

NATURA IMPACT STATEMENT

IN SUPPORT OF THE
APPROPRIATE ASSESSMENT
OF THE
INDUSTRIAL EMISSIONS LICENSE
AT
Abbvie Ireland, NL B.V
Ballytivnan, Sligo

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

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prepared for

abbvie

on behalf of

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Section 1 Introduction

1.1 Background

EIS has been appointed to prepare this Natura Impact Statement (NIS) in support of the Appropriate Assessment (AA) of the Industrial Emissions License at AbbVie Ireland, NL B.V Ballytivnan, Sligo in accordance with the requirements of Article 6(3) of Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (hereafter referred to as the "Habitats Directive").

The overall aim of the Habitats Directive is to maintain or restore the "favourable conservation status" of habitats and species of European Community Interest. These habitats and species are listed in the Habitats and Birds Directives (Council Directive 2009/147/EC on the conservation of wild birds) with Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated to afford protection to the most vulnerable of them. These two designations are collectively known as European Sites.

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

1.2 Legislative Context

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

The Habitats Directive provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. In Ireland, these are SACs and SPAs, designated under the Birds Directive, hereafter referred to as European Sites.

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

"Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

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

ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

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

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

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

1.3 Guidance

This NIS has been prepared in accordance with the following guidance:

- *Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government, 2010.*
- *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission Environment DG, 2002.*
- *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC: European Commission, 2000.*
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2001).*
- *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission, Office for Official Publications of the European Communities, Luxembourg (EC, 2007).*
- *Flora (Protection) Order, 1999 (as amended).*

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

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

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

1.4 Approach

1.4.1 Stages in AA

There are four main stages in the AA process; the requirements for each depending on likely impacts to European Sites (SACs and SPAs).

Stage One: Screening

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

Stage Two: Appropriate Assessment

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

Stage Three: Assessment of Alternative Solutions

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

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

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

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

1.4.2 Source-Pathway-Receptor Model

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

- Source(s) – e.g. pollutant run-off from proposed works;

- Pathway(s) – e.g. groundwater connecting to nearby qualifying wetland habitats and
- Receptor(s) – qualifying aquatic habitats and species of European Sites.

In the interest of this report, receptors are the ecological features which are known to be utilised by the qualifying interests or special conservation interests of a European Site. A source is any identifiable element of the Industrial Emissions License and associated works which is known to have interactions with ecological processes. The pathways are any connections or links between the source and the receptor. This report determines if direct, indirect and cumulative adverse effects (however minor) will arise from the emissions.

1.4.3 Zone of Influence

Following the source-pathway-receptor process a Zone of Influence (ZOI) is determined based on the characteristics of the Plan (detailed in Section 3.2) and the foreseen distribution of likely effects through any pathways is identified. All European Sites within the ZOI are assessed with specific reference to the sensitive receptors of each site and pathways for effect that relate to the ecological integrity of the site.

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Section 2 Description of and background to the Industrial Emission License

2.1 Existing Abbvie Facility & Receiving Environment

The existing Abbvie facility is an operational medical device manufacturing plant. The site sits to the north of Sligo town, on the edge of the urban sprawl area. It lies less than 200m west of the N15 and is bordered by agricultural fields and residential properties. The surrounding area north of the site is dominated by agricultural lands. The Willsborough Stream (35W01) flows westward, at the northern corner of the site; the Shannon Eighter Stream (35S29) flows southward along the east of the site and joins the Willsborough Stream just before entering Sligo Bay.

None of the habitats on the site were found to contain Annex I type features; additionally, all of the habitats present on site were of low ecological importance at both landscape and local scales. Habitats recorded on site include Buildings and Artificial Surfaces (BL3), Re-colonised Bare Ground (ED3), Hedgerows (WL1), Agricultural Grassland and Amenity Grassland (GA2); a full habitat map can be found in Figure 2.1. There were no species identified on site which are invasive and subject to restrictions (Third Schedule) under Regulation 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011. There were no significant habitats found directly adjacent to the site.



Figure 2.1 Habitats present¹ on site

2.2 Emission License

AbbVie Ireland NL B.V. (AbbVie) is applying to the Environmental Protection Agency (EPA) for an Industrial Emissions (IE) Licence for their existing facility in Ballytivnan, Co. Sligo. The licensable activity, under the First Schedule of the EPA Act 1992 is, **Class 5.16: Production of Pharmaceutical Products including intermediates**. The production on an industrial scale by chemical or biological processing of substances or groups of substances detailed in the attached application. The regulations

¹ As at March 2018: Habitat codes: BL3 – Building and artificial surfaces; ED3 – Recolonised bare ground; GA1 – Improved Agricultural Grassland; GA2 Amenity Grassland (improved); WL1 – Hedgerow; WS4 – Wet Grassland

do not define what is meant by 'industrial scale' however the proposed facility will be an industrial use. There are no restrictions on capacity outlined in the planning permission(s) for the facility. The application detail identifies 4 types of emissions, detailed below.

2.2.1 Odour Emission

The License applications detail Odour emissions from the site operations will be restricted to NO₂ and fugitive emissions. Fugitive emissions are defined as low level diffuse emissions, mainly of volatile organic compounds, that occur when either gaseous or liquid process fluids escape from plant equipment. There are very minor fugitive emissions anticipated from the use of Isopropyl Alcohol (IPA) impregnated wipes and spray for cleaning internal work surfaces. Losses due to displacement of vapor and dilution are anticipated internally within the production areas only.

NO₂ Emissions from the site have been modelled using the AERMOD dispersion model (Version 16216r) which has been developed by the U.S Environmental Protection Agency (USEPA) and the American Meteorological Society (AMS). The model is recommended as an appropriate model for assessing the impact of air emissions from industrial facilities in the EPA Guidance document "*Air Dispersion Modelling from Industrial Installations Guidance Note (AG4) (2010)*"².

The model is a "new-generation" steady-state Gaussian plume model used to assess pollutant concentrations associated with industrial sources. The model is an enhancement of the Industrial Source Complex-Short Term 3 (ISCST3) model which has been widely used for emissions from industrial sources.

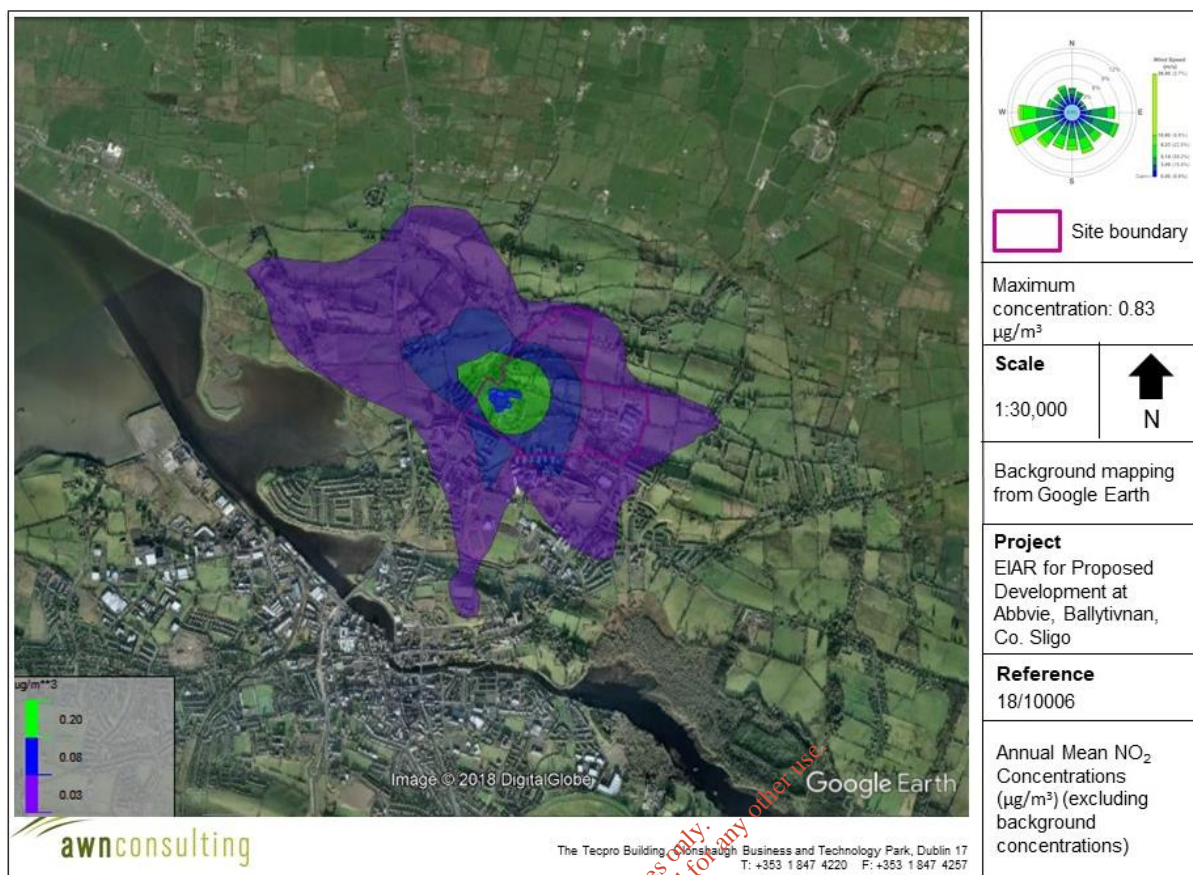
The NO₂ modelling results from the site emissions at the worst-case off-site receptor i.e. the highest NO₂ concentrations measured off-site (including the site boundary), are detailed in Table 2.1. The results indicate that the ambient ground level concentrations are significantly below the relevant air quality standards for NO₂.

Table 2.1 Dispersion Model Results – Cumulative Assessment

Pollutant / Meteorological Year	Background (µg/m ³)	Averaging Period	Process Contribution (µg/m ³)	Predicted Emission Concentration (µg/m ³)	Standard (µg/m ³) Note 1
NO ₂ / 2012	13	Annual Mean	1.72	14.72	40
	26	99.8 th ile of 1-hr means	19.74	45.74	200
NO ₂ / 2013	13	Annual Mean	1.73	14.73	40
	26	99.8 th ile of 1-hr means	21.81	47.81	200
NO ₂ / 2014	13	Annual Mean	1.76	14.76	40
	26	99.8 th ile of 1-hr means	20.40	46.40	200
NO ₂ / 2015	13	Annual Mean	1.77	14.77	40
	26	99.8 th ile of 1-hr means	18.73	44.73	200
NO ₂ / 2016	13	Annual Mean	1.65	14.65	40
	26	99.8 th ile of 1-hr means	20.75	46.75	200

Note 1 Air Quality Standards 2011 (from EU Directive 2008/50/EC and S.I. 180 of 2011)

² EPA (2010) Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)



Surface water from the buildings and yards is collected via a series of points across the facility. These then discharge via a series of hydrocarbon interceptors to an offsite drainage ditch along the eastern and southern boundaries of the site at 3 no. Emission Points (SW1, SW2, and SW3). The drainage ditch eventually discharges into the Shannon Eighter. The locations of these discharge points are shown on Drawing 008 Version 2.

In accordance with BAT, clean stormwater will be kept separate from wastewater and there will be no inherent risk of cross-contamination... Due to the nature of the run-off from the existing facility (stormwater from buildings and roads only) and the inclusion of hydrocarbon interceptors, the proposed discharge is unlikely to contain more than trace hydrocarbons and metals. Where bulk diesel delivery is proposed for the new facility, the new Class 1 Full Retention interceptor will provide the additional protection required to prevent hydrocarbons entering the stormwater drainage network.

It is therefore anticipated that the surface water quality will not exceed the Environmental Quality Standards as set out in SI 272 of 2009 and SI 386 of 2015 (Surface Water Regulations)... level alarms will be installed on all new interceptors and weekly inspections of the manholes at Monitoring Points SW1a, SW2a and SW3b will be completed as a minimum.

The report further states that:

It is considered that other than those parameters that are natural elevated in the local groundwater body, there will be no impact on the quality of the groundwater status of the Drumcliff Strandhill GWB from the site operations.

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Section 3 Screening for Appropriate Assessment

3.1 Introduction to Screening

3.1.1 Background to Screening

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

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

An important element of the AA process is the identification of the "conservation objectives", "Qualifying Interests" (QIs) and/ or "Special Conservation Interests" (SCIs) of European Sites requiring assessment. QIs are the habitat features and species listed in Annexes I and II of the Habitats Directive for which each European Site has been designated and afforded protection. SCIs are wetland habitats and bird species listed within Annexes I and II of the Birds Directive. It is also vital that the threats to the ecological / environmental conditions that are required to support QIs and SCIs are considered as part of the assessment.

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

"The integrity of a site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site's conservation objectives."

Favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

The screening stage of the AA takes account of the elements detailed above with regard to the details and characteristics of the project or plan to determine if potential for effects to the integrity of the European Site are likely. The characteristics of the Industrial Emissions License Application were constructed through an iterative process, as a result the European Sites which are screened below may differ from those of high-level plans, due to refinements in the methods/project details available.

3.1.2 Desktop Studies

The ecological desktop study completed for this AA of the Industrial Emissions License comprised the following elements:

- Available baseline information and relevant assessment such as hydrological reports from recent site development applications;

- Identification of European Sites within 15 km with identification of potential pathways links for specific sites (if relevant) greater than 15 km from the Plan area;
- Review of the NPWS site synopsis and conservation objectives for European Sites with identification of potential pathways from the Plan area; and
- A series of ecological desk studies were undertaken between March and November 2018. This included but is not limited to the collation of information on protected species including Bats, Otters, Bird species (including Annex I species), Annex II habitat types, protected and Red Data Book Flora species, invertebrates and amphibians. The results of these studies are included as part of the Appropriate Assessment where they were deemed relevant to the European Sites and their QIs/SCIs.

3.2 Identification of Relevant European Sites

This section of the screening process describes the European Sites which exist within the Zone of Influence (ZOI) of the site. The Department of the Environment (2009) Guidance on AA recommends a 15 km buffer zone to be considered. A review of all sites within the ZOI has allowed a determination to be made that in the absence of significant hydrological links the characteristics of the Industrial Emissions License will not impose effects beyond the 15 km ZOI.

European Sites that occur within 15 km of the Industrial Emissions License is listed in Table 3.1 and illustrated in Figure 3.1 below. Details on the specific qualifying features and special conservation interests of each European Site are also identified in Table 3.1. The site is connected to an adjacent stream which is linked to the Sligo Bay (Figure 3.2).

In order to determine the potential for effects from the Industrial Emissions License, information on the qualifying features, known vulnerabilities and threats to site integrity pertaining to any potentially affected European Sites was reviewed. Background information on threats to individual sites and vulnerability of habitats and species that was used during this assessment included the following:

- *Ireland's Article 17 Report to the European Commission "Status of EU Protected Habitats and Species in Ireland" (NPWS, 2013);*
- *Site Synopses; and*
- *NATURA 2000 Standard Data Forms.*

The assessment takes consideration of the SSCOs of each of the sites within the ZOI. Since the conservation objectives for the European Sites focus on maintaining the favorable conservation condition of the QIs/SCIs of each site, the screening process concentrated on assessing the potential effects of the Industrial Emissions License against the QIs/SCIs of each site. The conservation objectives for each site were consulted throughout the assessment process.

The site-specific threats and vulnerabilities of each of the sites are detailed in Appendix I.

Table 3.1 European sites within the 15 km ZOI of the site.

Name	Site Code	Distance [km]	Site Description	Qualifying Interests / Special Conservation Interests [Habitats Directive codes]
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	000627	0.71	<p>This large coastal site extends from Cullamore in the north-west to Killaspug in the south-west, and from Sligo town in the south-east to Drumcliff village in the northeast. It encompasses two large, shallow bays, Drumcliff Bay and Sligo Harbour, and both Ardboline and Horse Island. Sand dunes and sand hills at Rosses Point, Killaspug, Yellow Strand and Coney Island are included, as are grasslands at Ballintemple and Ballygilgan (Lissadell), along with a variety of other habitats such as woodland, saltmarsh, sandy beaches, boulder beaches, shingle, fen, freshwater marshes, rocky sea cliffs and lakes. The site is largely underlain by Carboniferous limestone, but acidic rocks are also found on the Rosses Point peninsula. At Serpent Rock in the north-western section of the site the most complete section of the northwestern Carboniferous strata is exposed. Here are found an excellent series of fossilised corals which, in some strata, stand out from the rock matrix.</p> <p>The standard data form for the site details a list of potential threats for the site such as grazing, sediment, invasive species, port services, fish farming, site use by humans. All of these pressures are identified within the SAC boundary and the site synopsis does not identify any specific threats for the site beyond the boundary.</p> <p>The targets and attributes of the SSCO's relate to the maintenance of the structure and function of habitat and community dynamics³</p>	<p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Phoca vitulina</i> (Harbour Seal) [1365]</p>
Cummeen Strand SPA	004035	0.77	<p>Cummeen Strand is a large shallow bay stretching from Sligo Town westwards to Coney Island. It is one of three estuarine bays within Sligo Bay and is situated between Drumcliff Bay to the north and Ballysadare Bay to the south. The Garavogue River flows into the bay and forms a permanent channel. At low tide, extensive sand and mud flats are exposed.</p> <p>Roads and motorways, fertilization, industrial and urban areas are recorded as threats and pressures to the SPA. The SSCO's identify targets and attributes related to population trends, distribution of species and habitat area⁴.</p>	<p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]</p>
Lough Gill SAC	001976	1.16	<p>This site includes Lough Gill, Doon Lough to the north-east, the Bonet River (as far as, but not including, Glenade Lough), and a stretch of the Owenmore River near Manorhamilton in Co. Leitrim. Lough Gill</p>	<p>Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]</p>

³ NPWS (2013) Conservation Objectives: Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC 000627. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

⁴ NPWS (2013) Conservation Objectives: Cummeen Strand SPA 004035. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

			itself, 2 km east of Sligo town, lies at a geological junction of ancient metamorphic rocks which produce acid groundwater, and limestone which dissolves in the groundwater. No Site-Specific threats were identified by the NPWS outside of the SAC boundary except continued urbanization and there are no SSCOs for the site ⁵ .	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]
Sligo/Leitrim Uplands SPA	004187	3.97	The Sligo/Leitrim Uplands SPA is located north-east of the town of Sligo in the mountain ranges of Ben Bulbin, Arroo and Cope's Mountain/Crockauns. The site straddles the Co. Sligo/Co. Leitrim border. The site includes six separate lengths of cliffs in these ranges, including those of King's Mountain, Benbulbin, Benwiskin, Gleniff, Truskmore, Tievebaun, Glenade, Glencar, Arroo Mountain and Cope's Mountain/Crockauns. The upper boundary of the site is taken to be 50 m from the cliff top except in the King's Mountain area, above Glencar Lough, where an expanse of suitable foraging habitat c. 200 m from the cliff top is included. These uplands are formed of Carboniferous limestone, capped in places by shales. They stand on a high plateau, 300-450 m above the surrounding countryside, and the edges form lofty cliffs from 15 to 300 m in height. Areas of scree occur below the cliffs on slopes of 40-50%.	Peregrine (Falco peregrinus) [A103] Chough (Pyrrhocorax pyrrhocorax) [A346]
Drumcliff Bay SPA	004013	4.14	Drumcliff Bay, Co. Sligo is the most northerly of Sligo Bay's three estuarine inlets. The bay comprises an inner area of sheltered estuarine habitat and an outer area of shallow seawater. It extends 9 km east to west from Drumcliff village to Raghly Point. Drumcliff Bay is the estuary of the Drumcliff River, a substantial river flowing from Glencar Lough to the east. The inner part of Drumcliff Bay is sheltered by a sandy/grassy peninsula extending north from Rosses Point. The northern part of the bay is fringed by fine sandy beaches - Ballygilgan Strand, Lissadell Strand and Ardtermon Strand. Salt marsh occurs in the most sheltered areas and at low tide, extensive inter-tidal flats are	Sanderling (Calidris alba) [A144] Bar-tailed Godwit (Limosa lapponica) [A157] Wetland and Waterbirds [A999]

⁵ NPWS (2018) Conservation objectives for Lough Gill SAC [001976]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

⁶ NPWS (2018) Conservation objectives for Sligo/Leitrim Uplands SPA [004187]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

			<p>exposed. A bed of Dwarf Eelgrass (<i>Zostera noltii</i>) occurs near the south-eastern corner of the bay.</p> <p>Dispersal and fertilization are the 2 pressures/threats identified to occur outside of the SPA boundary in the standard data form. There are no further site-specific threats identified by the NPWS in the site synopsis and the SSCO's identify targets and attributes related to population trends, distribution of species and habitat area⁷.</p>	
Ben Bulbin, Gleniff and Glencade Complex SAC	000623	5.65	<p>This large SAC site is located in the uplands around Ben Bulbin, King's Mountain, Benwiskin, Truskmore and Tievebaun (or Eagle's Rock), straddling the Sligo/Leitrim county boundary. These uplands are formed of Carboniferous limestone, capped in places by shales. They stand in a high plateau, 300-450 m above the surrounding countryside, and the edges form lofty cliffs ranging from 15 to 300 m in height. Below these cliffs, block scree usually occurs on slopes of 40-50 degrees. The mesa type of landform (i.e. flat-topped hill) found at this site, which has arisen from the long exposure of the upland areas to erosion, is of great interest geomorphologically. So too are the upper Viséan reefs exposed on the cliffs and on some of the summits. In addition, this region is also the type locality for the Ben Bulbin shale, the Glencar limestone and the Dartry limestone.</p> <p>No Site-Specific threats were identified by the NPWS outside of the SAC boundary except outdoor leisure and recreation and there are no SSCO's for the site⁸.</p>	<p>Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Transition mires and quaking bogs [7140] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Alkaline fens [7230] Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110] Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietia rotundifoliae</i>) [8120] Calcareous rocky slopes with chasmophytic vegetation [8210] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013] <i>Lutra lutra</i> (Otter) [1355]</p>
Ballysadare Bay SPA	004129	7.40	<p>Ballysadare Bay extends for approximately 10 km westwards from the town of Ballysadare, County Sligo. It is the most southerly of three inlets that form the eastern part of the larger Sligo Bay complex. The estuarine channel of the Ballysadare River winds its way through the bay, finally reaching the open sea near the Strandhill Dunes sand spit. The bay is underlain by sedimentary rocks of limestones, sandstones</p>	<p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]</p>

⁷ NPWS (2013) Conservation Objectives: Drumcliff Bay SPA 004013. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

⁸ NPWS (2018) Conservation objectives for Ben Bulbin, Gleniff and Glencade Complex SAC [000623]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

			<p>and shales which are exposed as low cliffs and small sections of bedrock shore at several locations.</p> <p>Continuous urbanization and fertilization are the only threats/pressures identified in the standard data form for the site outside of the site boundary. There are no additional site-specific threats identified by the NPWS in the site synopsis and the SSCO's identify targets and attributes related to population trends, distribution of species and habitat area⁹.</p>	
Ballysadare Bay SAC	000622	7.53	<p>Ballysadare Bay extends for about 10 km westwards from the town of Ballysadare, Co. Sligo, and is the most southerly of three inlets of the larger Sligo Bay. The estuarine channel of the Ballysadare River winds its way through the bay, finally reaching the open sea near the spit at Strandhill dunes. The bay is underlain by sedimentary rocks of limestones, sandstones and shales, which are exposed as low cliffs and small sections of bedrock shore at several locations. Knocknarea Mountain overlooks the site. The bay is little-used for fishing or boating, but marsh shooting is common in the upper reaches.</p> <p>Aquaculture is little-developed in this bay compared to nearby Sligo and Drumcliff Bays. Dune systems are sensitive to developments which alter their structure. Grazing is also a critical factor; the correct level of grazing maintains an open, species-rich sward, but the presence of too many grazers causes damage to the vegetation and may exacerbate dune erosion. Agricultural improvement, and particularly the application of fertilisers, threatens dune vegetation, leading to the eventual loss of species diversity.</p> <p>The targets and attributes of the SSCO's relate to the maintenance of the structure and function of habitat and community dynamics¹⁰.</p>	<p>Estuaries [1130]</p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Embryonic shifting dunes [2110]</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]</p> <p>Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p> <p>Humid dune slacks [2190]</p> <p><i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]</p> <p><i>Phoca vitulina</i> (Harbour Seal) [1365]</p>
Union Wood SAC	000638	8.12	<p>Union Wood is located on the eastern bank of the Ballysadare River between Ballysadare and Collooney in Co. Sligo. The site contains old oak woodland which is typical of western Oak wood (<i>Blechno-Quercetum</i>) and one of the best remaining in the region. Invasive species and forestry pressures are the only threats/pressures identified in the standard data form outside of the SAC boundary. No additional Site-Specific threats were identified by the NPWS in the site synopsis and there are no SSCO's for the site¹¹.</p>	<p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p>
Unshin River SAC	001898	8.44	<p>The Unshin River runs from Lough Arrow north to Ballysadare Bay, Co. Sligo. The river is largely undrained and unaltered along much of its course. The marginal vegetation associated with the river is also included in the site, along with other semi-natural habitats adjacent to</p>	<p>Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p>

⁹ NPWS (2013) Conservation Objectives: Ballysadare Bay SPA 004129. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

¹⁰ NPWS (2013) Conservation Objectives: Ballysadare Bay SAC 000622. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

¹¹ NPWS (2018) Conservation objectives for Union Wood SAC [000638]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht

			<p>the river (included in order to enhance its protection). Many of these habitat types are interesting and of conservation value in their own right. Other watercourses included within the site are the Owenboy/ Owenbeg and a number of smaller tributaries. The Unshin River flows across a number of geological boundaries between sandstone, shales and limestone. This results in unusual physico-chemical qualities which in turn are reflected in the rich and varied plant and animal populations.</p> <p>No Site-Specific threats were identified by the NPWS outside the SAC boundary except for forestry pressures and there are no SSCO's for the site¹²</p>	<p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]</p>
Ballintemple and Ballygilgan SPA	004234	12.40	<p>Ballintemple and Ballygilgan SPA comprises two separate areas of fields supporting agriculturally-improved grassland, situated on the north side of Drumcliff Bay, Co. Sligo.</p> <p>No Site-Specific threats were identified by the NPWS outside of the SPA boundary and there are no SSCO's for the site¹³</p>	Barnacle Goose (<i>Branta leucopsis</i>) [A045]
Streedagh Point Dunes SAC	001680	12.86	<p>Streedagh Point Dunes SAC is a sand dune and estuary system, and lies approximately 4 km west of Grange, a small village about 16 km north of Sligo town. The site consists of a tombolo formation, with a shingle spit overlain by sand dunes joining Conors Island to Streedagh Point. The landward side of the site comprises an area of sand flats, the estuary of the River Grange. The underlying bedrock is of stratified sedimentary rocks - argillaceous and oolitic limestones, conglomerates and chert; some strata are rich in fossils.</p> <p>The main land uses within the site are sheep grazing and recreation, both of which have led to some erosion in the dunes, although in places grazing has maintained a short sward used by geese and Choughs for feeding.</p> <p>No Site-Specific threats were identified by the NPWS outside of the SPA boundary. The targets and attributes of the SSCO's relate to the maintenance of the structure and function of habitat and community dynamics¹⁴.</p>	<p>Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]</p>
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	000625	14.49	<p>This site is situated on the south side of Donegal Bay, 5 km south-west of Bundoran, and it falls in the counties of Sligo and Leitrim. The part of the site west of Mullaghmore Head is very exposed to the prevailing wind and swells from the Atlantic, whereas the head itself affords moderate shelter to the eastern part of the site. The underlying</p>	<p>Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170]</p>

¹² NPWS (2018) Conservation objectives for Unshin River SAC [001898]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht

¹³ NPWS (2018) Conservation objectives for Ballintemple and Ballygilgan SPA [004234]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

¹⁴ NPWS (2015) Conservation Objectives: Streedagh Point Dunes SAC 001680. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

			<p>geology is of sedimentary rocks including limestone, shale and sandstone. Windblown sand is common in places, covering much of the underlying rocks and shingle.</p> <p>The machair and dunes within this site are grazed by sheep and cattle. Amenity use close to Mullaghmore village is high, with fishing and shooting also occurring nearby. Bunduff Strand is a busy recreational beach and water sports are popular here. A sewage discharge at Thumb Rock may be having a deleterious effect on water quality and sediment communities.</p> <p>No Site-Specific threats were identified by the NPWS outside of the SAC boundary. The targets and attributes of the SSCO's relate to the maintenance of the structure and function of habitat and community dynamics¹⁵.</p>	<p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Alkaline fens [7230] <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p>
Ardboline Island and Horse Island SPA	004135	14.70	<p>Ardboline Island and Horse Island are two small marine islands located approximately 500 m from the mainland at Dooneragh Point in Co. Sligo. The islands support short coastal grassland and are underlain by Carboniferous limestone, which is exposed at low tide as intertidal reef. The surrounding seas to a distance of 200m and an area of marine water between the two islands, where seabirds forage, bathe and socialise are included in the site.</p> <p>No Site-Specific threats were identified by the NPWS outside of the SPA boundary and there are no SSCO's for the site¹⁶.</p>	<p>Cormorant (<i>Phalacrocorax carbo</i>) [A017] Barnacle Goose (<i>Branta leucopsis</i>) [A045]</p>
Glenade Lough SAC	001919	14.73	<p>Glenade Lough is situated approximately 9 km north-west of Manorhamilton in Co. Leitrim. It is a relatively small lake situated on the upper reaches of the Bonet River and in a valley between the Arroo and Benbulbin Mountain ranges. The lough is underlain by Carboniferous limestone and shales. This confers a calcareous nature to the lake and the marginal vegetation. It is a naturally eutrophic lake, but although eutrophic, the system shows mesotrophic features - the water is clear, well aerated and relatively nutrient poor and the shoreline is stony or sandy. The lake has a maximum depth of 7.25 m. Some areas of surrounding wet grassland, marshes and fens are also included in the site. The main land use around the site is low to moderate intensity agriculture, mostly grazing. Some boating and fishing occur on the lake. These practices may cause minor disturbances or damage to the site.</p>	<p>Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Najas flexilis</i> (Slender Naiad) [1833]</p>

¹⁵ NPWS (2016) Conservation Objectives: Bunduff Lough and Machair/Trawalua/Mullaghmore SAC 000625. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

¹⁶ NPWS (2018) Conservation objectives for Ardboline Island and Horse Island SPA [004135]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

			Invasive species and forestry biocides are identified as pressures/threats for the SAC. There are no SSCO's prepared by the NPWS for the site ¹⁷ .	
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¹⁷ NPWS (2018) Conservation objectives for Glenade Lough SAC [001919]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

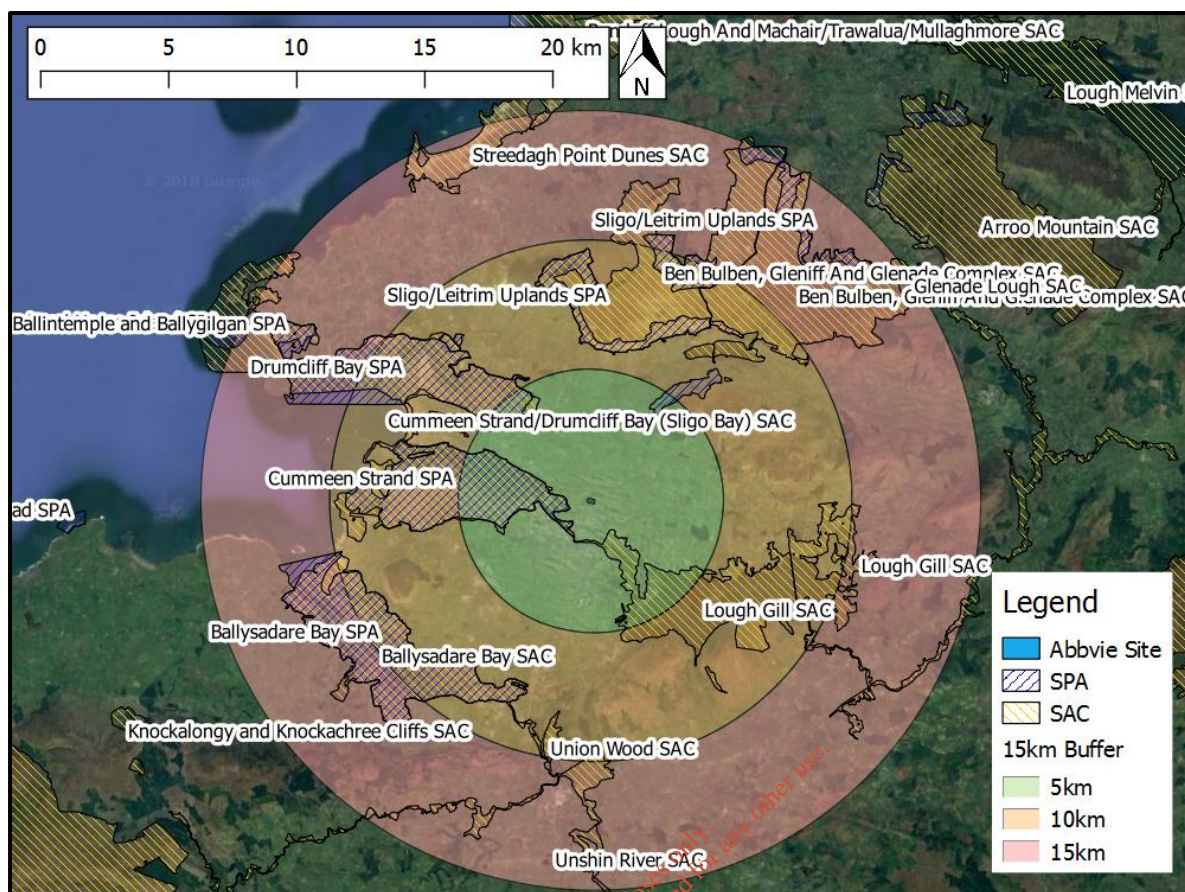


Figure 3.1 European sites within the 15km ZOI of the project area¹⁸

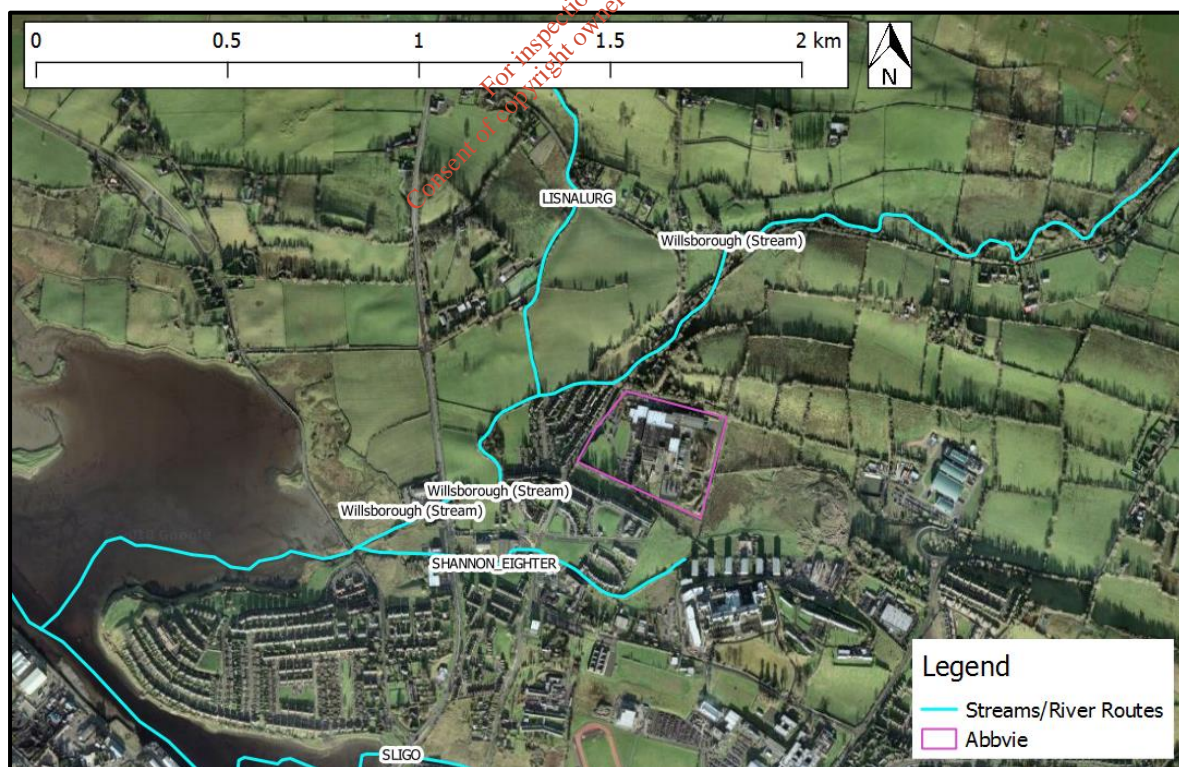


Figure 3.2 Map of River systems surrounding the AbbVie Facility

¹⁸ Source: NPWS (datasets downloaded October 2018)

3.3 Assessment Criteria

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

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

The primary purpose of the Industrial Emissions License is not the nature conservation management of the sites, but to allow industrial emissions from the Abbvie facility in Sligo. Therefore, the Industrial Emissions License is not considered by the Habitats Directive to be directly connected with or necessary to the management of European designated sites.

3.3.2 Elements of the Industrial Emissions License with Potential to Give Rise to Effects

The EPA Industrial Emissions License being sought is for Production of Pharmaceutical Products including intermediates. The technical documents identify four emission sources:

- NO₂
- Surface water
- Wastewater
- Noise

These four emission sources are considered with regard to each of the European Sites, their qualifying features and all relevant conservation objectives. The assessment is undertaken using the worst-case scenario model figures contained within the relevant attachments within the licence application information.

3.3.3 Identification of Potential Effects and Screening of Sites

This section documents the final stage of the screening process. It has used the information collected on the sensitivity of each European Site and describes any potential effects to the integrity of European Sites resulting from the Industrial Emissions License. This assumes the absence of any controls, conditions, or mitigation measures. In determining the potential for effects, a number of factors have been taken into account. Firstly, the sensitivity and reported threats to the European Site. Secondly, the individual elements of the Industrial Emissions License and the potential effect they may cause to the site were considered. The elements of the Industrial Emissions License with potential to cause effect to the integrity of European Sites are presented in Table 3.2 below.

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

- Where it can be shown that there are significant pathways such as hydrological links between activities of the Industrial Emissions License;
- Where the site is located at such a distance from Industrial Emissions License that effects are not foreseen; and
- Where it is that known threats or vulnerabilities at a site cannot be linked to potential impacts that may arise from the Industrial Emissions License.

Table 3.2 Screening of European Sites within 15 km of the Industrial Emissions License boundary

Name	Site Code	Distance [km]	Qualifying Interests & Special Conservation Interests Bookmark not defined. (Sensitive Receptors ¹⁹)	Potential effects (Sources of effects with regard to the qualifying interests, special conservation interests and/or conservation objectives of the European site)	Pathway for Significant Effects	Potential for In-Combination Effects
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	000627	0.71	Estuaries [1130]	<p>The habitat that is closest to the Abbvie site and therefore has the highest potential for effects are the estuary and mud/sandflats. The habitat is mixed sediment to sandy mud with <i>Hediste diversicolor</i> and an oligochaetes community complex. These are benthic worm species that form an integral part of the trophic web providing sustenance for a number of bird and fish species. Such as the grey plover (<i>Pluvialis squatarola</i>), the bar-tailed godwit (<i>Limosa lapponica</i>) and the curlew (<i>Numenius arquata</i>).</p> <p>The targets and attributes of the SSCO's relate to the maintenance of the structure and function of habitat and community dynamics. These habitat and community dynamics are vulnerable to direct interactions, and/or interactions with water quality and turbidity.</p> <p>There are hydrological pathways for potential effects, therefore further assessment is required.</p>	Yes	Unknown
			Mudflats and sandflats not covered by seawater at low tide [1140]			
			Embryonic shifting dunes [2110]			
			Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]			
			Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]			
			Juniperus communis formations on heaths or calcareous grasslands [5130]			

¹⁹ <https://www.npws.ie/sites/default/files/publications/pdf/Art17-Vol1-web.pdf>

Name	Site Code	Distance [km]	Qualifying Interests & Special Conservation Interests Bookmark not defined. (Sensitive Receptors ¹⁹)	Potential effects (Sources of effects with regard to the qualifying interests, special conservation interests and/or conservation objectives of the European site)	Pathway for Significant Effects	Potential for In-Combination Effects
			Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	These terrestrial habitats are outside of the Sligo estuary. They are sensitive to direct effects through management action, trampling, drainage, burning, encroachment etc. There are no sources for effects to the sensitivities of this QI.	No	No
			Petrifying springs with tufa formation (Cratoneurion) [7220]	Petrifying springs are lime-rich water sources that deposit tufa, a porous calcareous rock. These are defined by the chemical composition of the water and are typically groundwater fed. They are a freshwater habitat type. The petrifying spring is identified to be present along the northern coastal edge of the Sligo estuary. The bryophytes Palustriella commutata (Cratoneuron commutatum) and Eucladium verticillatum are diagnostic of this habitat (EC, 2007). Both are found at the location identified above. Water chemistry is currently unknown for this site. Characteristically, petrifying spring water has high values for pH, alkalinity and dissolved calcium and is oligotrophic (Lyons and Kelly, 2013). There are no hydrological pathways between the tufa as identified by the NPWS and the emissions from the Abbvie site due to the relative location and freshwater/groundwater dependents of the system.	No	No
			Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	This species is terrestrial is outside of the Sligo estuary. They are sensitive to direct effects through management action, trampling, drainage, etc. There are no sources for effects to the sensitivities of this QI. There are no hydrological pathways for effects and the odour dispersion models shows there will be no effects to the area identified for the QI in the SSCO	No	No
			Petromyzon marinus (Sea Lamprey) [1095]	This species is sensitive to changes in hydrological condition and direct land use management. Sea Lamprey have been recorded in the Garavogue River. However, the Abbvie site feeds into the Willsborough Stream which flows south westerly into the Sligo estuary. There is no hydrological connection to the Garavogue River. The odour dispersion models show there will be no emission from the site that will interact with the Garavogue River.	No	No
			Lampetra fluviatilis (River Lamprey) [1099]	This species is sensitive to changes in hydrological condition and direct land use management. River Lamprey have been recorded in the Garavogue River,	No	No

Name	Site Code	Distance [km]	Qualifying Interests & Special Conservation Interests Bookmark not defined. (Sensitive Receptors ¹⁹)	Potential effects (Sources of effects with regard to the qualifying interests, special conservation interests and/or conservation objectives of the European site)	Pathway for Significant Effects	Potential for In-Combination Effects
				and are also known from further upstream in the tributaries of Lough Gill further upstream of the Garavogue River. However, the Abbvie site feeds into the Willsborough Stream which flows south westerly into the Sligo estuary. There is no hydrological connection to the Garavogue River. The odour dispersion models show there will be no emission from the site that will interact with the Garavogue River.		
			Phoca vitulina (Harbour Seal) [1365]	There are no sources for direct effects to the species due to the emissions license. However, there are hydrological pathways for potential effects to the trophic structure of the estuary on which the bird species rely, so further investigation is required.	Yes	Unknown
Cummeen Strand SPA	004035	0.77	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Oystercatcher (Haematopus ostralegus) [A130] Redshank (Tringa totanus) [A162] Wetland and Waterbirds [A999]	There are no site-specific threats identified by the NPWS and the SSCO's identify targets and attributes related to population trends, distribution of species and habitat area. There are no sources for direct effects to the species due to the emissions license. However, there are hydrological pathways for potential effects to the trophic structure of the estuary on which the bird species rely, so further investigation is required.	Yes	Unknown
Lough Gill SAC	001976	1.16	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Austropotamobius pallipes (White-clawed Crayfish) [1092]	No Site-Specific threats were identified by the NPWS outside of the SAC boundary except continued urbanization and there are no SSCO's for the site ²⁰ . The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SAC.	No	No

²⁰ NPWS (2018) Conservation objectives for Lough Gill SAC [001976]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

Name	Site Code	Distance [km]	Qualifying Interests & Special Conservation Interests Bookmark not defined. (Sensitive Receptors ¹⁹)	Potential effects (Sources of effects with regard to the qualifying interests, special conservation interests and/or conservation objectives of the European site)	Pathway for Significant Effects	Potential for In-Combination Effects
			Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]			
Sligo/Leitrim Uplands SPA	004187	3.97	Peregrine (Falco peregrinus) [A103] Chough (Pyrrhocorax pyrrhocorax) [A346]	Sand/gravel extraction, geothermal power, camping and walking/cycling were identified pressures/threats in the standard data form for the site that persist outside of the SPA. There are no SSCO's for the site ²¹ . The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SPA.	No	No
Drumcliff Bay SPA	004013	4.14	Sanderling (Calidris alba) [A144] Bar-tailed Godwit (Limosa lapponica) [A157] Wetland and Waterbirds [A999]	Dispersal and fertilization are the 2 pressures/threats identified to occur outside of the SPA boundary in the standard data form. There are no further site-specific threats identified by the NPWS in the site synopsis and the SSCO's identify targets and attributes related to population trends, distribution of species and habitat area. The localised nature of effects from the proposed development (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SPA.	No	No
Ben Bulbin, Gleniff and Glencade Complex SAC	000623	5.65	Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachion vegetation [3260] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Alpine and Boreal heaths [4060]	No Site-Specific threats were identified by the NPWS outside of the SAC boundary except outdoor leisure and recreation and there are no SSCO's for the site. The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SAC.	No	No

²¹ NPWS (2018) Conservation objectives for Sligo/Leitrim Uplands SPA [004187]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

Name	Site Code	Distance [km]	Qualifying Interests & Special Conservation Interests Bookmark not defined. (Sensitive Receptors ¹⁹)	Potential effects (Sources of effects with regard to the qualifying interests, special conservation interests and/or conservation objectives of the European site)	Pathway for Significant Effects	Potential for In-Combination Effects
			<p>Juniperus communis formations on heaths or calcareous grasslands [5130]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]</p> <p>Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]</p> <p>Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]</p> <p>Transition mires and quaking bogs [7140]</p> <p>Petrifying springs with tufa formation (Cratoneurion) [7220]</p> <p>Alkaline fens [7230]</p> <p>Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]</p> <p>Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolia) [8120]</p> <p>Calcareous rocky slopes with chasmophytic vegetation [8210]</p> <p>Vertigo geyeri (Geyer's Whorl Snail) [1013]</p> <p>Lutra lutra (Otter) [1355]</p>			
Ballysadare Bay SPA	004129	7.40	<p>Light-bellied Brent Goose (Branta bernicla hrota) [A046]</p> <p>Grey Plover (Pluvialis squatarola) [A141]</p> <p>Dunlin (Calidris alpina) [A149]</p> <p>Bar-tailed Godwit (Limosa lapponica) [A157]</p> <p>Redshank (Tringa totanus) [A162]</p> <p>Wetland and Waterbirds [A999]</p>	<p>Continuous urbanization and fertilization are the only threats/pressures identified in the standard data form for the site outside of the site boundary. There are no additional site-specific threats identified by the NPWS in the site synopsis and the SSCO's identify targets and attributes related to population trends, distribution of species and habitat area.</p> <p>The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence</p>	No	No

Name	Site Code	Distance [km]	Qualifying Interests & Special Conservation Interests Bookmark not defined. (Sensitive Receptors ¹⁹)	Potential effects (Sources of effects with regard to the qualifying interests, special conservation interests and/or conservation objectives of the European site)	Pathway for Significant Effects	Potential for In-Combination Effects
				of a hydrological link ensures that there are no pathways for effects to the SPA.		
Ballysadare Bay SAC	000622	7.53	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Vertigo angustior (Narrow-mouthed Whorl Snail) [1014] Phoca vitulina (Harbour Seal) [1365]	Dune systems are sensitive to developments which alter their structure. Grazing is also a critical factor; the correct level of grazing maintains an open, species-rich sward, but the presence of too many grazers causes damage to the vegetation and may exacerbate dune erosion. Agricultural improvement, and particularly the application of fertilisers, threatens dune vegetation, leading to the eventual loss of species diversity. The targets and attributes of the SSCO's relate to the maintenance of the structure and function of habitat and community dynamics. The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SAC.	No	No
Union Wood SAC	000638	8.12	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	Invasive species and forestry pressures are the only threats/pressures identified in the standard data form outside of the SAC boundary. No additional Site-Specific threats were identified by the NPWS in the site synopsis and there are no SSCO's for the site. The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SAC.	No	No
Unshin River SAC	001898	8.44	Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410]	No Site-Specific threats were identified by the NPWS outside the SAC boundary except for forestry pressures and there are no SSCO's for the site. The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SAC.	No	No

Name	Site Code	Distance [km]	Qualifying Interests & Special Conservation Interests Bookmark not defined. (Sensitive Receptors ¹⁹)	Potential effects (Sources of effects with regard to the qualifying interests, special conservation interests and/or conservation objectives of the European site)	Pathway for Significant Effects	Potential for In-Combination Effects
			Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]			
Ballintemple and Ballygilgan SPA	004234	12.40	Barnacle Goose (<i>Branta leucopsis</i>) [A045]	No Site-Specific threats were identified by the NPWS outside of the SPA boundary and there are no SSCO's for the site. The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SPA.	No	No
Streedagh Point Dunes SAC	001680	12.86	Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	The main land uses within the site are sheep grazing and recreation, both of which have led to some erosion in the dunes, although in places grazing has maintained a short sward used by geese and Choughs for feeding. The targets and attributes of the SSCO's relate to the maintenance of the structure and function of habitat and community dynamics. The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SAC.	No	No
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	000625	14.49	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	The machair and dunes within this site are grazed by sheep and cattle. Amenity use close to Mullaghmore village is high, with fishing and shooting also occurring nearby. Bunduff Strand is a busy recreational beach and water sports are popular here. A sewage discharge at Thumb Rock may be having a deleterious effect on water quality and sediment communities. No Site-Specific threats were identified by the NPWS outside of the SAC boundary. The targets and attributes of the SSCO's relate to the maintenance of	No	No

Name	Site Code	Distance [km]	Qualifying Interests & Special Conservation Interests Bookmark not defined. (Sensitive Receptors ¹⁹)	Potential effects (Sources of effects with regard to the qualifying interests, special conservation interests and/or conservation objectives of the European site)	Pathway for Significant Effects	Potential for In-Combination Effects
			Humid dune slacks [2190] Machairs (* in Ireland) [21A0] Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Alkaline fens [7230] Euphydrys aurinia (Marsh Fritillary) [1065] Petalophyllum ralfsii (Petalwort) [1395]	the structure and function of habitat and community dynamics. The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SAC.		
Ardboline Island and Horse Island SPA	004135	14.70	Cormorant (Phalacrocorax carbo) [A017] Barnacle Goose (Branta leucopsis) [A045]	No Site-Specific threats were identified by the NPWS outside of the SPA boundary and there are no SSCO's for the site. The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SPA.	No	No
Glenade Lough SAC	001919	14.73	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] Austropotamobius pallipes (White-clawed Crayfish) [1092] Najas flexilis (Slender Naiad) [1833]	The main land use around the site is low to moderate intensity agriculture, mostly grazing. Some boating and fishing occur on the lake. These practices may cause minor disturbances or damage to the site. Invasive species and forestry biocides are identified as pressures/threats for the SAC. There are no SSCO's prepared by the NPWS for the site. The localised nature of effects from the emission license (detailed above) combined with the location and distance between the sites as well as the absence of a hydrological link ensures that there are no pathways for effects to the SAC.	No	No

3.4 Other Plans and Programmes

Article 6(3) of the Habitats Directive requires an assessment of a plan or project to consider other plans or programmes that might, in combinations with the plan or project, have the potential to adversely impact upon European Sites. Table 3.3 outlines projects within the surrounding area of the Abbvie site that were considered which may interact with the proposed Project to cause in-combination effects to European Sites.

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Table 3.3 Plans or projects within the ZOI of the Industrial Emissions License that may have in-combination effects

Plan or project	Status	Overview	Possible significant effects from plan or project	Possible significant in-combination effects	Risk of significant in-combination effects with the proposed Abbvie Project
Protogenia Ltd	Pending (Further Information Requested)	Development consisting of the change of use of 21 executive hotel apartments to student accommodation with minor internal alterations in a detached 3 storey block located to the rear of the Clayton Hotel with all associated site works. The development is located on the grounds and within the curtilage of Protected Structures	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	Changes to existing use demographic and minor internal alterations. These activities have no effects to ecological processes.
Abbvie Ireland NL BV	17/05/18	For development consisting of (a) Interna Interna alterations alterations to accommo accommodate an integrated ntegrated Bio-Chemical Chemical manufacturing manufacturing facility acility sized 3,46 sq m, within the existing Abbvie Ballytivnan building. (b) New roof mounted plant and Penthouse Louvres 1.8 high and removal of existing roof mounted equipment. (c) The construction of additional plant room internal mezzanines, sized 645 sq. m within the existing building and an externa single storey extension sized 20 sq. m and 9.6 metres high, located to the north of the existing facility. (d) A revised yard layout, located to the north of the existing facility, including a new single storey electrical room extension sized 155 sq. m and 7.1 metres high. (e) The enclosure of an existing walled yard area with a new roof and cladding, sized 150 sq. m to house chillers. (f) The addition of 4 no. new boiler flues, 17.5 metres high above ground level and 500 mm (f) The addition of 4 no. new boiler flues, 17.5 metres high above ground level and 500 mm diameter. (g) 2 no. new above-ground bunded waste water holding tanks, housed in a building sized 110 sq. m and 9m high, and associated tanker unloading area. (h) 2 no. bunded underground tanks housed in a building sized 75 sq. m and 4 metres high. (i) 3 no.	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These works are currently underway and there is a Construction Environmental Management Plan in place for the site. The existing construction work will be considered with regard to site drainage works and emissions licence for each site in stage 2.

		cooling towers 9 metres high. A nitrogen tank sized 8m high and 2m diameter, and an emergency generator and its associated diesel tank and its 10m high stack. (j) Site works include revised road and car parking layout, additional temporary contractor related car parking for 109 cars located to the east of the existing electrical substation. Underground and over-ground utilities, landscaping			
AbbVie Ireland NL BV	01/08/2014	Development consisting of a single storey clad building enclosure (322m ²) over the existing drum storage yard to the north west of facility, the new building is to match the existing drum store; construction of a new forklift access ramp and pedestrian access stairs to the rear (south) of the existing drum store and re-landscaping of the area; 3 no 3.8m wide x 15.2m long x 3.5m high storage container units installed adjacent and to the west of the existing drum store and all associated site works (this application relates to a development which comprises or is for the purposes of an activity requiring an Integrated Pollution Control License), all at the Manor Hamilton Road Pharmaceutical facility	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These development works are complete and form part of the AbbVie facility itself. The emissions from the site are being considered as a whole.
AbbVie Ireland	14/03/2014	(a) construction of a three storey lift extension (height 15.5 metres) to the existing Administration Building, (b) construction of 45sqm new office space in an existing void within the existing Production / Tableting Building, (c) construction of an external covered walkway to connect the Administration Building to the Tableting Building and the API Building, (d) ancillary works to include for the re-arrangement of carparking areas and site works associated with the above listed items at the ABBVIE IRELAND Pharmaceutical Campus	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These development works are complete and form part of the AbbVie facility itself. The emissions from the site are being considered as a whole.
AbbVie Ireland	14/03/2014	(a) alteration to part of the south façade of the Administration Building and (b) re-arrangement of carparking areas at the ABBVIE IRELAND Pharmaceutical Campus	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects	No	These development works are complete and form part of the AbbVie facility itself. The emissions from the site are being considered as a whole.

			etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.		
Dwelling Application	18/05/2013	The retention of development consisting of a single storey, ground floor extension to the rear of dwelling comprising a bedroom en-suite with toilet facility area = 39m2 and garden shed 9m2	This site is outside of designated areas so there will be no direct land take. This project is very small in scale so the effects to ecological processes are negligible.	No	
AbbVie Ireland NL B.V. (formerly Abbott Ireland)	12/04/2013	amendments and alterations to a previously permitted west extension to existing Production / Tableting Building (planning application reference No PL 12/51 refers)	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These development works are complete and form part of the Abbvie facility itself. The emissions from the site are being considered as a whole.
Abbott Ireland	23/05/2012	Alterations and extensions to 3 no buildings on the existing Abbott Ireland Pharmaceutical Campus	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These development works are complete and form part of the Abbvie facility itself. The emissions from the site are being considered as a whole.
Abbott Ireland	22/05/2012	Alterations and extensions to 3 no buildings on the existing Abbott Ireland Pharmaceutical Campus	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These development works are complete and form part of the Abbvie facility itself. The emissions from the site are being considered as a whole.
Abbott Ireland	13/03/2012	Construction of a single storey link approximately 301m2 in area (height 9.8 metres) with associated roof equipment located between the tableting building and the manufacturing building and minor elevational changes to the tableting building including an external lobby to the west approximately 7.4m2 in area (height 3.75 metres).	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These development works are complete and form part of the Abbvie facility itself. The emissions from the site are being considered as a whole.

Abbott Ireland	26/08/2010	Abbott Ireland whose principal place of business is at Ballytivnan, Sligo is applying to Sligo Borough Council for planning permission to demolish 5 No. dilapidated farm buildings on agricultural lands at Ballytivnan, Sligo to the east of the Abbott Ireland manufacturing plant at Ballytivnan, Sligo. The purpose of this planning application is to demolish the farm buildings without any other change to the site in order to prevent the buildings falling into further dereliction.	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These development works are complete and form part of the Abbvie facility itself. The emissions from the site are being considered as a whole.
Abbott Ireland Pharmaceutical Operation	09/07/2010	Extension of the existing Administration and Laboratory Building, Building 10 to both the west and east.	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These development works are complete and form part of the Abbvie facility itself. The emissions from the site are being considered as a whole.
Abbott Ireland Pharmaceutical Operations	02/07/2010	Abbott Ireland whose principal place of business is at Ballytivnan, Sligo, Co. Sligo is applying for planning permission to extend the existing Building 10 on its Pharmaceutical Operations site, Manorhamilton Road, located within the Ballytivnan & Rathbraughan townlands, Co. Sligo. The development will consist of an extension of the existing Administration and Laboratory Building, Building 10 to both the west and east.	This site is outside of designated areas so there will be no direct land take. There could be effects arising from construction effects such as noise, dust, water quality effects etc. This project was subject to its own EIA and AA assessments which deemed the site will not have significant effects on European Sites.	No	These development works are complete and form part of the Abbvie facility itself. The emissions from the site are being considered as a whole.

3.5 Conclusions

The likely effects that could arise from the Industrial Emissions License have been examined in the context of a number of factors that could potentially affect the integrity of any European Site. On the basis of the findings of this Screening for AA, it is concluded that the Industrial Emissions License:

- Is not directly connected with or necessary to the management of a European Site; and
- May have significant impacts on any European Site.

Therefore, applying the precautionary principle and in accordance with Article 6(3) of the Habitats Directive, a Stage 2 AA is required for the Industrial Emissions License (see Section 4 of this report).

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Section 4 Stage 2 Appropriate Assessment

4.1 Introduction

The main objective of the Stage 2 AA is to determine whether the Industrial Emissions License would result in significant adverse impacts on the integrity of any European Site with respect to the site's structure, function, and/or conservation objectives.

The Stage 1 Screening presented above has identified two European Sites with potential to be affected by the Industrial Emissions License (see Table 4.1). Therefore, taking a precautionary approach, Stage 2 AA is required. The potential adverse effects considered at this stage will either be effects occurring as a result of the implementation of the Industrial Emissions License alone or in-combination with other plans, programmes, and/or projects.

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

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

Table 4.1 European Sites potentially affected by the LAP

Site Code	European Site	Distance (km)
000627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	0.71
004035	Cummeen Strand SPA	0.77

4.2 Characterisation of European Sites Potentially Affected

The Appropriate Assessment Screening identified five European Sites with pathway receptors for potential from the implementation of the license. Therefore, it is necessary to characterize each of these sites and the sensitivities of their QIs, SCIs or their conservation objectives.

Table 4.2 characterizes each of the qualifying features of the two European Sites brought forward from Stage 1; in context of each of the sites' vulnerabilities. Each of these site characterisations were taken from the NPWS website²².

²² NPWS (2016), last accessed 14th January 2019; <https://www.npws.ie/protected-sites>

Table 4.2 Characterisation of the QIs/SCIs potentially affected from the European Sites brought forward from stage 1 by the Industrial Emissions License

Site Code	Site Name	Distance (km)	Qualifying features (Qualifying Interests or Special Conservation Interests)	Site Characteristics
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	000627	0.71	Estuaries [1130]	<p>This large coastal site extends from Cullamore in the north-west to Killaspug in the south-west, and from Sligo town in the south-east to Drumcliff village in the northeast. It encompasses two large, shallow bays, Drumcliff Bay and Sligo Harbour, and both Ardboline and Horse Island. Sand dunes and sand hills at Rosses Point, Killaspug, Yellow Strand and Coney Island are included, as are grasslands at Ballintemple and Ballygilgan (Lissadell), along with a variety of other habitats such as woodland, saltmarsh, sandy beaches, boulder beaches, shingle, fen, freshwater marshes, rocky sea cliffs and lakes. The site is largely underlain by Carboniferous limestone, but acidic rocks are also found on the Rosses Point peninsula. At Serpent Rock in the north-western section of the site the most complete section of the northwestern Carboniferous strata is exposed. Here are found an excellent series of fossilised corals which, in some strata, stand out from the rock matrix.</p> <p>The habitat that is closest to the Abbvie site and therefore has the highest potential for effects are the estuary and mud/sandflats. The habitat is mixed sediment to sandy mud with <i>Hediste diversicolor</i> and an oligochaetes community complex. These are benthic worm species that form an integral part of the trophic web providing sustenance for a number of bird and fish species. Such as the grey plover (<i>Pluvialis squatarola</i>), the bar-tailed godwit (<i>Limosa lapponica</i>) and the curlew (<i>Numenius arquata</i>).</p> <p>The targets and attributes of the SSCO's relate to the maintenance of the structure and function of habitat and community dynamics. These habitat and community dynamics are vulnerable to direct interactions, and/or interactions with water quality and turbidity.</p>
			Mudflats and sandflats not covered by seawater at low tide [1140]	
			Phoca vitulina (Harbour Seal) [1365]	
Cummeen Strand SPA	004035	0.77	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]	<p>There are no site-specific threats identified by the NPWS and the SSCO's identify targets and attributes related to population trends, distribution of species and habitat area.</p> <p>There are no sources for direct effects to the species due to the emissions license. However, there are hydrological pathways for potential effects to the trophic structure of the estuary on which the bird species rely, so further investigation is required.</p>

4.3 Identifying and Characterising Potential Significant Effects

The following parameters are described when characterising impacts (following guidance from the Chartered Institute of Ecology and Environmental Management, Environmental Protection Agency and National Roads Authority):

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

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

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

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

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

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

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

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

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

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

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

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

Generic Conservation Objectives for cSACs have been provided as follows:

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

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

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

EC guidance²³ outlines the types of effects that may affect European sites. These include effects from the following activities:

- Land take
- Resource Requirements (Drinking Water Abstraction Etc.)
- Emissions (Disposal to Land, Water or Air)
- Excavation Requirements
- Transportation Requirements
- Duration of Construction, Operation, Decommissioning

In addition, the guidance outlines the following likely changes that may occur at a designated site, which may result in effects on the integrity and function of that site:

- Reduction of Habitat Area
- Disturbance to Key Species
- Habitat or Species Fragmentation
- Reduction in Species Density
- Changes in Key Indicators of Conservation Value (Water Quality Etc.)
- Climate Change

The elements detailed above were considered with specific reference to each of the European sites identified in Section **Error! Reference source not found..**

4.3.1 Land Take

There will be no direct land take due to the granting of the license as the license only relates to industrial emissions and there are no works outside of the boundary of the Abbvie Facility.

4.3.2 Resource Requirements (Drinking Water Abstraction Etc.)

The resource requirements are consistent with the existing condition of the site and there are no sources for effects to resource requirements due to the emission licensing process.

4.3.3 Emissions (Disposal to Land, Water or Air)

The odour dispersion models show that the annual average mean NO₂ emissions from the site will be less than 0.03 ug/m³ at the SAC boundary (Figure 2.2). The average background NO₂ levels for the area was shown to be 13ug/m³ (Table 2.1). NO₂ can cause eutrophication; however harmful rates of nitrogen deposition from the atmosphere for aquatic systems are known to be above 300 ug/m³ annually. Also, the Critical level for the protection of vegetation 30 µg/m³ NO + NO₂^{24,25,26}. Therefore, the AWN model provides sufficient evidence to support that there are no significant effects of the NO₂ emissions identified.

²³ Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission Environment DG, 2001

²⁴ Aherne, J., Henry, J., and Wolniewicz, M. (2017). Development of critical loads for Ireland: Simulating impacts on systems (SIOS). EPA Research Report 2008-CCRP-4.1a. Prepared for the Environmental Protection Agency by Trent University. March 2017. ISBN: 978-1-84095-677-1.

²⁵ Dobben, H. V., Bobbink, R., Bal, D. & Hinsberg, A. V. (2013) Overview of critical loads for nitrogen deposition for Natura 2000 habitat types occurring in The Netherlands. Available at: http://jncc.defra.gov.uk/pdf/airpol_nitroworkshop_CLhabitatsreport_Alterra2488.pdf

²⁶ APIS (2018). Air Pollution Information System. Available online at www.apis.ac.uk Accessed 20th September 2018.

4.3.4 Excavation Requirements

There are no on-site works being conducted in relation to the emission license, the previously granted works at the Abbvie site are being conducted under a Construction Environmental Management Plan (CEMP) to ensure there are no adverse effects of the works on the surrounding environment. This project was subject to its own AA and Environmental Impact processes which included ecological considerations. There are no sources for effects to excavation works due to the emissions license.

4.3.5 Transportation Requirements

The supporting documents for the emission license do not identify dust to be part of the emission license process. However, the delivery of raw materials to the Abbvie Facility were considered in the EIAR for the planning application to extend the existing facility. This application included a detailed Dust Control Management Plan. Traffic related dust is known to be high in contaminants such as zinc. Given the scale of the site, and the level of traffic anticipated, and the distances involved the potential interactions with ecological processes are negligible.

4.3.6 Duration of Construction, Operation, Decommissioning

There are no construction or decommissioning phases associated with the license application. The license term is indefinite and will persist as long as the facility is in operation within the terms of the licence.

4.3.7 Reduction of Habitat Area

There are no direct sources for the reduction of habitat area from the emission licence. The changes in key indicators of conservation value give further detail in regard to aquatic habitats and their sensitivities (see below).

4.3.8 Disturbance to Key Species

The noise emission values detailed in the supporting documents indicate that the max noise will be below the normal day, evening and night time noise criteria. Given the low level of noise emissions and the distances between the site and the closest European Site (0.71km) there are no disturbance effects identified from the emission licence.

4.3.9 Habitat or Species Fragmentation or Reduction in Species Density

There are no direct sources for the fragmentation of habitat, species distributions or densities from the emission licence. The changes in key indicators of conservation value give further detail in regard to aquatic habitats and their sensitivities (see below).

4.3.10 Changes in Key Indicators of Conservation Value (Water Quality Etc.)

Key indicators of conservation value relevant to this emissions licence are water quality. Wastewater from the site will go to Sligo WWTP. The main issue at the Sligo WWTP as identified in the 2017 AER for the facility is Total Phosphorus which is consistent with most facilities across Ireland. The Total Phosphorous concentration of the wastewater discharge from the AbbVie facility is anticipated to be 68 mg/L which, once diluted with the rest of the hydraulic load of the Sligo WWTP (at a dilution factor of 0.0096), will contribute 0.019 mg /L to the total influent to the facility. Irish Water have advised that the receiving wastewater system will have the capacity to accept the proposed discharge. Therefore, there will be no changes to water quality due to wastewater.

Surface water is managed on site through a SUDS scheme which has existing hydrocarbon interceptors. However, three of the four existing interceptors are proposed to be upgraded:

- The interceptor prior to Emission Point SW1 will be upgraded to a BMS Class 1 By Pass Separator PB7. Nominal Size 76 litres/sec. Oil storage capacity 1140 litres.
- The interceptor prior to Emission Point SW2 will be upgraded to a BMS Class 1 By Pass Separator PB3. Nominal Size 16 litres/sec. Oil storage capacity 245 litres.
- The interceptor prior to Emission Point SW3 will be upgraded to a BMS Class 1 By Full Retention Separator PF3. Nominal Size 5.3 litres/sec. Capacity 2000 litres. Oil storage capacity 56 litres.
- The fourth interceptor is no longer required and has therefore been removed from the site.

In addition, it is proposed that a new Class 1 Full Retention Separator will be installed adjacent to the new diesel tank loading bay. The size of the interceptor will be 2000 L with an oil storage capacity of 56L which is sufficient to retain hydrocarbons that may be regularly entrained in the stormwater at this area. The loading bay itself is bunded and equipped with a retention sump. The retention sump (Monitoring Point SW3a) will be equipped with a built-in level switch and an oil detector which will shut off the pump and cease the discharge to the stormwater drain should a major fuel spill in the loading bay be detected.

The new interceptors will be installed following the existing CEMP for the site extension works in the previous planning application granted in May 2018 (details above). The existing interceptors are maintained through a weekly maintenance policy in accordance with manufacturer specification. In addition to this the interceptors are all equipped with threshold alarms to ensure they are maintained to within their capacity. These protocols will ensure the surface water run-off is maintained at its current condition.

4.3.11 Climate Change

Due to the nature and scale of the AbbVie Facility and the odour emissions are restricted to NO₂, its effects of the proposed development on climate and Ireland's obligations under the Kyoto Protocol are not anticipated to be significant.

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Table 4.3 Characterisation of Potential Effects (on QIs/SCIs of the European Sites brought forward from Stage 1) arising from the Industrial Emissions License

Site Code	Site Name	Distance (km)	Qualifying features (Qualifying Interests or Special Conservation Interests)	Characterization of Potential Effects ²⁷	Potential Significant Effects	Mitigation Required
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	000627	0.71	<p>Estuaries [1130]</p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Phoca vitulina (Harbour Seal) [1365]</p>	<p>The habitat that is closest to the Abbvie site and therefore has the highest potential for effects are the estuary and mud/sandflats. The habitat is mixed sediment to sandy mud with <i>Hediste diversicolor</i> and an oligochaetes community complex. These are benthic worm species that form an integral part of the trophic web providing sustenance for a number of bird and fish species. Such as the grey plover (<i>Pluvialis squatarola</i>), the bar-tailed godwit (<i>Limosa lapponica</i>) and the curlew (<i>Numenius arquata</i>).</p> <p>The targets and attributes of the SSCO's relate to the maintenance of the structure and function of habitat and community dynamics. These habitat and community dynamics are vulnerable to direct interactions, and/or interactions with water quality and turbidity.</p> <p>There are hydrological pathways for potential effects, therefore further assessment is required. There are 4 emission sources:</p> <ul style="list-style-type: none"> • NO₂ • Wastewater • Noise • Surface Water <p>The odour dispersion models show that the annual average mean NO₂ emissions from the site will be less than 0.03 ug/m³ at the SAC boundary (Figure 2.2). The average background NO₂ levels for the area was shown to be 13ug/m³ (Table 2.1). NO₂ can cause eutrophication; however harmful rates of nitrogen deposition from the atmosphere for aquatic systems are known to be above 300 ug/m³ annually^{28,29,30}.. Also, the Critical level for the protection of vegetation 30 µg/m³ NO + NO₂. Therefore, the AWN model provides sufficient evidence to support that there are no significant effects of the NO₂ emissions identified.</p> <p>The wastewater for the site will be treated by the Sligo County Council Waste Water Treatment facility which has capacity to take the loadings indicated within</p>	Yes	Yes

²⁷ NPWS (2013). The Status of Protected EU Habitats and Species in Ireland. Overview Volume 1. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

²⁸ Aherne, J., Henry, J., and Wolniewicz, M. (2017). Development of critical loads for Ireland: Simulating impacts on systems (SIOS). EPA Research Report 2008-CCRP-4.1a. Prepared for the Environmental Protection Agency by Trent University. March 2017. ISBN: 978-1-84095-677-1.

²⁹ Dobben, H. V., Bobbink, R., Bal, D. & Hinsberg, A. V. (2013) Overview of critical loads for nitrogen deposition for Natura 2000 habitat types occurring in The Netherlands. Available at: http://jncc.defra.gov.uk/pdf/airpol_nitroworkshop_CLhabitatsreport_Alterra2488.pdf

³⁰ APIS (2018). Air Pollution Information System. Available online at www.apis.ac.uk Accessed 20th September 2018.

				<p>the documents. The main issue at the Sligo WWTP as identified in the 2017 AER for the facility is Total Phosphorus which is consistent with most facilities across Ireland. The Total Phosphorous concentration of the wastewater discharge from the AbbVie facility is anticipated to be 68 mg/L which, once diluted with the rest of the hydraulic load of the Sligo WWTP (at a dilution factor of 0.0096), will contribute 0.019 mg /L to the total influent to the facility. Irish Water have advised that the receiving wastewater system will have the capacity to accept the proposed discharge. Therefore, there will be no effects to the SAC.</p> <p>The habitats are not sensitive to noise. The noise emission figures identified in the technical documents are of very low Leq. The attenuation of sound in air and the distances involved ensure that there is no significant effect of noise on the species.</p> <p>Surface water effects from storm waters and accidental spillage are identified within the emission license documentation. All chemical storage areas must be banded to at least 110% capacity. A full list of chemicals and their hazard statements is included in Attachment 4-6-2 of this IE license application. The existing site also has temporary construction underway, which is being managed through a CEMP to ensure site works will not introduce chemicals into the surrounding watercourse through the surface water drainage system. The installation and upkeep of hydrocarbon interceptors at all point sources from the site. These measures will ensure that surface water interactions will not adversely affect the ecological integrity of the site. Monitoring will be undertaken, and reports will be sent to the EPA to ensure the parameters of the license are adhered to annually. Hydrocarbon interceptors are used to settle suspended solids and carbon compounds such as oils through a series of settlement tanks which need to be checked and maintained³¹. The hydrocarbon interceptors will ensure that the turbidity and chemical composition of the Willsborough Stream is maintained.</p>		
Cummeen Strand SPA	004035	0.77	<p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]</p>	<p>There are no site-specific threats identified by the NPWS and the SSCO's identify targets and attributes related to population trends, distribution of species and habitat area.</p> <p>There are no sources for direct effects to the species due to the emissions license. However, there are hydrological pathways for potential effects to the trophic structure of the estuary on which the bird species rely, so further investigation is required. There are 4 emission sources:</p> <ul style="list-style-type: none"> • NO₂ • Wastewater • Noise • Surface Water 	Yes	Yes

³¹<https://www.dublincity.ie/sites/default/files/content/WaterWasteEnvironment/WasteWater/Drainage/GreaterDublinStrategicDrainageStudy/Documents/Vol%203%20-%20Appendix%20E%20Oil%20Interceptors.pdf>

				<p>The odour dispersion models show that the annual average mean NO₂ emissions from the site will be less than 0.03 ug/m³ at the SAC boundary (Figure 2.2). The average background NO₂ levels for the area was shown to be 13ug/m³ (Table 2.1). NO₂ can cause eutrophication; however harmful rates of nitrogen deposition from the atmosphere for aquatic systems are known to be above 300 ug/m³ annually³²³³³⁴. Also, the Critical level for the protection of vegetation 30 µg/m³ NO + NO₂. Therefore, the AWN model provides sufficient evidence to support that there are no significant effects of the NO₂ emissions identified.</p> <p>The wastewater for the site will be treated by the Sligo County Council Waste Water Treatment facility which has capacity to take the loadings indicated within the documents. The main issue at the Sligo WWTP as identified in the 2017 AER for the facility is Total Phosphorus which is consistent with most facilities across Ireland. The Total Phosphorous concentration of the wastewater discharge from the AbbVie facility is anticipated to be 68 mg/L which, once diluted with the rest of the hydraulic load of the Sligo WWTP (at a dilution factor of 0.0096), will contribute 0.019 mg /L to the total influent to the facility. Irish Water have advised that the receiving wastewater system will have the capacity to accept the proposed discharge. Therefore, there will be no effects to the SAC.</p> <p>The habitats are not sensitive to noise. The noise emission figures identified in the technical documents are of very low Leq. The attenuation of sound in air and the distances involved ensure that there is no significant effect of noise on the species.</p> <p>Surface water effects from storm waters and accidental spillage are identified within the emission license documentation. All chemical storage areas must be bonded to at least 110% capacity. A full list of chemicals and their hazard statements is included in Attachment 4-6-2 of this IE license application. The installation and upkeep of hydrocarbon interceptors at all point sources from the site. These measures will ensure that surface water interactions will not adversely affect the ecological integrity of the site. Monitoring will be undertaken, and reports will be sent to the EPA to ensure the parameters of the license are adhered to annually. The hydrocarbon interceptors will ensure that the turbidity and chemical composition of the Willsborough Stream is maintained.</p>		
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³² Aherne, J., Henry, J., and Wolniewicz, M. (2017). Development of critical loads for Ireland: Simulating impacts on systems (SIOS). EPA Research Report 2008-CCRP-4.1a. Prepared for the Environmental Protection Agency by Trent University. March 2017. ISBN: 978-1-84095-677-1.

³³ Dobben, H. V., Bobbink, R., Bal, D. & Hinsberg, A. V. (2013) Overview of critical loads for nitrogen deposition for Natura 2000 habitat types occurring in The Netherlands. Available at: http://jncc.defra.gov.uk/pdf/airpol_nitroworkshop_CLhabitatsreport_Alterra2488.pdf

³⁴ APIS (2018). Air Pollution Information System. Available online at www.apis.ac.uk Accessed 20th September 2018.

Section 5 Mitigation Measures

This section outlines measures that need to be incorporated into the Industrial Emissions License in order to mitigate against potential effects to European Sites as identified above.

In order to demonstrate that there will be no adverse effects from the implementation of the License particulars, mitigation measures have been devised to be incorporated into running and design of the AbbVie Facility. Attachment 9.1 of the supporting documents of the License application details the Environmental management techniques to be used to reduce or avoid potential effects to the environment.

5.1 Mitigation Policies and procedures relevant to European Sites and the potential effects identified

In order to minimise any impact on the underlying sunken strata from material spillages, chemical storage tanks will be fully bunded in designated areas with an impervious loading area. Bunding will be to a volume in compliance with EPA standards.

Measures are in place in accordance with BAT for the Manufacture of Organic Fine Chemicals and BAT for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. As part of the design of the facility the project engineers have identified several measures designed to limit emission sources, improve integrity of process equipment and connections etc. Commissioning will be completed by vendors as part of the project – this will be overseen by suitably qualified engineers to ensure the required performance criteria are achieved. IPA, DMA, DMSO and other volatile organic solvents used in production, as well as printing solvents used in the medical devices' facility, will be stored internally in sealed bottles (and sealed wipes packaging) until used.

Measures are in place in accordance with BAT for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. Stormwater drains and wastewater drains are segregated. Uncontaminated rainwater is collected and discharged to the municipal storm water sewer rather than to foul sewer. Wastewater will be discharged after flow balancing, temperature control, and pH neutralization to ensure no impacts on the sewer network. The main issue at the Sligo WWTP as identified in the 2017 AER for the facility is Total Phosphorus which is consistent with most facilities across Ireland. The Total Phosphorous concentration of the wastewater discharge from the AbbVie facility is anticipated to be 68 mg/L which, once diluted with the rest of the hydraulic load of the Sligo WWTP (at a dilution factor of 0.0096), will contribute 0.019 mg /L to the total influent to the facility. Irish Water have advised that the receiving wastewater system will have the capacity to accept the proposed discharge.

Control of noise has been considered as part of the design of the new facility. Where practical, external plant layout has utilised barrier screening of on-site buildings, low noise generating plant items such as attenuated cooling towers have been selected and noisy plant items have been located within buildings. Proposed AHUs will be internal and therefore do not require additional abatement. Noise levels at the existing facility have also been reduced through the removal of operational noise sources from Abbott owned equipment. In particular, the sterilization equipment which had been previously identified as an undesirable noise source. The Abbott owned equipment was removed between January 2018 and May 2018. Solid Waste Minimization AbbVie is committed to minimizing the environmental impact of its operations and the proposed waste management process for the facility is considered an essential and integral component in the efficient operation of the facility. AbbVie will seek to meet the intent of the waste management hierarchy.

An EMS will be developed for the facility as required under the IE Licence. The purpose of the EMS is to identify the environmental objectives and targets and action plans which have been created by the Health, Safety and Environmental Manager. It is AbbVie policy that this will contain waste-reduction goals and employees who can significantly affect the achievement of these goals will be notified.

AbbVie's EHS and Energy Sustainability Long Range Plan 2017-2020 sets out waste disposal reduction targets to reduce the total amount of hazardous waste and nonhazardous waste generated, as well as tactics for achieving these targets matched with a relevant person responsible for that tactic. AbbVie currently operates a Zero Waste to Landfill site and it committed to maintaining this performance. The facility also tracks waste-reduction progress. The entire production process has been designed with waste reduction in mind. The raw materials used in the bio-chemical pharmaceutical products to be produced at the site are extremely valuable therefore the minimization of waste is crucial to the commercial success of the site.

Surface water is managed on site through a SUDS scheme which has existing hydrocarbon interceptors. However, three of the four existing interceptors are proposed to be upgraded:

- The interceptor prior to Emission Point SW1 will be upgraded to a BMS Class 1 By Pass Separator PB7. Nominal Size 76 litres/sec. Oil storage capacity 1140 litres.
- The interceptor prior to Emission Point SW2 will be upgraded to a BMS Class 1 By Pass Separator PB3. Nominal Size 16 litres/sec. Oil storage capacity 245 litres.
- The interceptor prior to Emission Point SW3 will be upgraded to a BMS Class 1 By Full Retention Separator PF3. Nominal Size 5.3 litres/sec. Capacity 2000 litres. Oil storage capacity 56 litres.
- The fourth interceptor is no longer required and has therefore been removed from the site.

In addition, it is proposed that a new Class 1 Full Retention Separator will be installed adjacent to the new diesel tank loading bay. The size of the interceptor will be 2000 L with an oil storage capacity of 56L which is sufficient to retain hydrocarbons that may be regularly entrained in the stormwater at this area. The loading bay itself is bunded and equipped with a retention sump. The retention sump (Monitoring Point SW3a) will be equipped with a built-in level switch and an oil detector which will shut off the pump and cease the discharge to the stormwater drain should a major fuel spill in the loading bay be detected. The interceptors are strategically placed within a SUDS design (see associate drawing for further details) to ensure all surface water from the site will be diverted through an interceptor. All of the new interceptors are all equipped with threshold alarms to ensure they are maintained to within their capacity; weekly inspections of the manholes at Monitoring Points SW1a, SW2a and SW3b will be completed as a minimum. These protocols will ensure the surface water runoff is maintained at its current condition and the surface water quality will not exceed the Environmental Quality Standards as set out in SI 272 of 2009 and SI 386 of 2015 (Surface Water Regulations).

5.2 Residual effects

There are no residual effects identified to the ecological integrity of European Sites given the successful implementation of the mitigation measures specified above.

Section 6 Conclusion

Stage 1 Screening and Stage 2 AA has been carried out. The implementation of the Industrial Emissions License would have the potential to result in effects to the integrity of any European Sites, if unmitigated.

The risks to the safeguarding and integrity of the qualifying interests, special conservation interests and conservation objectives of the European Sites have been addressed by the inclusion of mitigation measures that will prioritise the avoidance of effects in the first place and mitigate effects where these cannot be avoided.

In-combination effects from interactions with other plans and projects were considered in the assessment and the mitigation measures incorporated into the Industrial Emission License allow a conclusion to be arrived at that there will be no significant adverse effects as a result of the implementation of the License either alone or in-combination with other plans/projects.

Having incorporated mitigation measures, it is concluded that the Industrial Emissions License will not give rise to any effect on the ecological integrity of any European sites, alone or in combination with other plans or projects³⁵. This evaluation is made in view of the conservation objectives of the habitats or species for which these sites have been designated.

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³⁵ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:

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