H) Burning for agriculture (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (H) Agricultural activities generating air pollution (H) Wind, wave and tidal power, including infrastructure (M) Abiotic natural processes (e.g., erosion, silting up, drying out, submersion, salinization) (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles 91A0	Other invasive alien species (other than species of Union concern) (H) Intensive grazing or overgrazing by livestock (H) Problematic native species (M) Clear-cutting, removal of all trees (M) Storm, cyclone (M)
Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* 3130	Modification of hydrological flow (H) Physical alteration of water bodies (H) Agricultural activities generating diffuse pollution to surface or ground waters (H) Agricultural activities generating point source pollution to surface or ground waters (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (H) Other invasive alien species (other than species of Union concern) (M) Forestry activities generating pollution to surface or ground waters (M) Peat extraction (M)
Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) 3110	Agricultural activities generating diffuse pollution to surface or ground waters (H) Forestry activities generating pollution to surface or ground waters (H) Peat extraction (H) Drainage for use as agricultural land (H) Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M)
Perennial vegetation of stony banks 1220	Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (H)

	Extraction of minerals (e.g., rock, metal ores, gravel, sand, shell) (M) Roads, paths, railroads and related infrastructure (e.g., bridges, viaducts, tunnels) (M) Sports, tourism and leisure activities (M) Deposition and treatment of waste/garbage from household/recreational facilities (M) Other invasive alien species (other than species of Union concern) (M)
Petrifying springs with tufa formation (*Cratoneurion*) * 7220	Abandonment of grassland management (H) Intensive grazing or overgrazing by livestock (H) Abstraction from groundwater, surface water or mixed water (H) Drainage (M) Modification of hydrological flow (M) Mixed source pollution to surface and ground waters (M) Peat extraction (M)
Reefs 1170	Marine fishing and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (H) Marine fish and shellfish harvesting (professional, recreational) activities causing physical loss and disturbance of seafloor habitats (H)
Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation 3270	Intensive grazing or overgrazing by livestock (M) Other invasive alien species (other than species of Union concern) (M)
Salicornia and other annuals colonising mud and sand 1310	Other invasive alien species (other than species of Union concern) (M) Intensive grazing or overgrazing by livestock (M)
Sandbanks which are slightly covered by sea water all the time 1110	No threats listed
Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) 6210	Conversion from one type of agricultural land use to another (H) Extensive grazing or under-grazing by livestock (H) Extraction of minerals (H) Intensive grazing or overgrazing by livestock (M) Other invasive alien species (M) Problematic native species (M)
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) 2120	Sports, tourism and leisure activities (H) Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures)

	(H) Abiotic natural processes (e.g., erosion, silting up, drying out, submersion, salinization) (H) Roads, paths, railroads and related infrastructure (e.g., bridges, viaducts, tunnels) (M) Shipping lanes, ferry lanes and anchorage infrastructure e.g., canalisation, dredging (M) Conversion from other land uses to housing, settlement or recreational areas (excluding drainage and modification of coastline, estuary and coastal conditions) (M) Development and maintenance of beach areas for tourism and recreation incl. beach nourishment and beach cleaning (M) Other invasive alien species (other than species of Union concern) (M)
Siliceous rocky slopes with chasmophytic vegetation 8220	Other invasive alien species (other than species of Union concern) (M)
Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) 8110	Intensive grazing or overgrazing by livestock (M) Extensive grazing or under-grazing by livestock (M) Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (M)
Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) 6230	Problematic native species (M) Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices (M)
Submerged or partially submerged sea caves 8330	No threats listed
Taxus baccata woods of the British Isles 91J0	Other invasive alien species (other than species of Union concern) (H) Problematic native species (M) Clear-cutting, removal of all trees (M) Plant and animal diseases, pathogens and pests (M)
Tilio-Acerion forests of slopes, screes and ravines * 9180[11]	Biocenotic evolution, succession (H) Interspecific floral relations (H) Grazing (H) Invasive non-native species (H) Fire and fire suppression (H) Pollution to surface waters (limnic & terrestrial, marine & brackish) (M)

[11] https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030300.pdf

	Grazing in forests/ woodland (M) Outdoor sports and leisure activities, recreational activities (L) Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g., due to fishing gear), etc.) (L)
Transition mires and quaking bogs 7140	Conversion to forest from other land uses, or afforestation (H) Mixed source pollution to surface and ground waters (H) Drainage (H) Modification of hydrological flow (H) Abandonment of grassland management (M) Intensive grazing or overgrazing by livestock (M) Abstraction from groundwater, surface water or mixed water (M) Natural succession resulting in species composition change (M)
Turloughs*3180	Agricultural activities generating diffuse pollution to surface or ground waters (H) Intensive grazing or overgrazing by livestock (M) Drainage for use as agricultural land (M)
Vegetated sea cliffs of the Atlantic and Baltic coasts 1230	Extraction of minerals (e.g., rock, metal ores, gravel, sand, shell) (M) Roads, paths railroads and related infrastructure (e.g., bridges, viaducts, tunnels) (M) Sports, tourism and leisure activities (M) Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (M) Other invasive alien species (other than species of Union concern) (M) Increases or changes in precipitation due to climate change (M) Sea-level and wave exposure changes due to climate change (M)
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation 3260	Agricultural activities generating diffuse pollution to surface or ground waters (H) Agricultural activities generating point source pollution to surface or ground waters (H) Modification of hydrological flow (H) Physical alteration of water bodies (H) Discharge of urban waste

Table 5 : Annex II and IV species for which SACs within and surrounding the Study Area have been selected, and associated threats and vulnerabilities

Common Name	Scientific Name	EU Code	Recognised threats to relevant Annex II species (NPWS (2019c)) Threat level: H: High M: Moderate
Twaite Shad	*Alosa fallax fallax*	1103	Application of natural fertilisers on agricultural land (H) Application of synthetic (mineral) fertilisers on agricultural land (H) Hydropower (dams, weirs, run-off-the-river), including infrastructure (M) Shipping lanes, ferry lanes and anchorage infrastructure (e.g., canalisation, dredging) (M) Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations (M) Freshwater fish and shellfish harvesting (recreational) (M) Bycatch and incidental killing (due to fishing and hunting activities) (H) Other invasive alien species (other than species of Union concern) (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Increases or changes in precipitation due to climate change (H)
Killarney Shad	*Alosa fallax killarnensis*	5046	Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) Management of fishing stocks and game (including illegal restocking with native fish) (M) Interspecific relations (competition, predation, parasitism, pathogens) (M) Other invasive alien species (other than species of Union concern) (M)
White-clawed Crayfish	*Austropotamobius pallipes*	1092	Plant and animal diseases, pathogens and pests (H) Invasive alien species of Union concern (H)

Marsh Fritillary	*Euphydryas aurinia*	1065	Conversion into agricultural land (excluding drainage and burning) (H) Abandonment of management/use of other agricultural and agroforestry systems (all except grassland) (M) Extensive grazing or under-grazing by livestock (M) Conversion to forest from other land uses, or afforestation (excluding drainage) (H)
Kerry Slug	*Geomalacus maculosus*	1024	Vandalism or arson (M) Other invasive alien species (other than species of Union concern) (M)
Slender Green Feathermoss	*Hamatocaulis vernicosus*	6216	No threats listed
River Lamprey	*Lampetra fluviatilis*	1099	Hydropower (dams, weirs, run-off-the-river), including infrastructure (H) Increases or changes in precipitation due to climate change (H) Application of natural fertilisers on agricultural land (M) Application of synthetic (mineral) fertilisers on agricultural land (M) Drainage for use as agricultural land (M) Shipping lanes, ferry lanes and anchorage infrastructure (e.g., canalisation, dredging) (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)
Brook Lamprey	*Lampetra planeri*	1096	Application of natural fertilisers on agricultural land (M) Application of synthetic (mineral) fertilisers on agricultural land (M) Drainage for use as agricultural land (M) Clear-cutting, removal of all trees (M) Hydropower (dams, weirs, run-off-the-river), including infrastructure (M) Pollution to surface or ground water due to urban runoffs (M) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M)

			Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)
Otter	*Lutra lutra*	1355	No threats listed
Freshwater Pearl Mussel	*Margaritifera margaritifera*	1029	Drainage for use as agricultural land (H) Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (H) Other modification of hydrological conditions for residential or recreational development (H) Agricultural activities generating diffuse pollution to surface or ground waters (H) Forestry activities generating pollution to surface or ground waters (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) Peat extraction (M) Modification of flooding regimes, flood protection for residential or recreational development (M) Hydropower (dams, weirs, run-off-the-river), including infrastructure (M) Abstraction of ground and surface waters (including marine) for public water supply and recreational use (M)
Slender Naiad	*Najas flexilis*	1833	Modification of hydrological flow (H) Physical alteration of water bodies (H) Agricultural activities generating diffuse pollution to surface or ground waters (H) Agricultural activities generating point source pollution to surface or ground waters (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (H) Other invasive alien species (other than species of Union concern) (M) Forestry activities generating pollution to surface or ground waters (M) Peat extraction (M) Abstraction of ground and surface waters (including marine) for public water supply and recreational use (M)

Sea Lamprey	*Petromyzon marinus*	1095	Hydropower (dams, weirs, run-off-the-river), including infrastructure (H) Increases or changes in precipitation due to climate change (H) Application of natural fertilisers on agricultural land (M) Application of synthetic (mineral) fertilisers on agricultural land (M) Drainage for use as agricultural land (M) Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations (M) Threats and pressures from outside the Member State (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)
Harbour Seal	*Phoca vitulina*	1365	Geotechnical surveying (M) Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	1303	Removal of small landscape features for agricultural land parcel consolidation (M) Livestock farming (without grazing) [impact of antihelminthic dosing on dung fauna (M) Clear-cutting, removal of all trees (M) Conversion from other land uses to housing, settlement or recreational areas (M) Construction or modification (e.g., of housing and settlements) in existing urban or recreational areas (M) Residential or recreational activities and structures generating noise, light, heat or other forms of pollution (M) Other human intrusions and disturbance not mentioned above (Dumping, accidental and deliberate disturbance of bat roosts (e.g., caving) (M) Interspecific relations (competition, predation, parasitism, pathogens) (M) Flooding (natural processes)(M)

Salmon	*Salmo salar*	1106	Agricultural activities generating diffuse pollution to surface or ground waters (H) Other impacts from marine aquaculture, including infrastructure (H) Physical alteration of water bodies (H) Temperature changes (e.g., rise of temperature & extremes) due to climate change (H) Agricultural activities generating point source pollution to surface or ground waters (M) Forestry activities generating pollution to surface or ground waters (M) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) Modification of flooding regimes, flood protection for residential or recreational development (M) Illegal harvesting, collecting and taking (M) Other invasive species (other than species of Union concern) (M)
Killarney Fern	*Trichomanes speciosum*	6985	No threats listed
Common Bottlenose Dolphin	*Tursiops truncatus*	1349	Geotechnical surveying (M) Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)
Narrow-mouthed Whorl Snail	*Vertigo angustior*	1014	Abandonment of grassland management (e.g., cessation of grazing or of mowing) (H) Extensive grazing or under-grazing by livestock (H) Sports, tourism and leisure activities (M) Creation or development of sports, tourism and leisure infrastructure (outside the urban or recreational areas) (M)
Geyer's Whorl Snail	*Vertigo geyeri*	1013	Abandonment of grassland management (H) Intensive grazing or overgrazing by livestock (H) Extensive grazing or under-grazing by livestock (H) Modification of hydrological flow (H)

Table 6: Special conservation interests (SCIs) of SPAs within and surrounding the Study Area

Common Name	Scientific Name
Arctic Tern	*Sterna paradisaea*
Black-headed Gull	*Chroicocephalus ridibundus*
Black-tailed Godwit	*Limosa limosa*
Chough	*Pyrrhocorax pyrrhocorax*
Common Tern	*Sterna hirundo*
Coot	*Fulica atra*
Cormorant	*Phalacrocorax carbo*
Corncrake	*Crex crex*
Fulmar	*Fulmarus glacialis*
Gannet	*Morus bassanus*
Golden Plover	*Pluvialis apricaria*
Goldeneye	*Bucephala clangula*
Greenland White-fronted Goose	*Anser albifrons flavirostris*
Guillemot	*Uria aalge*
Hen Harrier	*Circus cyaneus*
Kittiwake	*Rissa tridactyla*
Lapwing	*Vanellus vanellus*
Lesser Black-backed Gull	*Larus fuscus*
Little Grebe	*Tachybaptus ruficollis*
Mallard	*Anas platyrhynchos*
Manx Shearwater	*Puffinus puffinus*

Merlin	*Falco columbarius*
Peregrine	*Falco peregrinus*
Pintail	*Anas acuta*
Puffin	*Fratercula arctica*
Shoveler	*Anas clypeata*
Storm Petrel	*Hydrobates pelagicus*
Teal	*Anas crecca*
Tufted Duck	*Aythya fuligula*
Wetland and Waterbirds	-
Whooper Swan	*Cygnus cygnus*
Wigeon	*Anas penelope*

3.4 Assessment of potential for significant effects on European Sites

This step in the screening process assesses the likelihood and potential significance of the impacts identified to impact on European Sites, either alone or in combination with other plans.

A likely significant effect is considered any effect that may reasonably be predicted as a consequence of a plan or project that would negatively and significantly affect the conservation objectives established for the habitats and species significantly present on the Natura 2000 site. This can result from either on-site or off-site activities, or through combinations with other plans or projects.

3.4.1 Direct Loss of Habitat Area

There is potential for loss of existing habitat in areas of new trail and trail redevelopment sections both directly where trail passes through sensitive sites, and also indirectly if works are carried out in close proximity to sensitive sites.

Potential for particular significance where trail passes through areas of priority habitat.

As discussed above, the trail has a direct pathway links with 27 SACs and 8 SPAs with areas of new trail building intersecting with 16 SACs and 7 SPAs. A further 4 SACs have potential pathways to the trail but the connectivity to these sites is uncertain. Table 1 listed designated sites which are vulnerable to habitat loss resulting from trail builds or upgrades.

Likelihood: Highly Likely

3.4.2 Habitat Degradation

Habitat degradation could result from the direct trampling and disturbance of habitats resulting in changes in species composition along the trail line. Habitat degradation could also result from changes in abiotic factors such as changes in the quality or abundance of water which could impact on water-dependent species or habitats. This form of habitat degradation includes the potential for the production or release of sediments or pollution into watercourses during construction or operation of the trail, which could impact habitat suitability for sensitive species such as freshwater pearl mussel, salmonids or disrupt the suitability of an area for food sources of species such as otter. Such impacts have the potential to effect downstream water-dependent habitats where the European sites are hydrologically linked to the trail.

The hydrological links between the trail route and European Sites were traced, as far as possible, to identify sites which have the potential to be impacted by the development of the BBW Trail.

Likelihood: Likely

3.4.3 Disturbance

Potential for increased disturbance of habitats and species along the trail due to increased footfall and/or activity levels. Increased activity levels also have the potential to increase the risk of trampling of sensitive habitats and plant species.

Birds which are SCIs for SPAs and Annex II species which are Qualifying Interests for SACs are also particularly vulnerable to increased disturbance. The same can be said for many other Annex I species which might be listed as Qualifying Interests for SACs such as Otter or in some instances, bats such as the Lesser Horseshoe Bat.

There is also a potential for disturbance of nearby Designated Sites during construction if heavy machinery, equipment or other vehicles are used. Such impacts could include trampling of or damage to habitats and more sedentary species or the resting sites of protected species.

Likelihood: Highly Likely

3.4.4 Fragmentation

Where the trail intersects European sites or connected habitats (particularly of EU Annex I habitat quality), there is a potential for fragmentation of habitats. This is particularly relevant in the case of any trail development which requires breaking of ground or the introduction of new path/structures, and where such alterations are proposed in areas which pass through or adjacent to sensitive sites.

The population density of QI species could potentially be impacted by habitat loss, fragmentation and trampling of habitats resulting from increased visitor numbers, resulting in potential fragmentation of species populations.

Likelihood: Likely

3.4.5 Other indirect effects

There is also the potential for changes in the quality of the environment along the trail through indirect impacts such as the introduction of invasive species and/ or diseases through increased human and animal passage along the trail. There is also potential for trail development to set the precedent for additional development of the trail line into the future.

Likelihood: Possible

3.4.6 Assessing possible cumulative impacts with other plans and projects

In-combination effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM 2018). Different types of actions can cause cumulative impacts and effects. As such, these types of impacts may be characterised as;

- Additive/incremental – in which multiple activities/projects (each with potentially insignificant effects) add together to contribute to a significant effect due to their proximity in time and space (CIEEM, 2018).
- Associated/connected – a development activity 'enables' another Development activity e.g., phased Development as part of separate planning applications. Associated Developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess impacts of the 'project' as a whole and not ignore impacts that fall under a separate consent process (CIEEM, 2018).

In-combination effects are required to be considered at Screening for Appropriate Assessment Stage, and the Appropriate Assessment itself.

Plans or programmes with the potential to result in In-combination effects on Natura 2000 Sites are outlined below.

Table 7: Plans & Proposals with potential to cause in-combination effects

Plan/ Programme	Aim and Potential Impacts	In-combination Effect
International		
EU Habitats Directive 1992 (Council Directive 92/43/EEC)	The Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. Some 200 rare and characteristic habitat types are also targeted for conservation in their own right. Potential Impacts: • Positive, long-term enhancement of the status of habitats and species within the EU	There is the potential for adverse impacts on SAC's / QIs which is being assessed in more detail within this NIR.
The Birds Directive (Directive 2009/147/EC on the conservation of wild birds)	The Birds Directive aims to protect all of the 500 wild bird species naturally occurring in the European Union. Potential Impacts: • Positive, long-term enhancement of the status of wild bird species within the EU	There is the potential for adverse impacts on SPAs / SCIs which is being assessed in more detail within this NIR.
EU Biodiversity strategy for 2030	Aim: The biodiversity strategy aims to put Europe's biodiversity on the path to recovery by 2030 for the benefit of people, climate and the planet. Potential Impacts: • Positive, long-term enhancement of the status of habitats and species within the EU • Enhance connectivity of protected sites	In the absence of mitigation, the BBW Trail plan has the potential to undermine the objectives of the EU Biodiversity strategy by enhancing disturbance and pressure on designated sites through increased human disturbance and development.
EU Water Framework Directive (2000/60/EC)	Aim: To maintain and improve water quality within the EU Potential Impacts:	In the absence of mitigation, the BBW Trail plan has potential, albeit unlikely, to undermine the objectives of the EU Water Framework Directive in the short-

	• Positive, long-term enhancement of the status of waterbodies within the EU	term and longer term through potential for sediment and silt run-off into waterbodies during construction works and due to erosion of trail paths near watercourses.
SEA Directive (2001/42/EC)	Aim: It aims to ensure a high level of environmental protection and that environmental considerations are considered when preparing, adopting and implementing plans and programmes. Potential Impacts: • Positive, long-term integration on environmental considerations into plans and programmes	The BBW Trail plan is unlikely to result in cumulative effects with the SEA Directive. An SEA has been carried out for this plan to ensure environmental considerations are integrated into the plan development.
EIA Directive (2011/92/EU as amended by 2014/52/EU)	Requires the assessment of the environmental effects of public and private projects which are likely to have significant effects on the environment. Aims to assess and implement avoidance or mitigation measures to eliminate environmental effects, before consent is given of projects likely to have significant effects on the environment by virtue, *inter alia*, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects. Those projects are defined in Article 4.	No risk of likely significant in-combination effects as the primary purpose of the Directive is to improve the quality of the environment. SEA is being undertaken for the plan – EIA may be required at project level. All proposed projects meeting the threshold for EIA screening shall be screened for EIA, taking account the potential for cumulative impacts, and this will be included in the plan level mitigation within this NIR.
National		

National Biodiversity Action Plan (2017-2021)	The objective of this plan is to conserve and restore ecosystems and biodiversity in Ireland.	In the absence of mitigation, the BBW Trail Plan has the potential to adversely impact ecosystems or reduce biodiversity in Ireland, in contravention of the aims of the National Biodiversity Action Plan. However, with careful, targeted mitigation, the BBW Trail Plan could also enhance biodiversity in some areas and could reduce impacts in areas where significant trampling / disturbance already exists.
Project Ireland 2040 - National Planning Framework	The National Planning Framework is the Government's high-level strategic plan for shaping the future growth and development of our country out to the year 2040. It is a framework to guide public and private investment, to create and promote opportunities for our people, and to protect and enhance our environment -	There is potential for in-combination impacts to arise, if unmitigated. This plan may result in: • Habitat loss • Alteration of hydrology • Deterioration in water quality • Disturbance of species and habitats during construction / operation
People, Place and Policy Growing Tourism to 2025	The objective of this Strategy is to assist in the growth of oversea and domestic tourism in Ireland	There is potential for in-combination impacts to arise, if unmitigated. This is particularly relevant to sensitive and protected sites The BBW Trail plan may result in: • Habitat loss and/ or trampling • Deterioration in water quality

		• Disturbance of species and habitats
National Peatlands Strategy (NPS) and Raised Bog SAC Management Plans	The objectives of these plans are to conserve and restore peatlands in Ireland	In the absence of mitigation, the BBW Trail Plan has the potential to adversely impact peatland ecosystems or reduce peatland biodiversity in Ireland, in contravention of the aims of the goals of the National Peatlands Strategy (NPS) and Raised Bog SAC Management Plans. However, with careful, targeted mitigation, the BBW Trail Plan could also enhance biodiversity in some areas and could reduce impacts in areas where significant trampling / disturbance already exists.
Strategy for the Future Development of National and Regional Greenways	The objective of this Strategy is to assist in the strategic development of nationally and regionally significant Greenways in appropriate locations constructed to an appropriate standard in order to deliver a quality experience for all Greenways users. It also aims to increase the number and geographical spread of Greenways of scale and quality around the country over the next 10 years with a consequent significant increase in the number of people using Greenways as a visitor experience and as a recreational amenity.	There is potential for in-combination impacts to arise, if left unmitigated. The BBW Trail plan could have an impact on sensitive habitats and species in areas where cumulative trail and greenway development result in increased habitat fragmentation, and increased disturbance of habitats and species

		through increased visitor numbers to previously undeveloped areas. As such, careful consideration and alignment with the objectives of environmental legislation and policy is required.
Action Plan for Rural Development - Realising our Rural Potential	The objective of this plan is to promote the development of services and jobs in Rural Ireland.	There is potential for in-combination impacts to arise, if left unmitigated. The BBW Trail plan could result in: • Habitat loss • Alteration of hydrology • Deterioration in water quality • Disturbance of species and habitats during construction / operation of infrastructure
Regional/ Local		

Cork County Development Plan 2014 Kerry County Development Plan 2015-2021 South Tipperary County Development Plan 2009 (as varied) Extended North Tipperary County Development Plan 2010 Extended 2022 Galway County Development Plan 2015-2021 Roscommon County Development Plan 2014-2020 Sligo County Development Plan 2017-2023 Leitrim County Development Plan 2015-2021 Cavan County Development Plan 2014 - 2020	The purpose of the County Development plans are to direct sustainable economic and social development within the country, whilst protecting and enhancing the environment.	There is potential for in-combination impacts to arise, if left unmitigated. This is particularly relevant where plans interact with sensitive and/ or protected sites. These plans may result in: • Habitat loss • Alteration of hydrology • Deterioration in water quality • Disturbance of species and habitats during construction / operation of infrastructure and due to increased tourism pressure.

3.5 Conclusion of Screening Stage

A Screening for Appropriate Assessment was conducted for the Beara Breifne Way Trail Plan to ascertain (in view of best scientific knowledge and with consideration the Conservation Objectives of European Sites within the zone of influence, while applying the 'Precautionary Principle') if the plan, either individually or in combination with other plans, is likely to have significant effects on any European Sites.

On completion of this initial assessment, it is considered that Beara Breifne Way Trail Plan:

- Is not directly connected with or necessary to the management of any European site; and,
- Could have significant impacts on the Natura 2000 network (European Sites) within the Study Area, in the absence of mitigation. See section 3.3 for full list of potentially impacted Natura 2000 sites.

Therefore, in accordance with Article 6(3) of the Habitats Directive, it is considered that a Stage 2 AA is required.

While the trail has the potential to have adverse effects on European Sites (in the absence of mitigation), there is also the potential for positive effects to arise, such as maintaining visitors along a waymarked built trail in order to reduce / negate current erosion issues along more heavily used parts of the trail.

4 Stage 2 Appropriate Assessment

4.1 Introduction

The Stage 2 AA assesses whether the Plan alone, or in-combination with other plans, programmes, and/or projects, would result in adverse impacts on the integrity of the 39 European Sites brought forward from screening (see **Error! Reference source not found.3**), with respect to site structure, function and/or conservation objectives. The potential adverse effects considered at this stage will either be effects occurring as a result of the implementation of the Programme alone or in-combination with other plans, programmes, and/or projects.

4.2 Potential Significant Effects of Plan on European Sites

As described above, and in line with the methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission 2021). The potential significant effects of the plan were considered under the following headings arising from the assessment of potential for significant effects in stage 1:

- Reduction of Habitat Area (Habitat Loss)
- Fragmentation
- Disturbance of Key Species/ Habitats
- Population Density
- Water Quality and Quantity
- Invasive Alien Species

4.2.1 Reduction of Habitat Area (Habitat Loss)

The plan included actions to create some new areas of trail along the route in areas where there is no existing way-marked trail, and upgrades to existing trails where current trail condition is considered unsuitable. These interventions include the introduction of gravel paths (with and without terram), boardwalks and stepping stones, for specific locations as outlined above in Section 3.2.1.1 and in Table 1. There are also areas where trail infrastructure will be included along the route, such as signage, benches, and shelters. These interventions, particularly in rural and upland areas are likely to be located on or close to semi-natural areas. In areas of trail infrastructure and new trail sections, there is a potential to reduce habitat area, through replacing existing vegetation with trail hardware.

4.2.2 Fragmentation

Where the trail cuts through sensitive and protected habitats, there is potential for habitat fragmentation. This is particularly notable in upland habitats that are sensitive to recreational pressure such as Alpine and Boreal Heaths [4060]. The potential for habitat fragmentation is likely highest in areas where there is no existing trail. Some areas of the trail also require fencing. Depending on the scale and permeability of the fencing design (which would be decided at the Project Level during a Detailed Design stage), this may act as a barrier to some mammal species, which could result in fragmentation of species territories.

There is currently no plan to include new lighting as part of the BBW Trail Plan. Installing such features could have significant effects upon QI species such as Lesser Horseshoe bat / or crepuscular species such as those QI's listed for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC if unsuitable lighting was located in sensitive commuting/foraging/resting habitats for these species.

4.2.3 Disturbance of Key Species/ Habitats

There is potential for direct disturbance of QI species along the trail due to increased visitor numbers and indirect disturbance associated with increases in noise pollution. Upland ground nesting species such as Hen Harriers are likely to be at increased risk of disturbance due to increased accessibility to upland sites within SPAs for this species. Sensitive species may not habituate to increased human presence and this may result in decreased population densities for some species in the vicinity of the trail.

Trampling of vegetation along trail edges may also result in habitat disturbance. This may result in trampling of invertebrate habitats and flowering plants, resulting in a decreased food supply for some mammals and small birds, with associated decreases in predators of these species. There is potential for trampling to result in increased erosion and soil compaction in high traffic areas along trail margins. Disturbance of foraging or resting habitat for QI species for SACs has the potential to negatively impact on these species due to deceased suitability of the habitat overall to support the QI species.

During trail construction, there is likely to be increased human and possible machinery activity with associate noise disturbance along some sections of the trail, which will likely result in disturbance of species in the area, and potential for trampling or compaction of the substrate along the trail section.

4.2.4 Population Density

The population density of species sensitive to disturbance is likely to decrease directly adjacent to the trail, while species that have habituated to human activity may not be impacted to the same degree. The level of behaviour change due to human activity is likely to vary in accordance with each species preferences and environment for example wintering birds at waterbodies along the route. In more exposed sites, species disturbance may be higher than where the trail is screened from view, for example by a hedgerow. Including such features can also enhance biodiversity and could increase population densities of species associated with such screened habitat.

4.2.5 Water Quality and Quantity

Increased footfall in sensitive areas and along trail edges may result in erosion of sediments, which may be carried into local watercourses, negatively impacting the quality of the aquatic habitats for water-dependent species, such as salmonids and the freshwater pearl mussel, and reducing water quality. Increased visitor numbers may also result in an increase in litter along the trail route, which can be washed into nearby watercourses.

During trail construction, there is the potential for construction work to result in the mobilisation of sediments or pollutants into nearby watercourses, with potential negative impacts on aquatic diversity and water quality. Potential for impacts on water quality and aquatic species is highest in areas where the trail runs alongside or intersects watercourses, particularly sensitive watercourses associated with QI species that are sensitive to changes in water quality such as salmonids and the freshwater pearl mussel.

4.2.6 Invasive Alien Species

Interrogation of existing biological records along the trail show the presence of a variety of invasive species in the vicinity of the trail route.

This includes 33 species of high impact invasive species, including 18 species of flowering plant, 1 algal species, 2 bird species, 1 mollusc, 1 fern, 1 crustacean and 1 bony fish and 8 mammal species.

Table 8: Invasive Species recorded within 1km of the Trail Route

Flowering Plant	Alga
Canadian Waterweed (*Elodea canadensis*)	Wireweed (*Sargassum muticum*)
Cherry Laurel (*Prunus laurocerasus*)	**Bird**
Curly Waterweed (*Lagarosiphon major*)	Ruddy Duck (*Oxyura jamaicensis*)
Fallopia japonica x sachalinensis = F. x bohemica	Greylag Goose (*Anser anser*)
Fringed Waterlily (*Nymphoides peltata*)	**Crustacean**
Giant Hogweed (*Heracleum mantegazzianum*)	*Hemimysis anomala*
Giant Knotweed (*Fallopia sachalinensis*)	**Bony fish (Actinopterygii)**
Giant-rhubarb (*Gunnera tinctoria*)	Roach (*Rutilus rutilus*)
Himalayan Knotweed (*Persicaria wallichii*)	**Mollusc**
Indian Balsam (*Impatiens glandulifera*)	Zebra Mussel (*Dreissena (Dreissena) polymorpha*)
Japanese Knotweed (*Fallopia japonica*)	**Terrestrial Mammal**
New Zealand Pigmyweed (*Crassula helmsii*)	American Mink (*Mustela vison*)
Nuttall's Waterweed (*Elodea nuttallii*)	Brown Rat (*Rattus norvegicus*)
Parrot's-feather (*Myriophyllum aquaticum*)	Coypu (*Myocastor coypus*)
Rhododendron ponticum	Eastern Grey Squirrel (*Sciurus carolinensis*)
Salmonberry (*Rubus spectabilis*)	Fallow Deer (*Dama dama*)
Spanish Bluebell (*Hyacinthoides hispanica*)	House Mouse (*Mus musculus*)
Three-cornered Garlic (*Allium triquetrum*)	Sika Deer (*Cervus nippon*)
Fern	Wild Boar (*Sus scrofa*)
Water Fern (*Azolla filiculoides*)	

4.3 Conservation Objectives

Given the scale of the plan area and number of Natura 2000 sites and protected habitats and species potentially effected, the section outlines the threats and vulnerabilities of the various protected habitats and species associated with the plan area. Data on the various threats and vulnerabilities of species and habitats was extracted from the Article 17 reports required under Article 11 of the Habitats Directive for non-avian species. Specific documented threats were not available for Annex I bird species, however, Gilbert *et al.* (2021) and Cutts *et al.* (2013) were used as a basis to extrapolate potential threats to Annex I bird species.

Table 99 shows the Annex I habitats which occur within the Study Area of the Plan. Table 1010 shows the Annex II and Annex IV species which occur within the Study Area of the Plan. Table 11 shows the Annex I bird species which occur within the Study Area of the Plan.

Table 9: Annex I Habitats which occur within the Study Area of the Plan

Habitat and Code	Threats and vulnerabilities	Example of Conservation Objectives
Active raised bogs 7110	Peat extraction (H) Drainage (H), Conversion to forest from other land uses, or afforestation (excluding drainage) (M), Burning for agriculture (M), Temperature changes (e.g., rise of temperature & extremes) due to climate change (M)	"To restore the favourable conservation condition of Active raised bogs in Redwood Bog SAC"
Alkaline fens 7230	Abandonment of grassland management (H) Intensive grazing or overgrazing by livestock (H) Drainage (M) Modification of hydrological flow (M) Mixed source pollution to surface and ground waters (M) Abstraction from groundwater, surface water or mixed water (M)	"To maintain the favourable conservation condition of Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** in Lough Derg, North-east Shore SAC"

	Droughts and decrease in precipitation due to climate change (M) Increases or changes in precipitation due to climate change (M)	
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) 91E0	Other invasive alien species (other than species of Union concern) (H) Problematic native species (M), Clear-cutting, removal of all trees (M), Plant and animal diseases, pathogens and pests (M)	"To maintain the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) * in River Shannon Callows SAC"
Alpine and Boreal heaths 4060	Intensive grazing or overgrazing by livestock (H) Agricultural activities generating air pollution (H) Sports, tourism and leisure activities (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)	"To maintain the favourable conservation condition of Alpine and Boreal heaths s in Caha Mountains SAC"
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 1330	Intensive grazing or overgrazing by livestock (H) Sports, tourism and leisure activities (H) Modification of hydrological flow or physical alternation of water bodies for agriculture (excluding development and operation of dams) (M) Agriculture activities not referred to above (M)	"To maintain the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in Kenmare River SAC"

	Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (M) Other invasive alien species (other than species of Union concern) (M)	
Blanket bogs (* if active bog) 7130	Intensive grazing or overgrazing by livestock (H) Burning for agriculture (H) Agricultural activities generating air pollution (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (H) Peat extraction (H) Abiotic natural processes (e.g., erosion, silting up, drying out, submersion, salinization) (M) Wind, wave and tidal power, including infrastructure (M) Drainage (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)	"To restore the favourable conservation condition of Blanket bogs in Caha Mountains SAC"

Bog woodland 91D0	Abstraction from groundwater, surface water or mixed water (M) Other invasive alien species (other than species of Union concern) (M) Peat extraction (M) Burning for agriculture (M) Clear-cutting, removal of all trees (M)	"To restore the favourable conservation condition of Bog woodland in All Saints Bog and Esker SAC"
Calaminarian grasslands of the *Violetalia calaminariae* 6130	Abiotic natural processes (H) Natural succession resulting in species composition change (H) Sports, tourism and leisure activities (M)	"To maintain the favourable conservation condition of Calaminarian grasslands of the Violetalia calaminariae in Kenmare River SAC"
Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) 8120	Intensive grazing or overgrazing by livestock (H)	"To restore the favourable conservation condition of Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii) in Bricklieve Mountains and Keishcorran SAC"
Calcareous fens with *Cladium mariscus* and species of the	Abandonment of grassland management (H) Intensive grazing or overgrazing by livestock (H) Abstraction from groundwater, surface water or mixed water (H) Drainage (M)	"To maintain the favourable conservation condition of Calcareous fens with Cladium mariscus and species of the Caricion

Caricion davallianae 7210	Modification of hydrological flow (M) Mixed source pollution to surface and ground waters (M) Peat extraction (M)	davallianae* in Lough Derg, North-east Shore SAC"
Calcareous rocky slopes with chasmophytic vegetation 8210	Intensive grazing or overgrazing by livestock (M) Agricultural activities generating air pollution (H) Other invasive alien species (other than species of Union concern) (M)	"To restore the favourable conservation condition of Calcareous rocky slopes with chasmophytic vegetation in Caha Mountains SAC"
Coastal lagoons *1150	Mixed source marine water pollution (marine and coastal) (H) Modification of hydrological flow (H) Drainage (H) Abiotic natural processes (e.g., Erosion, silting up, drying out, submersion, salinization (M) Accumulation of organic material (M) Extraction activities generating marine pollution (M) Sea-level and wave exposure changes due to climate change (M)	"To restore the favourable conservation condition of Coastal lagoons in the Lower River Shannon SAC"
Degraded raised bogs still capable of natural regeneration 7120	Peat extraction (H) Drainage (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (M)	"The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this

	Burning for agriculture (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M)	habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in All Saints Bog and Esker SAC"
Depressions on peat substrates of the *Rhynchosporion* 7150	Peat extraction (H) Drainage (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (M) Burning for agriculture (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M)	"Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in All Saints Bog and Esker SAC"
Estuaries 1130	Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro- particular pollution (H) Agricultural activities generation marine pollution (H) Marine aquaculture generating marine pollution (H) Other invasive alien species (other than species of Union concern) (H)	"To maintain the favourable conservation condition of Estuaries in the Lower River Shannon SAC"
European dry heaths 4030	Intensive grazing or overgrazing by livestock (H) Burning for agriculture (H) Conversion to forest from other land uses, or afforestation (excluding	"To restore the favourable conservation condition of European dry heaths in Ballyhoura Mountains SAC"

	drainage) (H) Agricultural activities generating air pollution (H) Wind, wave and tidal power, including infrastructure (M) Abiotic natural processes (e.g., erosion, silting up, drying out, submersion, salinization) (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)	"To maintain the favourable conservation condition of European dry heaths in Kenmare River SAC"
Fixed coastal dunes with herbaceous vegetation (grey dunes) 2130	Extensive grazing or under-grazing by livestock (H) Problems related to invasive alien species other than those covered by EU Regulation 1143/2014 (H) Conversion from one type of agricultural land use to another (excluding drainage and burning) (M) Intensive grazing or overgrazing by livestock (M) Sports, tourism and leisure activities (M) Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (M) Natural succession resulting in species composition change (other than by	"To maintain the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in Kenmare River SAC"

	direct changes of agricultural or forestry practices) (M)	
Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.*3140	Agricultural activities generating diffuse pollution to surface or ground waters (H) Agricultural activities generating point source pollution to surface or ground waters (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (H) Plants, contaminated or abandoned industrial sites generating pollution to surface or ground water (H) Forestry activities generating pollution to surface or ground waters (H) Peat extraction (M) Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (M) Drainage for use as agricultural land (M) Abstraction of ground and surface waters (including marine) for public water supply and recreational use (M) Other invasive alien species (other than species of Union concern) (M)	"To restore the favourable conservation condition of Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. in Lough Arrow SAC"
Hydrophilous tall herb fringe	Intensive grazing or overgrazing by livestock (M) Drainage for use as agricultural land (M)	"To maintain the favourable conservation condition of Hydrophilous tall herb fringe

communities of plains and of the montane to alpine levels 6430	Invasive alien species of Union concern (M) Other invasive alien species (other than species of Union concern) (M)	communities of plains and of the montane to alpine levels in Lower River Suir SAC"
Juniperus communis formations on heaths or calcareous grasslands 5130	No threats listed	"To restore the favourable conservation condition of Juniperus communis formations on heaths or calcareous grasslands in Lough Derg, North-east Shore SAC"
Large shallow inlets and bays 1160	Mixed source marine water pollution (marine and coastal) (H) Modification of hydrological flow (H) Drainage (H) Abiotic natural processes (e.g., Erosion, silting up, drying out, submersion, salinization (M) Accumulation of organic material (M) Extraction activities generating marine pollution (M) Sea-level and wave exposure changes due to climate change (M)	"To maintain the favourable conservation condition of Large shallow inlets and bays in Kenmare River SAC" "To maintain the favourable conservation condition of Large shallow inlets and bays in the Lower River Shannon SAC"
Limestone pavements * 8240	Conversion into agricultural land (H) Extensive grazing or under-grazing by livestock (M) Extraction of minerals (M)	"To restore the favourable conservation condition of Limestone pavements* in Lough Derg, North-east Shore SAC"

	Conversion from other land uses to housing (M) Other invasive alien species(M)	
Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) 6510	Conversion from one type of agricultural land use to another (H) Application of natural fertilisers on agricultural land (H) Application of synthetic (mineral) fertilisers on agricultural land (M) Abandonment of grassland management (e.g., cessation of grazing or of mowing) (M) Livestock farming (without grazing) (M)	"To restore the favourable conservation condition of Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) in Bricklieve Mountains and Keishcorran SAC"
Mediterranean salt meadows *(Juncetalia maritimi*) 1410	Intensive grazing or overgrazing by livestock (H) Modification of hydrological flow or physical alternation of water bodies for agriculture (excluding development and operation of dams) (M) Agriculture activities not referred to above (M) Extensive grazing or under-grazing by livestock (M)	"To maintain the favourable conservation condition of Mediterranean salt meadows (Juncetalia maritimi) in Kenmare River SAC"
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) 6410	Conversion from one type of agricultural land use to another (H) Abandonment of grassland management (e.g., cessation of grazing or of mowing) (H) Extensive grazing or under-grazing by livestock (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (H)	"To restore the favourable conservation condition of *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) in River Shannon Callows SAC"

	Livestock farming (without grazing) (M) Drainage for use as agricultural land (M)	
Mudflats and sandflats not covered by seawater at low tide 1140	Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro- particular pollution (H) Agricultural activities generation marine pollution (H) Marine aquaculture generating marine pollution (H)	"To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in the Lower River Shannon SAC"
Natural dystrophic lakes and ponds 3160	Forestry activities generating pollution to surface or ground waters (H) Peat extraction (H) Agricultural activities generating diffuse pollution to surface or ground waters (H) Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (H) Drainage for use as agricultural land (M) Energy production and transmission activities generating pollution to surface or ground waters (M)	"To maintain the favourable conservation condition of Natural dystrophic lakes and ponds"
Northern Atlantic wet heaths with *Erica tetralix* 4010	Intensive grazing or overgrazing by livestock (H) Burning for agriculture (H) Conversion to forest from other land uses, or afforestation (excluding drainage) (H)	"To restore the favourable conservation condition of Northern Atlantic wet heaths with *Erica tetralix"* in the SACs where this habitat is a QI.

	Agricultural activities generating air pollution (H) Wind, wave and tidal power, including infrastructure (M) Abiotic natural processes (e.g., erosion, silting up, drying out, submersion, salinization) (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)	
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles 91A0	Other invasive alien species (other than species of Union concern) (H) Intensive grazing or overgrazing by livestock (H) Problematic native species (M) Clear-cutting, removal of all trees (M) Storm, cyclone (M)	"To restore the favourable conservation condition of Old sessile oak woods with Ilex and Blechnum in the British Isles in St. Gobnet's Wood SAC"
Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* 3130	Modification of hydrological flow (H) Physical alteration of water bodies (H) Agricultural activities generating diffuse pollution to surface or ground waters (H) Agricultural activities generating point source pollution to surface or ground waters (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (H)	"To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC"

	Other invasive alien species (other than species of Union concern) (M) Forestry activities generating pollution to surface or ground waters (M) Peat extraction (M)	
Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) 3110	Agricultural activities generating diffuse pollution to surface or ground waters (H) Forestry activities generating pollution to surface or ground waters (H) Peat extraction (H) Drainage for use as agricultural land (H) Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M)	"To maintain the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)"
Perennial vegetation of stony banks 1220	Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (H) Extraction of minerals (e.g., rock, metal ores, gravel, sand, shell) (M) Roads, paths, railroads and related infrastructure (e.g., bridges, viaducts, tunnels) (M) Sports, tourism and leisure activities (M)	"To maintain the favourable conservation condition of Perennial vegetation of stony banks in Kenmare River SAC" "To maintain the favourable conservation condition of Perennial vegetation of stony banks in the Lower River Shannon SAC"

	Deposition and treatment of waste/garbage from household/recreational facilities (M) Other invasive alien species (other than species of Union concern) (M)	
Reefs 1170	Marine fishing and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (H) Marine fish and shellfish harvesting (professional, recreational) activities causing physical loss and disturbance of seafloor habitats (H)	"To maintain the favourable conservation condition of Reefs in Kenmare River SAC" "To maintain the favourable conservation condition of Reefs in the Lower River Shannon SAC"
Salicornia and other annuals colonising mud and sand 1310	Other invasive alien species (other than species of Union concern) (M) Intensive grazing or overgrazing by livestock (M)	"To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in the Lower River Shannon SAC"
Sandbanks which are slightly covered by sea water all the time 1110	No threats listed	"To maintain the favourable conservation condition of Sandbanks which are slightly covered by sea water all the time in the Lower River Shannon SAC"
Semi-natural dry grasslands and scrubland facies on	Conversion from one type of agricultural land use to another (H) Extensive grazing or under-grazing by livestock (H) Extraction of minerals (H)	"To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates

calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) 6210	Intensive grazing or overgrazing by livestock (M) Other invasive alien species (M) Problematic native species (M)	(Festuco-Brometalia) in All Saints Bog and Esker SAC"
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) 2120	Sports, tourism and leisure activities (H) Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (H) Abiotic natural processes (e.g., erosion, silting up, drying out, submersion, salinization) (H) Roads, paths, railroads and related infrastructure (e.g., bridges, viaducts, tunnels) (M) Shipping lanes, ferry lanes and anchorage infrastructure e.g., canalisation, dredging (M) Conversion from other land uses to housing, settlement or recreational areas (excluding drainage and modification of coastline, estuary and coastal conditions) (M) Development and maintenance of beach areas for tourism and recreation	"To maintain the favourable conservation condition of Shifting dunes along the shoreline with Ammophila arenaria ('white dunes') in Kenmare River SAC"

	incl. beach nourishment and beach cleaning (M) Other invasive alien species (other than species of Union concern) (M)	
Siliceous rocky slopes with chasmophytic vegetation 8220	Other invasive alien species (other than species of Union concern) (M)	"To restore the favourable conservation condition of Siliceous rocky slopes with chasmophytic vegetation in Caha Mountains SAC"
Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) 8110	Intensive grazing or overgrazing by livestock (M) Extensive grazing or under-grazing by livestock (M) Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (M)	"To restore the favourable conservation condition of Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)"
Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain	Problematic native species (M) Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices (M)	"To restore the favourable conservation condition of Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)* in Caha Mountains SAC"

areas, in Continental Europe) 6230		
Submerged or partially submerged sea caves 8330	No threats listed	"To maintain the favourable conservation condition of Submerged or partially submerged sea caves in Kenmare River SAC"
Taxus baccata woods of the British Isles 91J0	Other invasive alien species (other than species of Union concern) (H) Problematic native species (M) Clear-cutting, removal of all trees (M) Plant and animal diseases, pathogens and pests (M)	"To maintain the favourable conservation condition of Taxus baccata woods of the British Isles* in Lough Derg, North-east Shore SAC"
Transition mires and quaking bogs 7140	Conversion to forest from other land uses, or afforestation (H) Mixed source pollution to surface and ground waters (H) Drainage (H) Modification of hydrological flow (H) Abandonment of grassland management (M) Intensive grazing or overgrazing by livestock (M) Abstraction from groundwater, surface water or mixed water (M) Natural succession resulting in species composition change (M)	"To maintain the favourable conservation condition of Transition mires and quaking bogs in Philipston Marsh SAC"

Turloughs*3180	Agricultural activities generating diffuse pollution to surface or ground waters (H) Intensive grazing or overgrazing by livestock (M) Drainage for use as agricultural land (M)	““To maintain the favourable conservation condition of Turloughs* in in Bricklieve Mountains and Keishcorran SAC”
Vegetated sea cliffs of the Atlantic and Baltic coasts 1230	Extraction of minerals (e.g., rock, metal ores, gravel, sand, shell) (M) Roads, paths railroads and related infrastructure (e.g., bridges, viaducts, tunnels) (M) Sports, tourism and leisure activities (M) Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (M) Other invasive alien species (other than species of Union concern) (M) Increases or changes in precipitation due to climate change (M) Sea-level and wave exposure changes due to climate change (M)	“To maintain the favourable conservation condition of Vegetated sea cliffs of the Atlantic and Baltic coasts in Kenmare River SAC” “To maintain the favourable conservation condition of Vegetated sea cliffs in the Lower River Shannon SAC”
Water courses of plain to montane levels with the *Ranunculion fluitantis* and	Agricultural activities generating diffuse pollution to surface or ground waters (H) Agricultural activities generating point source pollution to surface or ground waters (H) Modification of hydrological flow (H)	“To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation in the Lower River Shannon SAC”

Callitricho-Batrachion vegetation 3260	Physical alteration of water bodies (H) Discharge of urban waste	

Table 10: Annex II and IV species which occur within the Study Area

Common Name	Scientific Name	EU Code	Recognised threats to relevant Annex II species Threat level: H: High M: Moderate	Example of Conservation Objectives
Twaite Shad (ANNEX II, IV)	*Alosa fallax fallax*	1103	Application of natural fertilisers on agricultural land (H) Application of synthetic (mineral) fertilisers on agricultural land (H) Hydropower (dams, weirs, run-off-the-river), including infrastructure (M) Shipping lanes, ferry lanes and anchorage infrastructure (e.g., canalisation, dredging) (M) Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations (M) Freshwater fish and shellfish harvesting (recreational) (M) Bycatch and incidental killing (due to fishing and hunting activities) (H) Other invasive alien species (other than species of Union concern) (M) Temperature changes (e.g., rise of temperature & extremes) due to	"To restore the favourable conservation condition of Twaite Shad in Lower River Suir SAC"

			climate change (M) Increases or changes in precipitation due to climate change (H)	
Killarney Shad (ANNEX II, IV)	*Alosa fallax killarnensis*	5046	Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) Management of fishing stocks and game (including illegal restocking with native fish) (M) Interspecific relations (competition, predation, parasitism, pathogens) (M) Other invasive alien species (other than species of Union concern) (M)	"To restore the favourable conservation condition of Killarney shad in Killarney National Park, Macgillacuddy's Reeks and Caragh River Catchment SAC"
White-clawed Crayfish (ANNEX II, IV)	*Austropotamobius pallipes*	1092	Plant and animal diseases, pathogens and pests (H) Invasive alien species of Union concern (H)	"To maintain the favourable conservation condition of White-clawed Crayfish in Lower River Suir SAC"
Marsh Fritillary (ANNEX II)	*Euphydryas aurinia*	1065	Conversion into agricultural land (excluding drainage and burning) (H) Abandonment of management/use of other agricultural and agroforestry systems (all except grassland) (M) Extensive grazing or under-grazing by livestock (M)	"To restore the favourable conservation condition of Marsh Fritillary in Killarney National Park, Macgillycuddy's Reeks and

			Conversion to forest from other land uses, or afforestation (excluding drainage) (H)	Caragh River Catchment SAC"
Kerry Slug (ANNEX II, IV)	*Geomalacus maculosus*	1024	Vandalism or arson (M) Other invasive alien species (other than species of Union concern) (M)	"To maintain the favourable conservation condition of Kerry Slug in Caha Mountains SAC"
River Lamprey (ANNEX II, IV)	*Lampetra fluviatilis*	1099	Hydropower (dams, weirs, run-off-the-river), including infrastructure (H) Increases or changes in precipitation due to climate change (H) Application of natural fertilisers on agricultural land (M) Application of synthetic (mineral) fertilisers on agricultural land (M) Drainage for use as agricultural land (M) Shipping lanes, ferry lanes and anchorage infrastructure (e.g., canalisation, dredging) (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)	"To maintain the favourable conservation condition of River Lamprey in the Lower River Shannon SAC"
Brook Lamprey (ANNEX II)	*Lampetra planeri*	1096	Application of natural fertilisers on agricultural land (M) Application of synthetic (mineral) fertilisers on agricultural land (M)	"To maintain the favourable conservation

			Drainage for use as agricultural land (M) Clear-cutting, removal of all trees (M) Hydropower (dams, weirs, run-off-the-river), including infrastructure (M) Pollution to surface or ground water due to urban runoffs (M) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)	condition of Brook Lamprey in the Lower River Shannon SAC"
Otter (ANNEX II, IV)	*Lutra lutra*	1355	No threats listed	"To restore the favourable conservation condition of Otter in Kenmare River SAC"
Freshwater Pearl Mussel (ANNEX II, IV)	*Margaritifera margaritifera*	1029	Drainage for use as agricultural land (H) Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (H) Other modification of hydrological conditions for residential or recreational development (H) Agricultural activities generating diffuse pollution to surface or ground	"To restore the favourable conservation condition of Freshwater Pearl Mussel in the Lower River Shannon SAC"

			waters (H) Forestry activities generating pollution to surface or ground waters (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) Peat extraction (M) Modification of flooding regimes, flood protection for residential or recreational development (M) Hydropower (dams, weirs, run-off-the-river), including infrastructure (M) Abstraction of ground and surface waters (including marine) for public water supply and recreational use (M)	
Slender Naiad (ANNEX II, IV)	*Najas flexilis*	1833	Modification of hydrological flow (H) Physical alteration of water bodies (H) Agricultural activities generating diffuse pollution to surface or ground waters (H) Agricultural activities generating point source pollution to surface or ground waters (H) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (H) Other invasive alien species (other than species of Union concern) (M) Forestry activities generating pollution to surface or ground waters (M)	"To maintain the favourable conservation condition of Slender Naiad in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC"

			Peat extraction (M) Abstraction of ground and surface waters (including marine) for public water supply and recreational use (M)	
Sea Lamprey (ANNEX II)	*Petromyzon marinus*	1095	Hydropower (dams, weirs, run-off-the-river), including infrastructure (H) Increases or changes in precipitation due to climate change (H) Application of natural fertilisers on agricultural land (M) Application of synthetic (mineral) fertilisers on agricultural land (M) Drainage for use as agricultural land (M) Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations (M) Threats and pressures from outside the Member State (M) Temperature changes (e.g., rise of temperature & extremes) due to climate change (M) Droughts and decreases in precipitation due to climate change (M)	"To restore the favourable conservation condition of Sea Lamprey in the Lower River Shannon SAC"
Harbour Seal (ANNEX II, IV)	*Phoca vitulina*	1365	Geotechnical surveying (M) Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	"To maintain the favourable conservation condition of Harbour Seal in Kenmare River SAC"

Lesser Horseshoe Bat (ANNEX II, IV)	*Rhinolophus hipposideros*	1303	Removal of small landscape features for agricultural land parcel consolidation (M) Livestock farming (without grazing) [impact of antihelminthic dosing on dung fauna (M) Clear-cutting, removal of all trees (M) Conversion from other land uses to housing, settlement or recreational areas (M) Construction or modification (e.g., of housing and settlements) in existing urban or recreational areas (M) Residential or recreational activities and structures generating noise, light, heat or other forms of pollution (M) Other human intrusions and disturbance not mentioned above (Dumping, accidental and deliberate disturbance of bat roosts (e.g., caving) (M) Interspecific relations (competition, predation, parasitism, pathogens) (M) Flooding (natural processes)(M)	"To maintain the favourable conservation condition of Lesser Horseshoe Bat in Kenmare River SAC"
Salmon (ANNEX II, IV)	*Salmo salar*	1106	Agricultural activities generating diffuse pollution to surface or ground waters (H) Other impacts from marine aquaculture, including infrastructure (H)	"To restore the favourable conservation condition of

			Physical alteration of water bodies (H) Temperature changes (e.g., rise of temperature & extremes) due to climate change (H) Agricultural activities generating point source pollution to surface or ground waters (M) Forestry activities generating pollution to surface or ground waters (M) Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) Modification of flooding regimes, flood protection for residential or recreational development (M) Illegal harvesting, collecting and taking (M) Other invasive species (other than species of Union concern) (M)	Salmon in the Lower River Shannon SAC"
Killarney Fern (ANNEX II, IV)	*Trichomanes speciosum*	6985	No threats listed	"To maintain the favourable conservation condition of Killarney Fern in Caha Mountains SAC"
Common Bottlenose Dolphin (ANNEX II, IV)	*Tursiops truncatus*	1349	Geotechnical surveying (M) Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	"To maintain the favourable conservation condition of Bottlenose

				Dolphin in the Lower River Shannon SAC"
Narrow-mouthed Whorl Snail (ANNEX II)	*Vertigo angustior*	1014	Abandonment of grassland management (e.g., cessation of grazing or of mowing) (H) Extensive grazing or under-grazing by livestock (H) Sports, tourism and leisure activities (M) Creation or development of sports, tourism and leisure infrastructure (outside the urban or recreational areas) (M)	"To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail in Kenmare River SAC"

Table 11: Special conservation interests (SCIs) of SPAs within and surrounding the Study Area

Common Name	Scientific Name	Conservation Status	Threats and Vulnerabilities relevant to Programme
Arctic Tern	*Sterna paradisaea*	Amber (B)	All bird species listed as Special Conservation Interests within the Study Area are potentially susceptible to some level of seasonal disturbance and displacement due to the implementation of the Beara-Breifne Way Trail Plan. Wintering bird species are vulnerable to disturbance and displacement from October to March, whereas those sites designated for breeding birds are vulnerable from March to August. Impacts would also depend on variations of usage across the seasons by both visitors to the Trail, and the seasonal variations in the lifecycles of the SCI birds themselves. The BOCCI 20220-2026 report particularly highlights the vulnerability of upland species, with half of the breeding bird species associated with upland habitats
Black-headed Gull	*Chroicocephalus ridibundus*	Red (B)	
Black-tailed Godwit	*Limosa limosa*	Amber (W)	
Chough	*Pyrrhocorax pyrrhocorax*	Amber (B)	
Common Tern	*Sterna hirundo*	Amber (B)	
Coot	*Fulica atra*	Amber (B &W)	
Cormorant	*Phalacrocorax carbo*	Amber (B &W)	
Corncrake	*Crex crex*	Red (B)	
Fulmar	*Fulmarus glacialis*	Green	
Gannet	*Morus bassanus*	Amber (B)	
Golden Plover	*Pluvialis apricaria*	Red (B & W)	
Goldeneye	*Bucephala clangula*	Red (W)	
Greenland White-fronted Goose	*Anser albifrons flavirostris*	Amber (W)	

Guillemot	*Uria aalge*	Amber (B)	currently Red-listed, which is the highest proportion by habitat. Such species are likely to be particularly vulnerable to trail development and associated increases in footfall to these areas at times of year when the birds might be more likely to be present.
Hen Harrier	*Circus cyaneus*	Amber (B)	
Kittiwake	*Rissa tridactyla*	Amber (B)	
Lapwing	*Vanellus vanellus*	Red (B & W)	
Lesser Black-backed Gull	*Larus fuscus*	Amber (B)	
Little Grebe	*Tachybaptus ruficollis*	Amber (B & W)	
Mallard	*Anas platyrhynchos*	Green	
Manx Shearwater	*Puffinus puffinus*	Amber (B)	
Merlin	*Falco columbarius*	Amber (B)	
Peregrine	*Falco peregrinus*	Annex I	
Pintail	*Anas acuta*	Red (W)	
Puffin	*Fratercula arctica*	Amber (B)	
Shoveler	*Anas clypeata*	Red (W)	
Storm Petrel	*Hydrobates pelagicus*	Amber (B)	
Teal	*Anas crecca*	Amber (B & W)	
Tufted Duck	*Aythya fuligula*	Red (W)	

Whooper Swan	*Cygnus cygnus*	Amber (W)	
Wigeon	*Anas penelope*	Red (W)	
Wetland and Waterbirds	-	-	Wetlands are particularly vulnerable to impacts from drainage, development, infilling, IAS spread.

5 MITIGATION MEASURES

5.1 Introduction

This Section aims to mitigate for any potential effects (identified in Section 5) caused by the Proposed Plan on potentially impacted sites within the Beara Breifne Way Study Area. This section is separated into plan level mitigation and proposed project level actions which can be implemented at a later date.

In line with EC 2021 Guidance, where adverse impacts on a sites' integrity have been identified, or cannot be ruled out, the first step is to ascertain the degree of the impact identified and if it is possible to apply mitigation measures which can first avoid the impact, or secondly, reduce them to a level where they will no longer adversely affect the integrity of the site.

The hierarchy of measures suggests:

1 – Avoidance of impact *(i.e., preventing significant effects from happening in the first place); and,*

2 – Reduction of impact *(i.e., reducing the magnitude and/or the likelihood of an impact).*

The Adverse Effects which have been identified through the Appropriate Assessment of the Beara Breifne Way Plan are:

- The potential for a reduction of habitat area (habitat loss or disturbance);
- The Potential for habitat fragmentation / creating barriers to the movement of species;
- Disturbance to key species; and,
- The potential for impacts on water dependent habitats or species.

In order to achieve funding (including promotion) for land use or infrastructural development or land use activities from Fáilte Ireland, Fáilte Ireland's stakeholders shall be required to demonstrate compliance with measures relating to sustainable development, environmental protection and environmental management.

5.2 Plan Level Mitigation

5.2.1 Adherence to Legislation and Policy

All projects stemming from the proposed Beara Breifne Way Plan will be conducted in line with all relevant EU Directives, National Legislation and National and local policy.

Fáilte Ireland will follow National Planning Framework guidelines and shall liaise within the relevant planning authorities to ensure any proposed developments stemming from the BBW Plan are feasible and can be adequately provided for in terms of critical service infrastructure.

Depending on the section of trail being investigated further, this work will be carried out in line with the County Development Plan for that area, adhering to provisions made for sustainable development, environmental protection and environmental management.

All work will be undertaken following any requirements for lower-tier environmental assessment included Environmental Impact Assessment (EIA), and Appropriate Assessment (AA) as required.

The promotion of developing visitor friendly infrastructure where it is required will also be encouraged, giving due cognisance to any environmental sensitivities as part of that work. Any proposed site management and / or maintenance guidelines produced by Fáilte Ireland will encourage site owners and operators to consider environmentally sustainable solutions and compliance with the Habitats Directive, the Birds Directive and the Water Framework Directive.

5.2.2 Ensuring Infrastructure Capacity

Any projects stemming from the BBW Plan will be carried out in line within local planning policy and will require close consultation with the local planning authority and relevant statutory authorities.

Consideration will be given within all lower tier assessment to the existing infrastructure capacity for each section. This will include an assessment being made regarding the potential for impacts upon local services including drinking water, wastewater, waste and transport as well as social and other environmental considerations). The potential effects of any increase in tourism related volumes of traffic and people will be fully investigated within all lower tier environmental assessment and mitigated for as appropriate, where relevant.

5.2.3 Management of Visitors

Future plans or projects stemming from the Beara Breifne Way Plan will be required to first assess any increase in visitors and the potential impacts that this may have upon ecological sensitivities. This work will seek to avoid any significant effects including loss / disturbance of habitats and/or species. Projects will be planned in locations that are identified as being a suitable distance from ecological sensitives in order to avoid any significant impacts upon habitats or species.

Projects will require detailed visitor management strategies to be drawn up and implemented in order to proceed with any plan, programme or project stemming from the BBW plan.

There will be a requirement for on-going monitoring as part of any visitor management strategies, and those implementing such strategies will be required to identify changes in visitor behaviour in order to avoid significant effects including loss of habitat and disturbance.

5.2.4 Green Infrastructure and Ecosystem Services

Projects stemming from the BBW Trail will ensure the maintenance and incorporation (where feasible) of green infrastructure and ecosystem services as part of the implementation of their detailed design. This must be incorporated through the design process from the outset. All projects will give due cognisance to the Ecosystems Services, Mapping and Assessment being undertaken in Ireland by the National Parks and Wildlife Service (NPWS)[12].

Projects will be required to demonstrate that they support the provision of open space amenities; provide for the sustainable management of water; ensure the protection and management of biodiversity; protect cultural heritage; and protect areas which have been designated as protected landscapes while being implemented in a sensitive manner in relation to their potential for visual impacts upon their environs.

It should be an aim of projects stemming from the BBW Plan that they maintain, compliment and integrate (rather than replacing) existing green infrastructure. Work will be carried out with regard to the "Connecting with Nature for Health and Wellbeing" EPA Research Report 2020[13].

5.3 Proposed Project Level Actions

5.3.1 Reduction of habitat area (habitat loss or disturbance)

In order to minimise habitat loss and disturbance, a detailed habitat assessment will be conducted prior to any detailed design stages for the 12 Sections proposed along the BBW Trail. This will aim to microsite trails and infrastructure outside of QI habitats, and away from the more environmentally sensitive areas along the trail.

Trail build will focus on enhancement of existing trails rather than introduction of new trail areas where possible. Avoid installation of new trails where no trail currently exists, and/or ensure proposed trails avoid all QI habitats within European Sites and aim to avoid any footprint within EU Annex I habitat types (which would result in a reduction of the national resource). Restricting development to the upgrading and improvement of existing trails restricts the fragmentation of habitats to established areas.

[12] Further information available at: https://www.npws.ie/research-projects/ecosystems-services-mapping-and-assessment

[13] Further information available at: https://www.epa.ie/publications/research/environment--health/research-348-toolkit-connecting-with-nature-for-health-and-wellbeing.php

Design complementary measures to improve habitat connectivity, such as biodiversity enhancing mowing regimes, native tree and hedge planting and drain blocking, as appropriate for the habitats affected.

Any contractor appointed on the scheme will be required to work with an experienced trail designer to assess the footprint of the proposal and to aim for minimal habitat loss as a result of the scheme. During the construction stage, any Contractor appointed on the scheme would be required to complete a detailed Construction and Environmental Management Plan (CEMP) to ensure this is followed through on the site during installation of the BBW Trail.

Where habitat loss is unavoidable, target such losses to areas outside of QI habitat and in areas which are less sensitive to disturbance. Any site clearance or construction work resulting in loss of nesting habitats for breeding birds should be carried out, outside of the breeding season i.e., during September to February.

Opportunities for habitat enhancement measures are outlined in the Beara Breifne Way Environmental Sensitivities and Opportunities Report (ESOR). In addition, all projects stemming from the Beara Breifne Way Trail Plan will aim, to enhance, restore and maintain QI habitat through appropriate design, in line with the detailed Conservation Objectives for the affected SACs and SPAs.

5.3.2 Habitat fragmentation / creating barriers to the movement of species

In order to minimise habitat loss and fragmentation, a detailed habitat and Ecological Impact Assessment (EcIA) will be conducted prior to any detailed design stages. This may require that EIA Screening is conducted on any proposals which meet the criteria for potential EIA. The aim of these studies will be to microsite any trail sections and infrastructure outside of QI habitats, and away from the more environmentally sensitive areas along the trail.

Trail build will focus on enhancement of existing trails rather than introduction of new trail areas where possible. Avoid installation of new trails where no trail currently exists, and or ensure proposed trails avoid all QI habitats. Restricting development to the upgrading and improvement of existing trails restricts the fragmentation of habitats to established areas.

Design complementary measures to improve habitat connectivity and to avoid creating barriers to wildlife (particularly for QI habitats and species), such as native tree and hedge planting and drain blocking, as appropriate for the habitats affected. Hot spots for mammal activity can be identified within an EcIA / EIA study. Such hotspots can incorporate mitigation such as avoidance of impact through

design or the incorporation of impact reducing features such as wildlife passes/ bridges/ landscaping to encourage the free movement of species such as Otter or other animals.

Where habitat loss is unavoidable, target such losses to areas outside of QI habitat and in areas which are less sensitive to disturbance. Any site clearance or construction work resulting in loss of nesting habitats for breeding birds should be carried out, outside of the breeding season i.e., during September to February.

Any contractor appointed on the scheme will be required to work with an experienced trail designer to assess the footprint of the proposal and to aim for minimal habitat loss as a result of the scheme. During the construction stage, any Contractor appointed on the scheme would be required to complete a detailed Construction and Environmental Management Plan (CEMP) to ensure this is followed through on the site during installation of the BBW Trail.

Opportunities for habitat enhancement measures, including measures to improve habitat connectivity are outlined in the Beara Breifne Way Environmental Sensitivities and Opportunities Report (ESOR). In addition, all projects stemming from the Beara Breifne Way Trail Plan will aim, to enhance, restore and maintain QI habitat through appropriate design, in line with the detailed Conservation Objectives for the affected SACs and SPAs.

5.3.3 Disturbance to Key Species

The trail runs through a variety of SACs and SPAs where there is potential for disturbance to QI species. Such disturbance actions include trampling of vegetation, increased noise and increased human and vehicle traffic on site during construction or upgrade works, as well as the potential for this to occur during operation.

The potentially impacted SPAs are breeding sites for a variety of bird species, as well as offering important resting sites for overwintering birds in some cases. As such, any works within SPAs which might have an impact through disturbance of QI species, must be carried out outside of the bird breeding season (which runs from March to August inclusive), or in line with the lifecycle of any target species that is potentially affected, such as overwintering waterbirds. This will be assessed in detail at the project level through EIA / EcIA and Appropriate Assessment (AA) as required.

Preparation and implementation of the environmental opportunities outlined in the ESOR compliment and inform future Conservation Management Plans for the Natural Environment along the Beara Breifne Way. The NIR of this plan has identified the need for detailed surveys and monitoring to be included within any assessments of future projects along this trail with the intention of informing

project level assessments once their design parameters have been established in more detail. Any required NIS' will adhere to the plans overall aims and objectives with regard to the protection of nature conservation interests and specifically include clear and defined targets and measures for protecting and enhancing the ecological interests (i.e., QI) of the associated Sites.

Subsequently, projects stemming from the Beara Breifne Way Trail Plan will also include their own monitoring and mitigation of any potential disturbance to QI species. Where potential impacts are identified and design-level mitigation is required, these will include provisions for long-term monitoring and recording of:

- Key sensitives, on-going impacts (from known & future threats and pressures) – some of this data can also correspond to the Article 17 Natura 2000 review & reporting for the European Sites along the route;
- Relative success of mitigation to be monitored by suitably qualified personnel via quantifiable metrics; for example:
    - Site selection of monitoring locations to be decided by suitably qualified personnel.
    - Monitoring ecological condition of habitats on and off trails via line-point transects and relevé's including metrics such as vegetation cover, bare soil, species composition, habitat condition, and disturbance to flora and fauna. Such monitoring forms can be informed by survey techniques provided within the relevant NPWS Irish Wildlife Manuals[14].

Such data must be recorded on a suitable IT system to ensure that collected data is manageable, regularly reviewed and used to inform future mitigation and management actions for the trail route to ensure no future adverse effects upon the integrity of impacted Natura 2000 sites (see **Appendix IV – Example Recreation Site Monitoring Form**).

Project level mitigation must include the placement of developments (infrastructure, trails etc.) and the timing of works to avoid disturbance of species. For instance, avoiding the clearance of bird nesting habitats during the bird breeding season (from March to August inclusive, or as appropriate for the target species that is potentially affected (e.g., Salmon)).

Further assessment of trails and detailed design for any project level proposals stemming from this Plan is required to fully inform the potential for impacts upon key sensitive features and QI habitats and species.

[14] Irish Wildlife Manuals are available at: Irish Wildlife Manuals | National Parks & Wildlife Service (npws.ie)

Proposed mitigation will include the formal introduction of clear information for the public to ensure that they have a more in-depth understanding as to the potential for impacts upon sensitive habitats and species within the site, to ensure that visitors have the lowest possible environmental impact (e.g., the listing of clear target behaviours for visitors, and the rationale behind these so that they are more effective[15]).

This mitigation will include periodic monitoring by suitably qualified personnel, to ensure the appropriate care and stewardship of the designated site. Such actions may include education through 'Leave No Trace' resources[16] which illustrate successful ways to empower people to look after our shared spaces. Actions can include effective ways of caring for shared spaces such as dogs being kept on a lead, safe disposal of pet waste and litter, walkers sticking to existing way-marked trails and key visitor areas as well as visitors avoiding the use of disposable barbeques which can result in wildfires and damage to vegetation if used and disposed of in an inappropriate way.

Any contractor appointed on the scheme will be required to work with an experienced trail designer to assess the footprint of the proposal and to aim for minimal disturbance to habitats and species as a result of the scheme. During the construction stage, any Contractor appointed on the scheme would be required to complete a detailed Construction and Environmental Management Plan (CEMP) to ensure this is followed through on the site during installation of the BBW Trail.

5.3.4 Potential impacts on water dependant habitats and species

Where projects stemming from the Plan require Appropriate Assessment screening and/or Appropriate Assessment, the NIS reporting for these proposals will adhere to the listed Best Practice Guidance on working near water and listed best practice Mitigation Measures for controlling of pollution and sediments from construction sites. The following documents will be consulted:

- IFI (undated) A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning (*including one-off developments).
- IFI (2016) Guidelines on protection of fisheries during construction works in and adjacent to waters - Guidance for consultants and contractors.

[15] Hughes, M., Ham, S. H., Brown, T. (2009) Influencing Park Visitor Behaviour: A Belief-based Approach. Journal of Park and Recreation Administration. Winter 2009. Volume 27, Number 4, pp. 38-53. Available at: https://www.leavenotraceireland.org/resources/international-publications/
Wallace, G. (Date Unknown) Law enforcement and the "Authority of the resource". Available at: https://lnt.org/wp-content/uploads/2018/10/Authority-of-the-Resource.pdf

[16] Additional 'Leave No Trace' Resources are available at: https://www.leavenotraceireland.org/resources/international-publications/

- CIRIA (Murnane *et al.* 2006) Control of water pollution from linear construction projects. Site guide.
- SEPA (2017) Works and maintenance in or near water. GPP 5.

At detailed project design stage, mitigation will include pollution prevention and suitable controls during construction (e.g., appropriate silt fencing shall be installed in areas where this is deemed necessary within EcIA/ EIA and/or AA reporting before and during construction).

Any contractor appointed on the scheme will be required to work with an experienced trail designer to assess specific drainage requirements at pre-construction design stage. This will ensure that the required mitigation measures are put into place at the appropriate locations and during the optimal stages of the proposal. Where possible, the surfacing installed will be permeable in order to avoid changes to drainage regimes at a localised level. If impermeable materials are used, alterations to trail surfacing could result in enhanced runoff from the trail into the surrounding area at a localised level, and this will require more targeted assessment and design specific mitigation to ensure there is no adverse alteration to hydrology, no release of sediments into local watercourses and to avoid any scouring / erosion as a result of the installed trail.

During the construction stage, any Contractor appointed would be required to complete a detailed Construction and Environmental Management Plan (CEMP) including details of proposed drainage mitigation measures and control of sedimentation.

6 POTENTIAL EFFECTS AFTER MITIGATORY ACTION

Qualifying Interest	Impact Type	Potential for Adverse Effect before mitigation?	Mitigation measures	Potential for Adverse Effect after Mitigation
QI Habitats	Disturbance during the operation of the trail route through trampling and erosion of intersecting and connected Natura 2000 sites and other Annex I habitats in the vicinity of the trail, resulting from increased visitor numbers to the vicinity of the trail route. Potential for habitat loss and fragmentation during construction phase in areas requiring upgrades or new trail building.	Possible – AA Screening required on all projects stemming from this plan	Disturbance prevention measures (see Section 5). Avoiding QI habitat, ascertaining key locations for QI species and avoiding these, restricting habitat disturbance and habitat loss to areas of existing trail where possible.	Projects to be conducted in line within EU, National and Local environmental and planning legislation and policy as described above. Best Practice Guidelines provided by the EPA and green infrastructure mapping by the NPWS will be considered within any future project work. AA Screening required for projects stemming from the plan Mitigation will be required to avoid impacts. Further visitor monitoring studies and strategies will be conducted on an on-going basis to inform detailed project level assessment. Conditioning the implementation of this mitigation will be the responsibility of the Local Authority and shall be appropriately managed by an Appointed Contractor / Consultant. Detailed assessment of any projects arising from the Plan is required in order to fully assess this impact. Any contractor appointed on the scheme will be required to work with an

				experienced trail designer to assess the design and implementation of the proposal. During the construction stage, any Contractor appointed would be required to complete a detailed Construction and Environmental Management Plan (CEMP).
QI Species	Disturbance during construction activities and operational stage of the trail route through increased human traffic within the site, leading to potential for increased erosion of paths and habitats, which impacts on quality of supporting habitat for QIs	Possible – AA Screening required on all projects stemming from this plan	Disturbance prevention measures (see Section 5). Avoiding QI habitat, ascertaining key locations for QI species and avoiding these, restricting habitat disturbance and habitat loss to areas of existing trail where possible.	Projects to be conducted in line within EU, National and Local environmental and planning legislation and policy as described above. Best Practice Guidelines provided by the EPA and green infrastructure mapping by the NPWS will be considered within any future project work. AA Screening required for projects stemming from the plan. Detailed assessment of any projects arising from the Plan is required in order to fully assess this impact. Any contractor appointed on the scheme will be required to work with an experienced trail designer to assess the design and implementation of the proposal. Appropriate ecological assessment of any projects arising from the Plan is required to fully assess this impact. Mitigation will be required to avoid both direct and indirect impacts.

				Further visitor monitoring studies and strategies will be conducted on an on-going basis to inform detailed project level assessment. Conditioning the implementation of this mitigation will be the responsibility of the Local Authority and shall be appropriately managed by an Appointed Contractor / Consultant. During the construction stage, any Contractor appointed would be required to complete a detailed Construction and Environmental Management Plan (CEMP).

7 CONCLUSION

A Screening for Appropriate Assessment was conducted to ascertain (in view of best scientific knowledge and with consideration the Conservation Objectives of European Sites within the zone of influence, while applying the 'Precautionary Principle') if the project, either individually or in combination with other plans or projects, is likely to have significant effects on a European Site.

Following that assessment, it was considered that, in the absence of appropriate mitigation, there was potential for significant effects on 39 Natura 2000 (European) sites along the trail route.

There is considered to be the potential for adverse impacts upon the integrity of the 39 No. European Sites as a direct and / or indirect result of the Beara Breifne Way Trail Plan, in the absence of mitigation. Subsequently, an Appropriate Assessment is required to be conducted by the Competent Authority to establish (in view of best scientific knowledge, taking consideration of the Conservation Objectives for the affected European Sites, and applying the 'Precautionary Principle') if there is likely to be any adverse effects upon the integrity of any European Sites as a result of the proposed Plan (or development projects stemming from this plan). This Natura Impact Report (NIR) provides information which can be used to inform this process.

Plan level mitigation measures have been set out in Section 5 of this NIR. AA Screening will be required for all projects stemming from the plan which are considered to have source-pathway-receptors to European Sites. Where a likely significant effect is identified, detailed assessment of any future projects arising from the Plan will be required.

In order to ensure that the proposed Beara Breifne Way Trail Plan has no significant effects upon any European Sites, the following mitigation must be adhered to:

- Plans, programmes and projects stemming from the BBW Plan will adhere to EU, National and local legislation, policy and guidance.
- Close consultation with the relevant planning authorities, statutory authorities and local stakeholders shall be required in order to ensure that proposals can be supported by the relevant local infrastructure, and proposals must ensure sufficient capacity is available prior to proceeding.
- Visitor management assessment, strategies and on-going monitoring will be required as part of future plans, programmes or projects stemming from the BBW Plan.
- Due cognisance shall be given to existing green infrastructure and to the provision of maintenance, enhancements and monitoring of green infrastructure as part of plans, programmes or projects stemming from the plan. These shall be conducted in line with EPA and NPWS research and guidance.

If the plan-level mitigation advised upon within this NIR is adhered to, it is considered that the Beara Breifne Way Trail Plan will not have any significant adverse impacts upon the integrity of any European Sites or their associated Qualifying Interests, either alone, or in-combination with other plans and/or projects.

Recommendations for further assessment to inform the implementation of the Beara Breifne Way Trail Plan at project level including to collation of the following Environmental Assessments:

- Ongoing impact reporting. Conditioning the implementation of this mitigation will be the responsibility of the Local Authority and shall be appropriately managed by an Appointed Contractor / Consultant.
- Breeding bird surveys (including for crepuscular species) along all trail routes.
- A detailed Wildlife Disturbance Study in areas where a requirement for this has been identified within the project level AA Screening / NIS / EcIA / EIA reporting.
- Visitor Survey and Impact Reporting at a Project Level in areas where a requirement for this has been identified within the project level AA Screening / NIS / EcIA / EIA reporting.
- Invasive Alien Species Assessment, Monitoring and Treatment as appropriate (and identified within required EcIA/EIA) to prevent the spread of IAS within the Study Area.
- Requirement for screening for AA and EcIA/EIA (as required) at project level.
- Any contractor appointed on the scheme will be required to work with an experienced trail designer to assess the design and implementation of the proposal.
- During the construction stage, any Contractor appointed would be required to complete a detailed Construction and Environmental Management Plan (CEMP).

The collation of the above information will assist in the effective Appropriate Assessment for any future projects stemming from the Beara Breifne Way Trail Plan.

8 REFERENCES

Cutts, N., Hemingway, K., Spencer, J. (2013) '*Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects*'.

Department of the Environment Heritage and Local Government (2010) '*Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*', 84.

European Commission (2022) Biodiversity Strategy for 2030 [online] available: https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en

European Commission (2021) *Commission Notice - Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*

European Commission (2001) *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* [online], available: http://europa.eu.int/comm/environment/pubs/home.htm.

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European Commission (1997) '*European Communities (Natural Habitats) Regulations 1997*.'

European Commsion (1992) *'European Community Habitats Directive (92/43/EEC) – The Habitats Directive*.'

Hughes, M., Ham, S. H., Brown, T. (2009) *Influencing Park Visitor Behaviour: A Belief-based Approach. Journal of Park and Recreation Administration*. Winter 2009. Volume 27, Number 4, pp. 38-53. Available at: https://www.leavenotraceireland.org/resources/international-publications/

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NPWS (2019a). *The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview*. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill

NPWS (2019b*). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments*. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill

NPWS (2019c). *The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments*. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill

Technical Trail Audit and Design for the Beara Breifne Way, September 2022 Outdoor Recreation NI on behalf of Fáilte Ireland. Unpublished Report.

Wallace, G. (Date Unknown) *Law enforcement and the "Authority of the resource*". Available at: https://lnt.org/wp-content/uploads/2018/10/Authority-of-the-Resource.pdf

Other Useful Information:

- https://www.Fáilteireland.ie/FáilteIreland/media/WebsiteStructure/Documents/2_Develop_Your_Business/Key%20Projects/Natura-Impact-Report.pdf
- https://www.interregeurope.eu/policylearning/good-practices/item/3437/great-western-greenway/
- https://www.mayo.ie/attractions/greenway
- https://www.mayo.ie/getmedia/031f5785-8241-4997-a9a2-dced77881e80/Vol-5-Draft-Natura-Impact-Report.pdf
- Sport Ireland Trail Grades:
  Types of trails
  https://www.sportireland.ie/outdoors/trail-grades

Appendix I: Additional Information on Plans and Projects

Cork County Development Plan 2014	The purpose of the county development plan is to direct sustainable economic and social development within the country while protecting and enhancing the environment	Potential to interact with: • County Development Plan Objective HE 2-1*: 'Site Designated for Nature Conservation Provide protection to all-natural heritage sites designated or proposed for designation under National and European legislation and International Agreements, and to maintain or develop linkages between these'* through nature of trail route as a connection between intersected designated sites. • County Development Plan Objective HE 2-2: '*Protected Plant and Animal Species'* – though potential to impact on species and habitats through reduction in habitat area, habitat fragmentation, disturbance and potential impacts on species density. • County Development Plan Objective HE 2-3: '*Biodiversity outside Protected Areas:* *Retain areas of local biodiversity value, ecological corridors and habitats that are features of the County's ecological network, and to protect these from inappropriate development.'* – Potential to impact on sensitive habitats outside of designated sites through trail development and associated impacts.

		• County Development Plan Objective HE 2-5: Trees and Woodlands '*… proposals do not compromise important trees and include an appropriate level of new tree planting…'* – integration of tree planting along appropriate areas of the trail can contribute positively to this policy. • County Development Plan Objective HE 2-7: '*Control of Invasive Species: Control the spread of invasive plant and animal species within the county*' – The plan has the potential to allow the spread invasive species along the trail route. • County Development Plan Objective GI 3-1 : Green Infrastructure - New Developments '*Require new developments to contribute to the protection, management and enhancement of the existing green infrastructure of the County and the delivery of new green infrastructure, where appropriate.'* - The plan has the potential to contribute to the development of green infrastructure along the trail route • County Development Plan Objective GI 4-1: Countryside Recreation '*To support the diversification of the rural economy through the development of the recreational potential of the countryside in accordance with the National Countryside Recreation Strategy.'* – This plan has the potential to enhance to recreational potential of the countryside • County Development Plan Objective GI 6-1: '*Landscape a) Protect the visual and scenic amenities of County Cork's built and natural environment. b) Landscape issues will be an important factor in all landuse proposals, ensuring that a pro-active view of development is undertaken while maintaining respect for the environment and heritage generally in line with the principle of sustainability. c) Ensure that new development meets high standards of siting and design. d) Protect skylines and ridgelines from development. e) Discourage proposals necessitating the removal of extensive amounts of trees, hedgerows and historic walls or other distinctive boundary treatments.'* – This plan has the potential to integrate with this policy through the identification of suitable trail lines and the use of high-quality trail designs to minimise impacts on landscapes both visually and ecologically.

Appendix II: Example Recreation Site Monitoring Form

Date:	Time Start: Time End:	Location:	Recorded by:	Site Habitat Type:	GPS Coordinates: Transect Start: Transect End:
Photo No's:					
General Comments:					
Level of visitor use [Estimate of Numbers if available]:	*Low (L)* *[ ]*	*Moderate (M)* *[ ]*	*High (H)* *[ ]*	*Reasoning for scoring:*	
Distance to nearest Trail / Key Visitor Location (m)			*Site Disturbance Expansion Potential*	*L/M/H & Reasoning:*	
Total site area	_____ *(Total site area being evaluated in m^2)*				

IMPACT INDICATORS	*Relevé Sizing*: _____* *(Use appropriately sized Relevé e.g., 2m grassland, 10m woodland along a transect if appropriate)*				
% Ground Cover (Tick)	*Vegetation Cover on site*	*Vegetation Cover off site*	*Exposed Soil / Bare Ground*	***DISTURBANCE***	***None / Slight, Moderate, Severe (State)***
0-5				***Tree Damage***	
6-25				***Root Exposure***	
26-50				***Disturbance to Species*** ***(Sp. Name)***	***None / Slight, Moderate, Severe (Tick)***
51-75					
76-95					
96-100					

**Use specific Relevé form subject to the habitat type you are in (see: https://www.npws.ie/publications/irish-wildlife-manuals)*