N63 Liss to Abbey Realignment Scheme

Natura Impact Statement

Galway County Council

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For: AECOM/ROD

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1 Appropriate Assessment

1.1 Introduction

This Stage 2 Appropriate Assessment (AA) (Natura Impact Statement (NIS)) is used to determine whether the Proposed Road Development at Abbeyknockmoy, Co. Galway would adversely affect the integrity of the only Natura 2000 site where likely significant effects could not be dismissed: Lough Corrib Special Area of Conservation (SAC). This involved the identification of potential adverse effects on the integrity of the SAC through impacts and effects on habitats and or species which form the qualifying interests of the Natura 2000 site. This report assesses the significance of potential effects on their conservation status with a view to concluding whether the integrity of the SAC will be adversely affected by the Proposed Road Development. Negative impacts on the integrity of these habitats or species will require the implementation of avoidance or mitigation measures to avoid progression to Stages 3 and 4 of the Appropriate Assessment Process as defined by the Planning and Development Acts 2000 to 2021.

1.2 Authors' Statement of Authority

Flynn Furney Environmental Consultants have 20 plus years of experience in ecological surveying and management. We have detailed knowledge on the principles and implementation of both Irish and European environmental legislation. We have worked closely with statutory bodies including the National Parks and Wildlife Service and Waterways Ireland on habitat management and protection projects. Other expertise includes Ecological Impact Assessment, Habitat and Floral Surveys, Bird Surveying, Bat Surveying, Fish and Waterways Surveys.

Billy Flynn (BSc, MSc (Agr.), H.Dip, Dip Ind., MIBiol, MCIEEM, MIEnvSc. CEnv.) is an Ecologist and Chartered Environmental Scientist. A native of Co. Monaghan, he was educated in London, Madrid and Dublin. He has over 20 years of experience in environmental science and engineering. He has worked on the survey, ecological design and construction supervision of most of Ireland's motorway projects. He has worked on the planning and design of national roads, greenways and light rail as well as constructed wetlands and parkland biodiversity areas.

Ian Douglas (MSc, BSc, H Cert.Ag) an Ecologist and Agri-environmental Consultant specialising in appropriate assessment, ecological impact assessment, habitats classification, soil science, GIS mapping and regenerative agriculture. Ian has worked on projects including large road developments, power infrastructure projects, planning and design of nature trails, constructed wetland creation and on farm habitat development.

Seán Meehan BSc ((Hons) MSc ACIEEM) is an Ecologist and Associate member of the Chartered Institute of Ecological and Environmental Management (CIEEM) and has worked in environmental consultancy for eight years. He holds a BSc in Agricultural and Environmental Science (UCD) and a MSc in Biological Recording (University of Birmingham, UK). Seán is an independent ecologist providing ecological consultancy on projects including compiling biodiversity chapters for EIARs, Appropriate Assessment screenings, NIS and EcIA report compilation, ecological clerk of works (ECoW) on sites and general habitat and fauna surveys. Seán has also undertaken badger sett exclusion and crayfish translocation (all under NPWS licence).

Usna Keating (B.Sc., M.Sc., M.Res.) is an experienced on-site ecologist who has worked on many large infrastructure projects in challenging environments. He has also worked with universities, state agencies and NGO's and has published a number of scientific research papers, which have primarily focused on bird conservation. He undertook a masters by research in University College Cork, which explored the relationship between afforestation and bird conservation in Ireland, and made recommendations to the Department of Agriculture, Food and The Marine, on Ireland's afforestation policy, to promote biodiversity retention. Usna also worked on an EU Life Project in Biebrzanski National Park, Poland.

1.3 Legislative Context and Overall Assessment Methodology

As outlined in Section 2 of the Stage 1 AA Screening Report, Article 6 of the Habitats Directive sets out provisions, which govern the conservation, and management of Natura 2000 sites. Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). 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 and 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 implication 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*".

Where the competent authority cannot definitively rule out adversely affecting the integrity or the conservation objectives of the site or sites concerned, a Stage 2 Appropriate Assessment and preparation of a Natura Impact Statement is then required. Table 2-2 provides a list of all Qualifying Interests (QI's) and whether they passed the Test of Likely Significant Effects (Screening). The processes for this are set out under Articles 6(3) and 6(4) of the Habitats Directive and are commonly referred to as 'Appropriate Assessments' (which in fact refers to Stage 2 in the sequence under the Habitats Directive Article 6). This provision was transposed into Irish law by Part XAB of the Planning and Development Acts 2000 to 2021. Section 177U (4) of the said Acts provides for screening for Appropriate Assessment as follows:

"*The competent authority shall determine that an appropriate assessment of a proposed development is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site*."

Where the competent authority deems that impacts could not be definitively ruled out, a Natura Impact Statement (NIS) is then required. Section 177T(1) and (2) provide for an NIS as "*a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites*" and specifies that it "*shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European site in view of the conservation objectives of the site or sites*".

The European Court of Justice has made a number of relevant rulings in relation to when an Appropriate Assessment is required and its purpose: "*Any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects*" and that the plan or project may only be authorised "*where no reasonable scientific doubt remains as to the absence of such effects*".

A list of relevant ruling are provided below:

Table 1-1: Case law relevant to the AA screening for the Proposed Road Development

Case	Ruling
People Over Wind and Sweetman v Coillte Teoranta (C-323/17)	The ruling of the CJEU in this case requires that any conclusion of 'no Likely Significant Effect' on a European site must be made prior to any consideration of measures to avoid or reduce harm to the European site. The determination of Likely Significant Effects should not, in the opinion of the CJEU, constitute an attempt at detailed technical analyses. This should be conducted as part of the AA.
Waddenzee (C-127/02)	The ruling in this case clarified that AA must be conducted using best scientific knowledge, and that there must be no reasonable scientific doubt in the conclusions drawn. The Waddenzee ruling also provided clarity on the definition of 'significant effect', which would be any effect from a plan or project which is likely to undermine the conservation objectives of any European site.
Holohan and Others v An Bord Pleanála (C-461/17)	The conclusions of the Court in this case were that consideration must be given during AA to: ▪ effects on qualifying habitats and/or species of a SAC or SPA, even when occurring outside of the boundary of a European site, if these are relevant to the site meeting its conservation objectives; and, ▪ effects on non-qualifying habitats and/or species on which the qualifying habitats and/or species depend, and which could result in adverse effects on the integrity of the European site.
T.C Briels and Others v Minister van Infrastructuur en Milieu (C-521/12)	The ruling of the CJEU in this case determined that compensatory measures cannot be used to support a conclusion of no adverse effect on site integrity.

In addition, in a Judicial Review in Irish High Court in the case of Kelly v An Bord Pleanála & Anor, it was ruled that Sustainable Drainage Systems (SuDS) which form a part of the design of a development can be considered an integral part of the development and:

- are not measures that are intended to avoid or reduce the harmful effects of a particular development on a European site;
- are not intended to have that effect as they are required to comply with other relevant policies and legislation, including the Water Framework Directive and associated water quality Directives and Regulations; and,
- are not required to be incorporated by reason of the potential effect of a development on a European site. The court concluded "*as a matter of fact and law, that SuDS are not mitigation measures which a competent authority is precluded from considering at the* [AA] *screening stage*".

The European Court of Justice has also made a relevant ruling on what should be contained within an Appropriate Assessment: "[The Appropriate Assessment] *cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned*" (Case C-127/02, Waddenvereniging and Vogelbeschermingvereniging, paragraphs 52 – 61).

An AA screening was completed by Galway County Council (Galway County Council, 2019) for this Proposed Road Development. A copy of which can be seen in Appendix II. Their determination concluded that the likelihood of significant effects upon some the qualifying interests of the Lough Corrib SAC could not be definitely ruled out at screening stage. The qualifying interests upon which the test of likely significance failed are as follows:

Annex I Habitats

- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]
- Petrifying springs with tufa formation (Cratoneurion) [7220]

Annex II Species

- *Lutra lutra* (Otter) [1355]
- *Salmo salar* (Salmon) [1106
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]

Risk of significant impacts to the conservation objectives of any other Annex I habitats or Annex II species of the Lough Corrib SAC were considered unlikely by Galway County Council due to one or more of the following:

- Significant buffer distance between the Proposed Road Development and the location of the Sites Qualifying Interest
- No hydrological connectivity between the Proposed Road Development and the location of the Sites Qualifying Interest
- The nature of the site's conservation objectives relative to the possible impacts of the scheme
- The qualifying interest was not recorded within the Zone of Influence of the Proposed Road Development
- No change to chemical or physiological condition of the designated site qualifying intertest as a result of the proposed development.

This test of likely significance was able to rule out direct, indirect, or cumulative impacts upon any other Natura 2000 designated sites as a result of the Proposed Road Development. Flynn Furney Environmental Consultants were requested by AECOM/ROD to complete a Stage 2 Appropriate Assessment and preparation of a NIS of the works on behalf of Galway County Council.

The Natura 2000 sites outside 15 km were excluded from further consideration as:

- A significant buffer existed between these sites and the site of the proposed works;
- No hydrological or other connectivity exists between these sites and the site of the proposed works; and
- No qualifying interests of any other Natura 2000 sites were found within the zone of influence of the proposed works.

1.3.1 Zone(s) of Influence and Study Areas

The zone of influence (ZoI) for a project (or "spatial extent of the impact" as described in Annex III (3) of the EIA Directive 2014/52/EU) is the area over which ecological features may be subject to significant impacts as a result of the Proposed Road Development and associated activities. In the case of the project area for example, the Proposed Road Development crosses the Abbert River, which is part of the Lough Corrib SAC (Site Code: 000297).

The ZoI is likely to extend beyond the boundary of a Proposed Road Development; for example, where there are hydrological links extending beyond the site boundaries that create connectivity to other areas. Activities associated with the construction, operation, (and where applicable, decommissioning and restoration) phases should be separately identified where relevant.

The ZoI will vary for different ecological features depending on their sensitivity to environmental change. It is therefore appropriate to identify different ZoI for different features. The features affected could include habitats, species, and the processes on which they depend. ZoI are specified for different features, and types of potential impact.

It is also important to acknowledge, as per draft EPA guidance (EPA, 2017) "*that the absence of a designation or documented feature does not mean that no such feature exists within the site*". As such, ZoI should be identified for all features potentially occurring within the Proposed Road Development, in addition to any features known to occur. Desktop survey areas for the Proposed Road Development correspond, as a minimum, to the ZoI of potentially significant effects for each ecological feature. As recommended by CIEEM (2018; updated September 2019), professionally accredited or published studies are used to determine ZoI. Professional judgement is also used to assess ZoI in this assessment, in the absence of data, or presence of conflicting data. Having considered the Proposed Road Development, ZoI have been estimated for habitats and flora and fauna species and their associated habitats. In this report, the study area for cumulative effects is considered to be within the ZoI of the Proposed Road Development.

1.4 Guidance Documents

This report has been prepared with regard to the following guidance documents on Appropriate Assessment, where relevant:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010 revision);
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10;
- Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EUROPEAN COMMISSION, 28.9.2021 Brussels);
- 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 Directorate-General, 2001 and updates April 2015 and September 2021). The guidance within this document provides a non-mandatory methodology for carrying out assessments required under Article 6(3) and (4) of the Habitats Directive;
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC (EC Environment Directorate-General, 2018);
- Communication from the Commission on the precautionary principle. European Commission (2000); and
- OPR (2021) Appropriate Assessment Screening for Development Management. Practice Note PN01. Office of the Planning Regulator. March 2021.

The DoEHLG (2010) guidance states that European sites with the potential to be affected by a plan or project should be identified taking into consideration the potential for direct, indirect and/or cumulative (in-combination) effects. It also states that the specific approach in each case is likely to differ depending on the scale and likely effects of the plan or project. However, it advises that the following sites should generally be included:

- All European sites within or immediately adjacent to the plan or project area;
- All European sites within the likely 'zone of impact' of the plan or project; and
- Adopting the precautionary principle, all European sites for which there is doubt as to whether or not such sites might be significantly affected.

The likely zone of impact (also referred to as the likely 'zone of influence' (ZoI)) of a plan or project is the geographic extent over which significant ecological effects are likely to occur. The DoEHLG guidance document prescribes a 15 km distance threshold for European sites from the boundary of a plan area. In the case of projects, the guidance acknowledges that the zone of influence must be devised on a case by case basis with reference to the following criteria: the nature, size / scale and location of the project, sensitivity of ecological features under consideration and cumulative effects.

1.5 Outline Project Description and Potential Associated Impacts

The overall length of the Proposed Road Development is circa 2.3 km of new Type 2 Single Carriageway road (predominantly offline) including a new crossing over the Abbert River. Provision of both pedestrian and cycle facilities have been included as part of the Proposed Road Development, predominantly along the route of the existing N63. The Proposed Road Development is located in the townlands of Culliagh North, Culliagh South, Liss, Abbey, Chapelfield, Clashard, Moyne and Newtown in Co. Galway. The Proposed Road Development site covers an area of circa 15 ha, the majority of which is on a predominantly greenfield site to the north-east of the village of Abbeyknockmoy, Co. Galway. The Proposed Road Development runs in a south-west to north-east direction across the Abbert River. Starting on the eastern edge of Abbeyknockmoy and running north-east to the proposed tie-in with the existing N63 at the L6234 junction.

The Proposed Road Development will include elements such as:

- One new roundabout at the western end of the Proposed Road Development to provide connection with the existing N63;
- Two new priority junctions to provide connection to the existing L6159 and L6234, including some minor local road realignments;
- One new clear span bridge crossing of the Abbert River;

- Seven new piped culverts and two new box culverts over existing field ditches;
- Three new flood alleviation culverts (box culverts);
- New pedestrian and cycle facilities, predominantly located along the existing N63;
- Associated earthworks including excavation;
- Accommodation works, including the provision of access roads and accesses;
- Drainage works;
- Treatment of surface water run-off prior to outfall discharge, spill containment measures and attenuation treatment facilities;
- Landscaping planting works, signage, lighting and other works ancillary to the construction and operation of the Proposed Road Development; and
- Environmental measures and other ancillary works.

Maps of the Proposed Road Development Layout, The Lough Corrib SAC and the Annex I habitats areas, as identified, are provided in Appendix I.

All Natura 2000 designated sites within 15km of the Proposed Road Development can also be seen in Appendix I. Distances to these Natura 2000 sites and whether potential impacts from proposed works are likely are summarised in Table 1-2. In the competent authorities AA Screening exercise only the Lough Corrib SAC was noted as possibly at risk from the Proposed Road Development. Risks to the Qualifying Interests of any other site within or beyond 15km from the Proposed Road Development was considered unlikely due to the distance between the Proposed Road Development and the Natura 2000 sites and the nature of the site conservation objectives and qualifying interests.

Table 1-2: Designated sites with 15km of the Proposed works area

Site Code	Site Name & Designation	Distance	Potential for Impact	Rationale
297	Lough Corrib SAC	0 km	Possible (discussed below)	Site is crossed by part of the proposed works area.
2352	Monivea Bog SAC	8.6 km	Nil	Significantly removed from proposed site of works and no connectivity exists
295	Levally Lough SAC	9.0 km	Nil	Significantly removed from proposed site of works and no connectivity exists
2197	Derrinlough (Cloonkeenleananode) Bog SAC	11.5 km	Nil	Significantly removed from proposed site of works and no connectivity exists
326	Shankill West Bog SAC	13.0 km	Nil	Significantly removed from proposed site of works and no connectivity exists
1242	Carrownagappul Bog SAC	14.4 km	Nil	Significantly removed from proposed site of works and no connectivity exists
2350	Curraghlehanagh Bog SAC	16.8 km	Nil	Significantly removed from proposed site of works and no connectivity exists

A strategy for construction has been developed with the aim of minimising potential environmental impacts at each phase of the project. Major construction activity associated with the Proposed Road Development, such as excavation work, requires the use of powerful and often large and heavy equipment. These works take a significant time period to complete and progressive phases of construction entail different activities and require the use of various types of equipment. Overall, however, construction is a temporary activity meaning effects associated with these works are generally also temporary in nature. Any residual impacts, which may arise as a result of the Proposed Road Development should be mitigated through activities and infrastructure imbedded in the construction methods, project design and project infrastructure.

The general activities that could cause potential direct and indirect impacts associated with the construction of the Proposed Road Development include:

- Site clearance including demolitions and vegetation clearance;
- Fencing;
- Site access;
- Construction compounds;
- Ground and Site investigations;
- Archaeological testing;
- Material requirement and source of material;
- Temporary road closures and diversions;
- Water management/treatment; and
- Temporary storage of materials, surplus materials or wastes arising.

An overview of specific activities associated with the construction phase of the Proposed Road Development that could cause potential direct and indirect impacts to the Natura 2000 site include:

- One new roundabout at the western end of the Proposed Road Development to provide connection with the existing N63;
- Two new priority junctions to provide connection to the existing L6159 and L6234, including some minor local road realignments;
- One new clear span bridge crossing of the Abbert River;
- Flood relief culverts;
- New piped culverts over existing field ditches;
- Improved and new pedestrian and cycle facilities, predominantly located along the existing N63;
- Associated earthworks including excavation of unacceptable material, excavation and processing of rock and other material, provision of material deposition areas and deposition and recovery of unacceptable material for reuse in the works;
- Accommodation works, including the provision of access roads and accesses;
- Drainage works, including the construction of attenuation ponds;
- Utilities and services diversion works;
- Safety barrier, public lighting, fencing;
- Landscaping works; and
- Environmental measures and other ancillary works.

An overview of specific activities associated with the operational phase of the Proposed Road Development that could cause potential direct and indirect impacts to the Natura 2000 site include:

- Loss of sediments, hydrocarbons and other polluting material (including air quality impacts) during the operational phase of the Development
- Potential disturbance to species as result of the Proposed Road Development.
- Possible positive improvements to water quality due to the creation of sealed surface water management infrastructure along the roadway.

Specific direct and indirect potential impacts are discussed in detail in Section 3.

2 Ecological Assessment

This NIS has been informed by a range of habitat, botanical and species-specific surveys carried out over a calendar year. Table 2-1 details the dates, targeted survey type and the methodologies employed for each survey type. Habitats and all terrestrial fauna surveys were carried out over an area of a minimum of 395ha, which encompassed the entire route with a buffer distance of between 150 meters and 1.5 km from the route, to the extent of the study area as per NRA/TII Guidelines (e.g., NRA 2005;2006). Aquatic species surveys were carried out along the extent of the Abbert River as is passes within this survey area. Detailed specific surveys of Annex I habitat types were carried out in areas of *Molinia* Meadows and Petrifying Springs. River habitat surveys and Crayfish surveys were carried out within a number of surveys reaches of the Abbert River. These are detailed in the Maps in Appendix I.

Table 2-1: Survey dates and survey types

Date	Target/Survey Type	Methodology Employed
18 Dec 2019 7 January 2020	Wintering Bird Surveys	Gilbert, G., Gibbons, D.W. and Evans, J., 1998. Bird Monitoring Methods: a manual of techniques for key UK species. RSPB.
21 May 2020 28 May 2020 6 August 2020	Breeding Bird Surveys	Gilbert, G., Gibbons, D.W. and Evans, J., 1998. Bird Monitoring Methods: a manual of techniques for key UK species. RSPB.
7 January 2020 12 – 28 May 2020 24- 25 August 2020	Habitat/Walkover Surveys/ Floral	Fossitt, J. (2000). Guide to Habitats in Ireland. The Heritage Council Heritage Council's 'Best Practice Guidance for Habitat Survey and Mapping' (Smith *et al*. 2011). Martin, J.R., O'Neill, F.H. & Daly, O.H. (2018) The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats. Irish Wildlife Manuals, No. 102. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland National Roads Authority (2008). Guidelines on the Management of Noxious Weeds and Non-native Invasive Species on National Roads, NRA, Dublin NRA (TII) (2008). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes
15 – 18 August 2020	Bat Surveys	Bat Conservation Trust's (BCT) 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (Collins, 2016). National Roads Authority (2005). Guidelines for the Treatment of Bats Prior to the Construction of National Roads Schemes. NRA, Dublin
24 June 2020 And Desktop	Fish Surveys	Fisheries habitat survey through river habitats survey: *River Habitat Study in Britain and Ireland: Field Survey Guidance Manual 2003*. Environment Agency, HMSO, London. CIEEM (2016). Guidelines for Ecological Impact Assessment in the UK and Ireland: terrestrial, freshwater

Date	Target/Survey Type	Methodology Employed
		and Coastal 2nd Edition. The Chartered Institute of Ecology and Environmental Management. **Review of existing data** O'Brien, R., Matson, R., Gordon, P., Lopez, S., Cierpal, D., Connor, L., Corcoran, W., Coyne, J., Gavin, A., McLoone, P., Twomey, C. and Kelly, F.L. (2019) Sampling Fish in Rivers 2019 – Clare River Catchment, Factsheet No. 2019/2. National Research Survey Programme. Inland Fisheries Ireland. IFI (2010) Water Framework Directive Fish Stock Survey of Rivers in the Western River Basin District, 2010. IFI (2013) Water Framework Directive Fish Stock Survey of Rivers in the Western River Basin District, 2013
7 – 15 January 2020 29-30 January 2020	Mammal Surveys (Otters, Badgers, Red Squirrel and Pine Marten)	Bailey, M. & Rochford, J. (2006). Otter Survey of Ireland 2004/2005. Irish Wildlife Manuals No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland. Harris, S., Cresswell, P., and Jefferies, D. (1989). Surveying Badgers. The Mammal Society, London. National Roads Authority (2006c) Guidelines on the Treatment of Otters Prior to the Construction of National Road Schemes, NRA, Dublin.
April – July 2020	Amphibian: Common Frog (*Rana temporaria*) & Smooth newt (*Lissotriton vulgaris*)	Direct observation during other summer surveys
16 October 2020	Freshwater Macroinvertebrates	Kick sampling and Laboratory Analysis by Whitehill Environmental Ltd as per Toner et al (2005)
24 June 2020	River Habitat Survey	*River Habitat Study in Britain and Ireland: Field Survey Guidance Manual 2003*. Environment Agency, HMSO, London.
12 May – 17 July 2020	Common Lizard (*Lacerta vivipara*) Surveys	Direct observation during other summer surveys
24 June 2020	Crayfish Surveys	NBDC database, Dedicated Search as per NRA/TII guidelines (2010) *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* Direct observation during RHS
25 August 2020 11 September 2020	Marsh Fritillary (*Euphydryas aurinia*) (web surveys)	March Fritillary Larval Web survey as per NRA/TII (as above, 2010), NBDC database

2.1 Qualifying Features and Sensitivities

Lough Corrib is situated to the north of Galway city and is the second largest lake in Ireland, with an area of approximately 18,240 ha. The surrounding lands to the south and east are mostly pastoral farmland, while bog and heath predominate to the west and north. A number of rivers are included within the SAC as they are important for Atlantic Salmon and other Annex II species. These rivers include the Clare, Grange, Abbert, Sinking, Dalgan and Black to the east, as well as the Cong, Bealanabrack, Failmore, Cornamona, Drimneen and Owenriff to the west. In addition to the rivers and lake basin, adjoining areas of conservation interest, including raised bog, woodland, grassland and limestone pavement, have been incorporated into the site (NPWS, 2015). The importance of the Lough Corrib SAC (0297) under the Habitats Directive is defined by its qualifying features or interests. The qualifying interests for the Lough Corrib SAC are given in Table 2-2 and Table 2-3, along with the specific sensitivities/ main threats relevant to each feature. The environmental sensitivities for each site have been derived from the baseline assessments of conservation status carried out by National Parks and Wildlife Service (NPWS) as part of the report to the EU commission on The Status of EU Protected Habitats and Species in Ireland, submitted in 2013.

Table 2-2: Annex I habitats and Environmental Sensitivities associated with Lough Corrib Special Area of Conservation (SAC)

Natura 2000 Code	Annex 1 Habitat	Environmental Sensitivity & Main Pressures/Threats	Distance from Annex I Habitat to the Proposed Road Development
7220	Petrifying springs*	Ground water dependent Highly sensitive to hydrological changes Changes in nutrient or base status	Adjacent to ZoI of the Proposed Road Development
91A0	Old oak woodlands	Non-native invasive species Grazing in forest/woodland Problematic native species	None recorded within or close to ZoI for the Proposed Road Development
3260	Floating river Vegetation	Surface water dependent Highly sensitive to hydrological changes Medium sensitivity to pollution Spread of invasive species	None recorded within or close to ZoI for the Proposed Road Development
3110	Oligotrophic Waters containing very few minerals	Surface and ground water dependent Highly sensitive to nutrient level changes Diffuse surface water pollution Water extraction Invasive species non-native species	None recorded within or close to ZoI for the Proposed Road Development
3130	Oligotrophic to Mesotrophic Standing Waters	Surface and ground water dependent Highly sensitive to hydrological changes Diffuse surface water pollution Water extraction Invasive species non-native species	None recorded within or close to ZoI for the Proposed Road Development
3140	Hard Water Lakes	Surface and ground water dependent Highly sensitive to nutrient level changes Diffuse surface & ground water pollution	None recorded within or close to ZoI for the Proposed Road Development

Natura 2000 Code	Annex 1 Habitat	Environmental Sensitivity & Main Pressures/Threats	Distance from Annex I Habitat to the Proposed Road Development
		Pollution to surface waters by agriculture, forestry and industry	
6210	Orchid-rich Calcareous Grassland*	Species composition change Problematic native species Intensive grazing Abandonment of grazing	None recorded within or close to ZoI for the Proposed Road Development
6410	*Molinia* meadows	Abandonment of pastoral systems, lack of grazing/mowing Water abstractions from groundwater Species composition change (succession) Intensive grazing Problematic species	Area of *Molinia* meadows recorded within proposed road development **but** outside the SAC boundary
7110	Raised Bog (Active)	Water abstractions from groundwater Peat extraction Planting of non-native tree species Fire and fire suppression Mining and quarrying	None recorded within or close to ZoI for the Proposed Road Development
7120	Degraded Raised Bog	Water abstractions from groundwater Peat extraction Planting of non-native tree species Fire and fire suppression Mining and quarrying	None recorded within or close to ZoI for the Proposed Road Development
7150	Rhyncosporion vegetation	Planting of non-native tree species Mechanical removal of peat Water abstractions from groundwater Burning down Hand removal of peat	None recorded within or close to ZoI for the Proposed Road Development
7210	*Cladium* Fens*	Water abstractions from groundwater Reclamation from sea, estuary or marsh Diffuse surface water pollution Abandonment of pastoral systems, lack of grazing	None recorded within or close to ZoI for the Proposed Road Development
7230	Alkaline Fens	Water abstractions from groundwater Reclamation from sea, estuary or marsh Diffuse ground water pollution from agricultural & forestry activities	None recorded within or close to ZoI for the Proposed Road Development

Natura 2000 Code	Annex 1 Habitat	Environmental Sensitivity & Main Pressures/Threats	Distance from Annex I Habitat to the Proposed Road Development
		Abandonment of pastoral systems, lack of grazing	
8240	Limestone Pavement*	Mining & Quarrying Landfill, land reclamation and drying out Non-native invasive species Problematic native species	None recorded within or close to ZoI for the Proposed Road Development
91D0	Bog Woodland*	Peat extraction Human-induced changes in hydraulic conditions	None recorded within or close to ZoI for the Proposed Road Development

(* = priority habitat)

Table 2-3: Annex II Species and Environmental Sensitivities associated with Lough Corrib Special Area of Conservation.

Natura 2000 Code & Species Name	Environmental Sensitivity & Main Pressures/Threats	Occurrence of Suitability for Species within the Proposed Road Development ZoI
1095 Sea Lamprey 1096 Brook Lamprey	Surface water dependant Highly sensitive to water quality impacts	Suitable habitat for these species within Proposed Road Development ZoI
1029 Freshwater Pearl Mussel	Surface water dependant Highly sensitive to water quality impacts Very highly sensitive to pollution	None recorded within ZoI of the Proposed Road Development. None known to occur with the ZoI NPWS (2017)
1092 Crayfish	Surface water dependant Highly sensitive to water quality impacts	Suitable habitat for this species recorded within Proposed Road Development ZoI
1106 Atlantic Salmon	Surface water dependant Highly sensitive to water quality impacts	Suitable habitat for this species recorded within Proposed Road Development ZoI
1355 Otter	Surface water dependant Highly sensitive to water quality impacts	Suitable habitat for this species recorded within Proposed Road Development ZoI
1303 Lesser Horseshoe Bat	Loss of roost sites Loss of commuting routes Unsympathetic management of foraging sites	None recorded within ZoI of the Proposed Road Development
1393 Slender Green Feather-moss	Habitat destruction Sheep and deer grazing Groundwater abstraction	None recorded within ZoI of the Proposed Road Development. None known to occur with the ZoI NPWS (2017)
1833 Slender Naiad	Nutrient enrichment (eutrophication) Drainage	None recorded within ZoI of the Proposed Road Development. None known to occur with the ZoI NPWS (2017)

2.2 Conservation Objectives

The overall conservation Objectives for the Lough Corrib SAC (NPWS, 2011) are as follows:

- To maintain Annex I habitats (Petrifying springs, Old oak woodlands, Floating river Vegetation, Orchid-rich Calcareous Grassland, *Molinia* meadows, Rhyncosporion vegetation, Cladium Fens, Alkaline Fens, Limestone Pavement, Bog Woodland and Old Oak Woodland) for which the SAC has been selected, at favourable conservation condition.

- To restore Annex I habitats (Oligotrophic Waters containing very few minerals, Oligotrophic to Mesotrophic Standing Waters, Hard oligo-mesotrophic waters with benthic vegetation of Chara spp, Raised Bog (Active) and Degraded Raised Bog for which the SAC has been selected, at favourable conservation condition.

- To maintain favourable conservation conditions of the Annex II species (Crayfish(*Austropotamobius pallipes*), Atlantic Salmon (*Salmo salar*), Otter(*Lutra lutra*), and Slender Green Feather-moss (*Drepanocladus vernicosus*) for which the SAC has been selected.

- To restore favourable conservation conditions of the Annex II species Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), Freshwater Pearl Mussel (*Margaritifera margaritifera*), Lesser Horseshoe Bat (*Rhinolophus hipposideros*) and Slender Naiad (*Najas flexilis*) for which the SAC has been selected.

- To maintain the extent species richness and biodiversity of the entire site.

The Habitats Directive (EU, 1992) describes how 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''*.

2.3 Site Specific Conservation Objectives

Site specific conservation objectives of all Annex I habitat types identified within or close to the proposed development are detailed below. Annex II species for which suitable habitat was noted within the project ZoI are also listed below.

2.3.1 (6410) *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)

The maintenance of favourable conservation condition of *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) in Lough Corrib SAC, which is defined by the following list of attributes and targets.

An area of *Molinia* meadow was recorded within the footprint of the Proposed Road Development on the northern bank of the Abbert River. See Appendix I. This habitat area is outside the SAC boundary and not connected to or in close proximity to any areas of *Molinia* meadow within the SAC boundary.

Table 2-4: Site Specific Conservation Objectives for (6410) Molinia meadows in Lough Corrib SAC (NPWS (2017)

Attribute	Measure	Target	Note
Habitat area	Hectares	Area stable or increasing, subject to natural processes	*Molinia* meadows on calcareous, peaty or clayey-silt laden soils (*Molinion caeruleae*) occurs mainly as small areas and in intimate association with other habitats in this SAC such as other grassland types and fens and is therefore difficult to map separately. O'Neill et al. (2013) surveyed and mapped some grassland sites within Lough Corrib SAC. However, the full extent of this habitat in this SAC is currently unknown
Habitat distribution	Occurrence	No decline, subject to natural processes	See notes for area above
Vegetation composition: typical species	Number at a representative number of monitoring stops	At least seven positive indicator species present, including one "high quality" species as listed in O'Neill et al. (2013)	Attribute and target based on O'Neill et al. (2013), where the list of positive indicator species, including high quality species, as identified by the Irish Seminatural Grasslands Survey (ISGS) is presented. O'Neill et al. (2013) should be consulted for further details
Vegetation composition: negative indicator species	Percentage at a representative number of monitoring stops	Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10%	Attribute and target based on O'Neill et al. (2013), where the list of negative indicator species as identified by the ISGS is presented
Vegetation composition: non-native species	Percentage at a representative number of monitoring stops	Cover of non-native species not more than 1%	Attribute and target based on O'Neill et al. (2013)
Vegetation composition: moss species	Percentage at a representative number of monitoring stops	Hair mosses (*Polytrichum* spp.) not more than 25% cover	Attribute and target based on O'Neill et al. (2013)
Vegetation structure: woody species and bracken	Percentage at a representative number of monitoring stops	Cover of woody species and bracken (Pteridium aquilinum) not more than 5%	Attribute and target based on O'Neill et al. (2013)
Vegetation structure: broadleaf herb: grass ratio	Percentage at a representative number of monitoring stops	Broadleaf herb component of vegetation between 40% and 90%	Attribute and target based on O'Neill et al. (2013)

Attribute	Measure	Target	Note
Vegetation structure: sward height	Percentage at a representative number of monitoring stops	At least 30% of sward between 10cm and 80cm tall	Attribute and target based on O'Neill et al. (2013)
Vegetation structure: litter	Percentage at a representative number of monitoring stops	Litter cover not more than 25%	Attribute and target based on O'Neill et al. (2013)
Physical structure: bare soil	Percentage at a representative number of monitoring stops	Not more than 10% bare soil	Attribute and target based on O'Neill et al. (2013)
Physical structure: disturbance	Square metres	Area showing signs of serious grazing or other disturbance less than 20m²	Attribute and target based on O'Neill et al. (2013)

2.3.2 Petrifying springs with tufa formation (Cratoneurion)

The maintenance of favourable conservation condition of Petrifying springs with tufa formation (Cratoneurion)* in Lough Corrib SAC, which is defined by the following list of attributes and targets.

Table 2-5: Site Specific Conservation Objectives for Petrifying springs with tufa formation (Cratoneurion) in Lough Corrib SAC (NPWS 2017)

Attribute	Measure	Target	Note
Habitat area	Square metres	Area stable or increasing, subject to natural processes	Petrifying springs with tufa formation (Cratoneurion) have not been mapped within Lough Corrib SAC and thus the total area of the qualifying habitat in the SAC is unknown. However, the necessary ecological conditions required for this habitat occur around Lough Corrib
Habitat distribution	Occurrence	No decline, subject to natural processes	As mentioned above, this habitat has not been mapped within the SAC. It is often associated with other habitats including Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (7210), Alkaline fens (7230) and Limestone pavements (8240). The conservation objectives for all these habitats in the SAC should be used in conjunction with each other as appropriate. Lyons and Kelly (2016) describe eight plant communities of Irish petrifying springs based on relevé data. Further information on the vegetation communities associated with this habitat is presented in Lyons and Kelly (2016)

Attribute	Measure	Target	Note
Hydrological regime: height of water table; water flow	Metres; metres per second	Maintain appropriate hydrological regimes	Petrifying springs rely on permanent irrigation, usually from upwelling groundwater sources or seepage sources (Lyons and Kelly, 2013). In karst areas, water tends to flow away rapidly over bare rock surfaces, even on fairly flat ground (Lyons and Kelly, 2013). Water flow should not be altered anthropogenically. See Lyons and Kelly (2016) for further details
Water quality – nitrate level	mg/l	No increase from baseline nitrate level and less than 10mg/l	Target based on data from McGarrigle et al. (2010). See Lyons and Kelly (2016) for further details
Water quality – phosphate level	mg/l	No increase from baseline nitrate level and less than 10mg/l	Target based on data from McGarrigle et al. (2010). See Lyons and Kelly (2016) for further details
Water quality – phosphate level	µg/l	No increase from baseline phosphate level and less than 15µg/l	Based on data from Lyons (2015). See Lyons and Kelly (2016) for further details
Vegetation composition: positive indicator species	Number per spring	At least three positive/high quality indicator species as listed in Lyons and Kelly (2016) and no loss from baseline number	Based on Lyons and Kelly (2016), where the lists of positive and high quality indicator species are presented
Vegetation composition: negative indicator species	Cover (DAFOR scale)	Potentially negative indicator species should not be Dominant or Abundant; invasive species should be absent	Based on Lyons and Kelly (2016), where the lists of potentially negative herbaceous, bryophyte (and alga) and woody species are presented. See Lyons and Kelly (2016) also for details on potentially invasive species, including sycamore (Acer pseudoplatanus) which is invasive in non-wooded springs and a negative indicator species in wooded springs. If two or more potentially negative bryophyte species are present, and if at least two are Frequent, or at least one is Abundant, then the habitat fails for this attribute. See Lyons and Kelly (2016) for further details
Vegetation structure: sward height	Centimetres	Field layer height between 10cm and 50cm (except for bryophyte-dominated ground	See Lyons and Kelly (2016) for further details
Physical structure: trampling/dung	Cover (DAFOR scale)	Cover should not be Dominant or Abundant	See Lyons and Kelly (2016) for further details

2.3.3 1092 White-clawed Crayfish *Austropotamobius pallipes*

The maintenance of favourable conservation condition of the White-clawed Crayfish *Austropotamobius pallipes* (1092) in Lough Corrib SAC is defined by the following list of attributes and targets.

Table 2-6: Site Specific Conservation Objectives for 1092 White-clawed Crayfish Austropotamobius pallipes in Lough Corrib SAC (NPWS 2017)

Attribute	Measure	Target	Note
Distribution: rivers	Occurrence	No reduction from baseline.	White-clawed crayfish (*Austropotamobius pallipes*) is recorded from the entire lengths of the four main tributaries of the River Clare. There are post-1996 records from the following tributaries: Abbert, Grange, Dalgan and Sinking Rivers. It is also present in some minor lower order streams within the Clare catchment
Distribution: Lough Corrib	Occurrence	No reduction from baseline.	The distribution of crayfish in Lough Corrib is uncertain. It certainly occurs in three 1km squares in the northern section of the lower basin (M2341, M2342, M2941) and is probably more widely distributed
Population structure: recruitment	Occurrence of juveniles and females with eggs	Juveniles and/or females with eggs in all occupied tributaries and occupied parts of Lough Corrib	Juveniles and/or females with eggs in all occupied tributaries and occupied parts of Lough Corrib See Reynolds et al. (2010) for further details
Negative indicator species	Occurrence	No alien crayfish species	Alien crayfish species are identified as a major direct threat to this species and as a disease vector. Ireland is currently free of non-native invasive crayfish species. See Reynolds (1998) for further details
Disease	Occurrence	No instances of disease	Disease is identified as a major threat and crayfish plague has occurred in Ireland even in the absence of alien vectors. Disease can, in some circumstances, be introduced through contaminated equipment and water in the absence of vector species. See Reynolds (1998) for further details
Water quality	EPA Q value	At least Q3-4 at all sites sampled by EPA	Target taken from Demers and Reynolds (2002). Q values based on triennial water quality surveys carried out by the Environmental Protection Agency (EPA)
Habitat quality: heterogeneity	Occurrence of positive habitat features	No decline in habitat heterogeneity or habitat quality	Crayfish need high habitat heterogeneity. Larger crayfish must have stones to hide under, or an earthen bank in which to burrow. Hatchlings shelter in vegetation, gravel and among fine tree-roots. Smaller crayfish are typically found among weed and debris in shallow water. Larger juveniles in particular may also be found among cobbles and detritus such as leaf litter. These conditions must be available throughout the occupied habitat

To restore the favourable conservation condition of Sea Lamprey in Lough Corrib SAC, which is defined by the following list of attributes and targets:

Table 2-7: Site Specific Conservation Objectives for 1095 Sea Lamprey Petromyzon marinus in Lough Corrib SAC

Attribute	Measure	Target	Note
Distribution: extent of anadromy	Percentage of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	Sea lamprey (*Petromyzon marinus*) traditionally congregate and build spawning nests in the River Corrib in Galway city, both up- and downstream of the Salmon Weir Bridge. Their further upstream passage is impeded by the regulating weir immediately upstream. The combination of barriers to passage and low flows can impede further upstream passage in Irish catchments and prevent or reduce penetration and extensive colonisation (Gargan et al., 2011; Rooney et al., 2015). Sea lamprey have been recorded passing through the Denil fish passage facility at the regulating weir. However, no quantitative assessment has been made, nor has any annual record been maintained. Sea lamprey have also been observed using their sucker mouths to project themselves up the damp concrete faces of the weir structure at low water levels (J. King, Inland Fisheries Ireland (IFI), pers. comm.)
Population structure of juveniles	Number of age/size groups	At least three age/size groups present	Attribute and target based on Harvey and Cowx (2003) and O'Connor (2007)
Juvenile density in fine sediment	n fine sediment Juveniles/m²	Mean catchment juvenile density at least 1/m²	Juveniles burrow in areas of fine sediment in still water. Attribute and target based on Harvey and Cowx (2003). No sites surveyed in 2006 (O'Connor, 2007) or 2013 (IFI, unpublished data) were positive for sea lamprey ammocoetes
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	Attribute and target based on spawning bed habitat mapping by Inland Fisheries Ireland (IFI). Lampreys spawn in clean gravels. Artificial barriers can prevent lampreys from accessing suitable spawning habitat. As mentioned above, artificial barriers are currently preventing lamprey from accessing suitable spawning habitat above the regulating weir in the River Corrib
Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive, with a minimum of four positive sites in a catchment, which are at least 5km apart	Artificial barriers can prevent juvenile lampreys from accessing the full extent of suitable habitat. Silting habitat is essential for larval lamprey and they can be severely impacted by sediment removal. Recovery can be rapid and newly-created habitat can be rapidly colonised (King et al., 2015). However, it is vital that such sedimenting habitats are retained

2.3.4 1096 Brook Lamprey *Lampetra planeri*

To Restore the favourable conservation condition of Brook Lamprey in Lough Corrib SAC, which is defined by the following list of attributes and targets:

Table 2-8: Site Specific Conservation Objectives for 1096 Brook Lamprey Lampetra planeri in Lough Corrib SAC

Attribute	Measure	Target	Note
Distribution	Percentage of river accessible	Access to all watercourses down to first order streams	Artificial barriers can block or cause difficulties to brook lampreys' migration both up- and downstream, thereby possibly limiting species to specific stretches, restricting access to spawning areas and creating genetically isolated populations (Espanhol et al., 2007)
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present	Attribute and target based on data from Harvey and Cowx (2003) and JNCC (2005). It is impossible to distinguish between brook and river lamprey ammocoetes in the field (Gardiner, 2003), hence they are considered together in this target
Juvenile density in fine sediment	Ammocoetes/m²	Mean catchment ammocoete density of brook/river lamprey at least 5/m²	Ammocoetes burrow in areas of fine sediment in still water. Attribute target revised upward based on more recent proposals of JNCC (2005) and replacing initial proposals of Harvey and Cowx (2003). New criterion set at 5 ammocoetes/m² on a catchment basis. The majority of sub-catchments in the SAC achieved this target in 2013 (IFI, unpublished data)
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	Attribute and target based on spawning bed mapping by Inland Fisheries Ireland (IFI). Brook lamprey spawning habitat attributes compiled in Rooney et al. (2013) and the particle size required is considered to be available very widely in all river systems within the SAC, apart from very steep and torrential areas of boulder and bedrock. It is not considered that spawning habitat is a limiting feature for the conservation status of this species
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Target of 50% presence in suitable habitat based on Irish experience to date in catchment-wide surveys. 50% of surveyed sites in the catchment were positive in 2013 (IFI, unpublished data) compared with 49% in 2006 (O'Connor, 2007). Silting habitat is essential for larval lamprey and they can be severely impacted by sediment removal. Recovery can be rapid and newly-created habitat can be rapidly colonised (King et al., 2015). However, it is vital that such sedimenting habitats are retained

2.3.5 1106 Salmon *Salmo salar*

To maintain the favourable conservation condition of Salmon in Lough Corrib SAC, which is defined by the following list of attributes and targets.

Table 2-9: Site Specific Conservation Objectives for 1106 Salmon Salmo salar in Lough Corrib SAC

Attribute	Measure	Target	Note
Distribution: extent of anadromy	Percentage of river accessible	100% of river channels down to second order accessible from estuary	There are no barriers to migration of salmon (*Salmo salar*) in Lough Corrib SAC. Salmon spawn in the headwaters of Lough Corrib tributaries. There is an artificial canal joining Lough Corrib and Lough Mask where salmon did not have access historically and does not constitute a limit on the distribution of salmon in Lough Corrib SAC
Adult spawning fish	Number	Conservation limit (CL) for each system consistently exceeded	A conservation limit (CL) is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "the spawning stock level that produces long-term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship". The target is based on the Standing Scientific Committee on Salmon (SSCS) annual model output of CL attainment levels. See SSCS (2016). Attainment of CL estimates are derived from direct counts of adults (rod catch, fish counter) or indirectly by fry abundance counts. The Corrib catchment is currently exceeding its CL
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	The target is the threshold value for rivers currently exceeding their conservation limit (CL)
Out-migrating smolt abundance	Number	No significant decline	Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (*Lepeophtheirus salmonis*)
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Salmon spawn in clean gravels. The habitat for salmon is good and habitat rehabilitation programmes have been undertaken throughout the Corrib catchment to restore drained channels and repair habitat damaged by overgrazing
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	Q values based on triennial water quality surveys carried out by the Environmental Protection Agency (EPA)

2.3.6 1355 Otter *Lutra lutra*

To maintain the favourable conservation condition of Otter in Lough Corrib SAC, which is defined by the following list of attributes and targets:

Table 2-10: Site Specific Conservation Objectives for 1355 Otter Lutra lutra in Lough Corrib SAC

Attribute	Measure	Target	Note
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. Favourable Conservation Status (FCS) target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 1,054ha along river banks/ lake shoreline/around ponds	No field survey. Areas mapped to include 10 m terrestrial buffer along shoreline and river banks identified as critical for otters (NPWS, 2007)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 314.2km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 314.2km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 4,178ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk and Moorhouse, 1991; Kruuk, 2006)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013)
Barriers to connectivity	Number	No significant increase. For guidance, see map 12	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

3 Potential Impacts and Schedule of Mitigation

Table 3-2 and Table 3-3 examine the Annex I habitats and Annex II species for which the SAC has been given its designation. It considers whether impacts to any of these habitats or species are likely due to the Proposed Road Development.

3.1 Description of Potential Impacts and Effects

A description of potential impacts associated effects from the Proposed Road Development is given in Table 3-2 and Table 3-3. The nature of the potential impacts are discussed below.

3.1.1 Direct Impacts and Effects

In the absence of mitigation, significant ecological effects may occur during the construction phase of this Proposed Road Development. Specifically, the ingress of suspended solids and organic material to surface waters could have direct impacts on a number of Annex I habitats and Annex II species.

Potential short-term and long-term impacts of polluting materials such as fuels, oils and lubricants and hydraulic fluids, can result in substantial fish-kills. Accidental spillages or leaks of oil and other polluting liquids can have significant effects on fisheries. Additionally, their persistence within aquatic environments can reduce water quality and ecological value within the river system for a number of years.

3.1.2 Indirect Impacts and Effects

Indirect impacts and associated effects may relate to changes to prey species due to impacts on water quality. Changes in turbidity and water quality can inhibit some invertebrate species upon which many fish species are dependent. The eventual settling out of silts in sand or pebble beds used as spawning areas for Salmon and Trout could impact breeding cycles of these fish species that may lead to population reductions. This may then have subsequent impacts upon Sea Lamprey and Brook Lamprey and mammal species such as Otters.

Potential positive impacts and effects might also occur as a result of the Proposed Road Development. The construction of formal sealed surface water management infrastructure may decrease the volume of direct ruff from the roadway, compared to the runoff from drains currently in use on the existing N63. This may positively effect water quality and Annex II species for which water quality is a key indicator of good conservation statues. Reductions in traffic volumes along the old N63 may be beneficial for the Petrifying spring habitat recorded adjacent to the boundary of the works area. Reduced traffic volumes, debris, rubbish, and runoff, due to reduced road usage and sealed drainage may have a positive impact on water quality in the pool formed by this spring.

No lighting impacts are predicted as there will be no lighting on the bridge structure or approaches or rural road section of the scheme.

Air quality modelling was carried out at the Lough Corrib SAC, near to the proposed bridge crossing of the Abbert River and at the existing bridge. The assessment predicted that there would be an increase annual mean NOx concentration and nitrogen deposition at the SAC near to the proposed bridge crossing of the Abbert River and adjacent habitats during the operational phase of the proposed road development. In contrast a decrease in annual mean NOx concentrations and nitrogen deposition was predicted at the SAC near to the existing bridge. At both locations, annual mean NOx concentrations were below the limit value of 30 µg/m^3. The contribution of the proposed road development to the N deposition rate along a 200m transect at both locations is well below the critical load for the lower boundary limit for *Molinea caerula* habitats of 5-10kg(N)/ha/year (TII, 2011). Therefore, harmful effects on vegetation within this Annex I habitat from NO_2 are not likely. Ammonia (NH_3) is emitted in small amounts by vehicles, but atmospheric concentrations are well below critical levels for this pollutant (Natural England, 2016; Bignal et al., 2004) and therefore, effects on vegetation within Lough Corrib SAC from ammonia are not likely. Therefore, no indirect impacts on the River Abbert SAC are predicted as arising from changes to air quality.

3.1.3 Cumulative Impacts and Effects

Projects of this nature are generally unlikely to contribute to cumulative impacts as it is unlikely that other works will be taking place on the river channel or within this vicinity. At the time of writing, no further/other road construction or realignment projects within the ZoI of this Proposed Road Development are in planning or proposed. Also, as any potential impacts from the development under study are likely to be temporary direct impacts, the greatest risk of cumulative impacts is likely where a number of instream or bankside projects take place within similar time frames. This would not occur at this site. This is extremely unlikely to occur at this site given the international designation of the watercourse and the nature of land use in the area.

The proposed crossing of the Abbert River would be achieved by the construction of a clear-span structure. The bridge width to height above water ratio of the bridge is calculated as being 0.22. However, any shading impact of the structure will not be sufficient to have any significant negative impact on any of the qualifying interests of the SAC. No *Ranunculus* vegetation was recorded at the proposed crossing point. Therefore, no impact on this qualifying interest may be predicted. Any shading impact on other freshwater macrophytes will be offset by positive impacts for Atlantic Salmon as the bridge shading will provide cooling for the watercourse at low-flow conditions during summer months.

No instream works, building of banks infrastructure or bridge piers close to the channel would feature in the proposed works. However, potential impacts may arise from the loss of suspended solids, cement and other building materials to the Abbert River during construction. Mitigation measures have been devised that would specifically address these risks, these are set out in Table 3-2. Therefore, no cumulative effects are predicted.

A desktop planning application search, using publicly available data from MyPlan.ie's National Planning Application database, GCC planning application portal, and An Bord Pleanála's (ABP) online database was undertaken. The majority of planning applications for the lands situated around the Proposed Road Development, predominantly relate to small scale residential developments, amendments and extensions. A list of relevant (larger-scale) planning application is given below.

Table 3-1: Other plans or projects

Planning Ref. No.	Development Address	Development Proposal	Status
17728	Pollawarla, Co. Galway	for the permanent placement of soil and topsoil on part of a land plot with an area of 2.58 hectares. The plot of land is adjacent to the proposed upgrade of the N63 at Ballyglunin. Fill depth will vary between 0.1mt- 3.60mt approximately. Access to the plot of land for the placement of soil and topsoil will be via the N63 in the Townland of Polara, Abbeyknockmoy on behalf of Johnston Plant Hire ltd	Approved Subject to Conditions by GCC on 26/01/2018
121577	Brooklodge Demesne, Co. Galway	Extension of duration for the conservation, restoration, refurbishment and conversion, including alterations, additions and new buildings to an existing, disused farm complex to provide 15 no. tourism-related holiday homes. The Tower House and associated buildings existing on site are Protected Structures. The proposed development will provide 8 no. tourist dwelling units through the refurbishment, extension and alteration of the existing protected structures. 7 no. tourist dwelling units will be new-build in the form of 2 no. single-storey units and 5 no. detached 2-storey units. The proposed development will also include 2 no. single-storey utility buildings for use as central boiler/plant room and maintenance store ancillary to the propose development, all site development/enabling works and the provision of an on-site sewerage treatment plant (previous planning ref. no. 07/3365) (Gross floor area 2392 sqm)	Approved Subject to Conditions by GCC on 19/02/2013
121003	Ballynapark, Co. Galway	to construct a residential development consisting of 21 no. detached dwelling houses, 21 no. garages, 1 no. access road, 1 no. access point onto public road and carry out all associated site development works including provision of proprietary sewage treatment system and	Approved Subject to Conditions by GCC on 01/10/2012

Planning Ref. No.	Development Address	Development Proposal	Status
		percolation area - Gross floor space 3929.1 sqm house, 504 sqm garage (previous planning reference number 07/2174)	
11278	Liss, Co. Galway	Extension of duration for the construction of a rural cluster residential development comprised as follows: A) 13 residential units consisting of 9 detached dwellings and 4 semi-detached dwellings B) domestic garages on sites number 1,3 & 10 in the development scheme C) the construction of a proprietary treatment system and percolation area/polishing filter D) all ancillary site works, services, traffic calming, hard and soft landscaping and the holding of existing natural hedgerows within the development site. (gross floor space 2100.64 m^2) (previous pl. ref. 06/2371)	Approved Subject to Conditions by GCC on 13/06/2011

None of the planning applications discussed above are likely to lead to direct, indirect or cumulative impacts on any natura 2000 sites or associated QI species.

3.1.4 Operational Phase Impacts and Effect

As discussed above, the creation of a sealed formal surface water management system is likely to have a net positive impact upon water quality in Abbert River within the vicinity of the Proposed Road Development. Reduced runoff, losses of silts, petrol chemicals and other pollutant loads associated with road runoff could improve habitat quality for a number of QI species locally. Mammal proof fencing with mammal underpasses will be installed along this roadway reducing the risk of mammal fatalities.

Table 3-2 Potential Impacts to Lough Corrib SAC's Annex I Habitats from the Proposed Works

Annex I Habitat Areas recorded within close proximity to the Proposed Road Development					
Qualifying Interest/Annex II Species	Environmental Sensitivity/Main Threat	Potential Impact Pathway	Nature of Impact	Potential for Impact	Mitigation Required
Molinia meadows	Abandonment of pastoral systems, lack of grazing/mowing Water abstractions from groundwater Species composition change (succession) Intensive grazing Problematic species	Habitat loss Impacts on hydrological regime resulting in drying out of *Molinia* meadow	Moderate negative impacts of Permanent Duration	The Proposed Road Development would result in the loss of a portion of this habitat type (c. 25% of this habitat type occurring here). However, NONE of this habitat area is within the boundary of the Lough Corrib SAC. **The total area of *Molinia* meadow recorded was 1.7ha of which 0.36ha will be lost as a result of the Proposed Road Development** Potential for habitat degradation of the remaining 75% of Molinia meadow through hydrological impact.	Yes
Petrifying Springs*	Landfill, land reclamation and drying out Elevated nitrates and phosphate Negative species composition	Impacts on hydrological regime resulting in drying out of spring Ingress of sediments to groundwater Changes to groundwater chemistry Reduction in road runoff to this habitat area	**Major Negative of Temporary Duration** **Major Positive of Long-term Duration**	The Proposed Road Development would not result in direct impacts to this habitat type, as this area does not occur within scheme ZoI. Potential for indirect impact (drying) from adjacent drainage works may be ruled out as the bank and ditch acting as a barrier between the existing road, the spring area and the bank and ditch separating them is to be retained. Indirect minor beneficial impacts may occur due to reductions in road runoff, debris and litter from reduced road usage adjacent the Petrifying Spring.	Yes

Annex I Habitat Areas not recorded within close proximity to the Proposed Road Development					
Qualifying Interest/Annex II Species	Environmental Sensitivity/Main Threat	Potential Impact	Nature of Impact	Potential for Impact	Mitigation Required
Old oak woodlands	Non-native invasive species Grazing in forest/woodland Problematic native species	None	N/A	No Old oak woodlands observed on or near site. No connectivity to any Old oak woodlands observed No changes in management to Old oak woodlands likely as a result of the Proposed Road Development. No changes in nutrient or base status of Old oak woodlands likely as a result of the Proposed Road Development.	None
Floating river Vegetation	Surface water dependent Highly sensitive to hydrological changes Medium sensitivity to pollution Spread of invasive species	None	N/A	No floating river vegetation observed on or near site during the river habitats survey or any of the site walkover surveys (see Table 2-1 for information on survey dates and types carried out for the Proposed Road Development). No in-stream works to be carried out. No spread of aquatic invasive species likely as a result of the Proposed Road Development. No stands of aquatic invasive species were recorded with the ZoI of the Proposed Road development as evidenced during site walkover surveys, invasive species surveys and River Habitats Surveys.	None
Oligotrophic Waters containing very few minerals	Surface and ground water dependent Highly sensitive to nutrient level changes Diffuse surface water pollution Water extraction Invasive non-native species	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017). Further information on the ZoI is available in Section 1.3.1. No lake habitats were recorded within the ZoI during the habitat survey Therefore, no impacts are predicted	None

Qualifying Interest/Annex II Species	Environmental Sensitivity/Main Threat	Potential Impact	Nature of Impact	Potential for Impact	Mitigation Required
Oligotrophic to Mesotrophic Standing Water	Surface and ground water dependent Highly sensitive to hydrological changes Diffuse surface water pollution Water extraction Invasive non-native species	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017) Further information on the ZoI is available in Section 1.3.1. also see Table 2-1 for information on survey dates and types carried out for the Proposed Road Development). No lake habitats were recorded within the ZoI during the habitat survey Therefore, no impacts are predicted	None
Hard Water Lakes	Surface and ground water dependent Highly sensitive to nutrient level changes Diffuse surface & ground water pollution Pollution to surface waters by agriculture, forestry and industry	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017). No lake habitats were recorded within the ZoI during the habitat survey Therefore, no impacts are predicted	None
Orchid-rich Calcareous Grassland	Species composition change Problematic native species Intensive grazing Abandonment of grazing	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017)., O'Neill et al (2013) No Calcareous Grassland habitats were recorded within the ZoI during the habitat survey Therefore, no impacts are predicted	None
Raised Bog (Active)	Water abstractions from groundwater Peat extraction Planting of non-native tree species Fire and fire suppression Mining and quarrying	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017). No peat derived habitats recorded within the ZoI during the habitat survey . Therefore, no impacts are predicted	None

Qualifying Interest/Annex II Species	Environmental Sensitivity/Main Threat	Potential Impact	Nature of Impact	Potential for Impact	Mitigation Required
Degraded Raised Bog	Water abstractions from groundwater Peat extraction Planting of non-native tree species Fire and fire suppression Mining and quarrying	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017). No peat derived habitats recorded within the ZoI during the habitat survey Therefore, no impacts are predicted	None
Rhyncosporion vegetation	Planting of non-native tree species Mechanical removal of peat Water abstractions from groundwater Burning down Hand removal of peat	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017). No peat derived habitats recorded within the ZoI during the habitat survey Therefore, no impacts are predicted	None
Cladium Fens	Water abstractions from groundwater Reclamation from sea, estuary or marsh Diffuse surface water pollution Abandonment of pastoral systems, lack of grazing	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017). No Fen habitats recorded during the habitats survey Therefore, no impacts are predicted	None
Alkaline Fens	Water abstractions from groundwater Reclamation from sea, estuary or marsh Diffuse ground water pollution from agricultural & forestry activities Abandonment of pastoral systems, lack of grazing	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017). No Fen habitats recorded during the habitats survey Therefore, no impacts are predicted	None

Qualifying Interest/Annex II Species	Environmental Sensitivity/Main Threat	Potential Impact	Nature of Impact	Potential for Impact	Mitigation Required
Limestone Pavement	Mining & Quarrying Landfill, land reclamation and drying out Non-native invasive species Problematic native species	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2017). No Limestone Pavement habitat recorded during the habitats survey Therefore, no impacts are predicted	None
Bog Woodland	Peat extraction Human-induced changes in hydraulic conditions	None	N/A	This habitat type does not occur within the ZoI of the Proposed Road Development NPWS (2009) No Bog Woodland habitat recorded during the habitats survey Therefore, no impacts are predicted	None

* no impacts predicted but due to proximity to the works best practice mitigation will be followed

Table 3-3 Potential impacts to Annex II species from the Proposed Works

Annex II Species for which suitable habitat/records were noted within close proximity to the Proposed Road Development (see Table 2-1 for information on survey dates and types carried out for the Proposed Road Development).					
Qualifying Interest/Annex II Species	Environmental Sensitivity/Main Threat	Potential Impact	Nature of Impact	Potential for Impact	Mitigation Required
Sea Lamprey Brook Lamprey	Surface water dependant Highly sensitive to water quality impacts	Potential changes to surface water quality due to the proposed works	Moderate negative of temporary duration No instream works to be carried out	Yes	Yes
Crayfish	Surface water dependant Highly sensitive to water quality impacts	Potential changes to surface water quality (nutrient enrichment and turbidity) due to the proposed works Impacts on prey species	Moderate negative of temporary duration No instream works to be carried out	Yes	Yes
Atlantic Salmon	Surface water dependant Highly sensitive to water quality impacts	Potential changes to surface water quality (turbidity) due to the proposed works Impacts to spawning due to sedimentation of gravel beds Impacts to prey species due to changes in water quality	Moderate negative of temporary duration No instream works to be carried out	Yes	Yes
Otter	Surface water dependant Highly sensitive to water quality impacts	Potential changes to surface water quality (and turbidity) due to the proposed works Indirect impacts through impacts to prey species listed above. Potential for road collision fatalities during construction and operational phase	Moderate negative of temporary duration No instream works to be carried out	Yes	Yes

Annex II Species for which no suitable habitat/records were noted within close proximity to the Proposed Road Development					
Qualifying Interest/Annex II Species	Environmental Sensitivity/Main Threat	Potential Impact	Nature of Impact	Potential for Impact	Risk of Impact
1303 Lesser Horseshoe Bat	Loss of roost sites Loss of commuting routes Unsympathetic management of foraging sites	None	N/A	This species was not recorded within ZoI of the Proposed Road Development. No Lesser Horseshoe Bats were recorded during bat surveys Therefore, no impacts are predicted	None
1393 Slender Green Feather-moss	Habitat destruction Sheep and deer grazing Groundwater abstraction	None	N/A	This species does not occur within the ZoI of the Proposed Road Development NPWS (2017). Therefore, no impacts are predicted	None
1833 Slender Naiad	Nutrient enrichment (eutrophication) Drainage	None	N/A	This species does not occur within the ZoI of the Proposed Road Development NPWS (2017). Therefore, no impacts are predicted	None

No significant negative impacts to Annex I habitats within the boundary of the SAC are predicted. Losses to an area of *Molinia* Meadow will occur as a result of the Proposed Road Development. These will occur outside the boundary of the SAC. The total area of Molinia meadow recorded was 1.7ha of which 0.36ha will be lost as a result of the Proposed Road Development. This area is not connected to or in close proximity to any other areas of *Molinia* Meadow within the SAC and is therefore not important as a supporting habitat area to any areas of *Molinia* Meadow within the SAC.

Works will occur adjacent to an area of Petrifying Spring close to where the new road scheme re-joins the existing N63. No works are due to take place within this habitat area. The hedgerow, ditch and bank separating the current N63, and the Petrifying Spring are due to be retained. This will maintain a hydrological barrier between the roadway and the Petrifying Spring habitat. Therefore, no direct impacts are predicted. Indirect minor beneficial impacts are predicted to this habitat area due to reduced runoff, litter and pollution from the existing roadway. This will result from the creation of a sealed drainage system for the roadway. This is replacing the informal ditch cuts currently in place along this section to the north of the existing N63.

A minor area of cut will occur approximately 100m to the east of the Petrifying Spring. The area of cut will be a maximum depth of 0.5-1.0m and is considered unlikely to impact upon the spring's flow regime. This is because during site investigation, the trial pits closest to the cutting and spring (TP06, to 2.5m bgl and TP07 to 3.0m bgl) were noted in logs to be dry. The borehole closest to the cutting and springs (BH10A/RC10) was noted to have slow water ingress at 1.3m bgl, beneath the proposed cut level. No hydrological impacts are therefore considered. . However, a schedule of mitigation measures to ensure this are set out in Section 3.2 of this report.

Beneficial impacts of long-term duration may be predicted with some confidence. These will arise through the additional protection to surface water quality within this area on the closure of the existing N63 to through vehicular traffic. The creation of the new alignment will reduce the risk of runoff of contaminated surface water from the existing road surface affecting this habitat type. The new alignment will be within a closed drainage system and will capture runoff that is currently captured by roadside drainage ditches beside the existing N63.

All potential impacts on qualifying interests species relate to water quality, with no impacts due to shading or other indirect impacts from the Abbert River Bridge predicted.

Several potential impacts are common to all of the Annex II species listed. All relate to reduction in water quality or to impacts on spawning habitat and/or prey species and do not include shading or other indirect impacts from the Abbert River Bridge as the soffit height of the bridge deck is considered sufficient, relative to its width, to ensure sufficient light penetration.

Table 3-4: Summary of Impacts

Qualifying Interest / Annex I Habitat	Nature of Impact		
	Construction Impacts	Operational Impacts	Cumulative Impacts
Molinia* Meadows	Habitat loss Habitat restoration through sod relocation* Not relevant to the SAC as this is outside the SAC and not functionally-linked to the SAC.	Changes in hydrological regime	None
Petrifying Springs	Possible impacts through losses of silt, soil and other polluting materials to the Petrifying Spring during works in close proximity to the Spring. Drying out through ground and surface water interception. Reduced runoff from the roadway during the construction phase of a minor beneficial impact	Net positive impact over time through reductions in surface water runoff from the road way entering the Petrifying Spring habitat area.	None
Sea Lamprey Brook Lamprey	Potential changes to surface water quality due to the proposed works. Changes in habitat structure due to the proposed works	None	None
Crayfish	Potential changes to surface water quality (nutrient enrichment and turbidity) due to the proposed works. Impacts on prey species.	None	None
Atlantic Salmon	Potential changes to surface water quality (turbidity) due to the proposed works. Impacts to spawning due to sedimentation of gravel beds. Impacts to prey species due to changes in water quality Potential impacts of light spill into the river channel	None	None
Otter	Potential changes to surface water quality (and turbidity) due to the proposed works. Indirect impacts and associated effects through impacts to prey species listed above.	None	None

* *Molinia* Meadows habitat area is outside of the Lough Corrib SAC but inside the ZoI.
** Petrifying Spring habitat area is inside the Lough Corrib SAC but outside the ZoI.

Mitigation measures to address these are given in Table 3-5:.

3.2 Mitigation

A review of the elements of the proposed works indicates that there is a potential for impacts to qualifying interests of the Lough Corrib SAC if appropriate mitigation measures are not undertaken. Mitigation measures designed to ensure compliance with the Habitats Directive Article 6 requirements are given below.

Table 3-5: Recommended Mitigation Measures

Potential Impact	Affected Habitat /Species	Recommended Mitigation
Habitat Loss (Outside the SAC boundary and not functionally dependant)	*Molinia* meadows	Construction Phase A number of measures are proposed to avoid disturbance and habitat deterioration of Annex I *Molinia* Meadows during the construction phase of the Proposed Road Development. The footprint of construction activities in the area with *Molinia* have been minimised to the smallest allowable cross section and all other construction works will be kept outside the remaining areas of *Molinia* meadow. The area will be clearly marked and areas to be retained shall be cordoned off in advance of works. No areas where *Molinia* Meadows is known to occur shall be used for storage, stock piling soil or any other auxiliary site activities. The Ecological Clerk of Works (ECoW) shall supervise setting out of the works area to avoid the potential for disturbing Annex I *Molinia* Meadows during works. Where disturbance is unavoidable to offset the loss habitat area including habitat translocation are advised. Some areas of *Molinia* Meadows (outside the SAC boundary) are due to be disturbed by the proposed development as they are within the footprint of works. This area of *Molinia* meadow is not connected to or acting as a supporting habitat area to that within the SAC. The total area of *Molinia* meadow is 1.7ha of which 0.36ha will be lost as a result of the Proposed Road Development Where disturbance to these areas of *Molinia* outside the SAC is unavoidable, measures to offset the loss of this habitat area including habitat translocation will be implemented. In these areas care will be taken to translocate the area of this habitat that exists within the works footprint. A suitable area for translocation has been identified, with similar hydrological conditions. The

Potential Impact	Affected Habitat /Species	Recommended Mitigation
		field adjacent to the southwest of this area is identified as the preferred location however it is subject to further review at detailed design stage (see Appendix I for location) Temporary signage would be installed to highlight the location of *Molinia* Meadows to construction personnel accessing the site. Any requirement for stockpiling, re-fuelling of machinery, site access, etc. during the construction phase would be sited away from *Molinia* Meadows. There would be no interference with areas of *Molinia* Meadows during site works, outside of the proposed route footprint. The Ecological Clerk of Works (ECoW) would verify that the Contractor has left the site of the proposed works as found, and where relevant direct the Contractor to remove any litter, or materials offsite. An area for sod translocation for *Molinia* Meadows has been identified in the adjacent field (see appendix I). This field has the same soil type and composition and hydrological characteristics to the current Molinia meadows site. Therefore, this has been identified as a suitable location for translocated sodes and has been included within the proposed Road development boundary. A detailed translocation plan will be prepared, and an appropriate management plan will be implemented including an extensive grazing and/or mowing regime with annual monitoring to assess the success of the translocation and management regime and to make recommendations for any changes or alterations to the management that are needed. Translocation of sods will only be undertaken in the period of October to November or between February and March. Sods will be cut carefully using a small, tracked excavator or by hand, and handled with care, prior to being translocated to the compensation area. The translocation of intact sods would be supervised by the Ecological Clerk of Works (ECoW) and must be

Potential Impact	Affected Habitat /Species	Recommended Mitigation
		undertaken within 12 hours of cutting the sods. The hydrological regime pertinent to the protection of the *Molinia* meadow is outlined below Hydrological impacts from the Proposed Road The hydrological regime of overland and subsurface water flow shall be retained (to ensure no hydrological barrier) in the vicinity of the *Molinia* meadow by the following methods: 1. Including a layer of free draining stone as part of the starter layer for the road surface 2. Allowing natural overland flow to percolate in the vicinity of the proposed road development The compensation area shall be monitored annually for a period of 3 years. Operational Phase Mitigation A monitoring programme as described above shall be established in order to assess the translocation of *Molinia* sods. This is will include quarterly visits by specialist ecologists who will assess species diversity and abundance over three years post completion of works. The monitoring plan shall also include any grazing, mowing, or invasive species treatment that may be required on the site. Monitoring shall include positive and negative indicator species studies assessments based on the conservation objectives of the *Molinia* meadows within the Lough Corrib SAC (NPWS, 2017) and O'Neill et al (2013).
Changes to the chemical elements (nitrates and phosphates) that define this habitats site specific conservation objectives	Petrifying springs	All works associated with the Proposed Road Development are outside the SAC. This Petrifying spring habitat area is also outside the ZoI for this development. **Pre construction:** A quarterly sampling programme will be undertaken for one year before construction throughout the duration of construction works. This will include scheduling samples for an inorganic suite of analysis, to include pH, electrical conductivity, ammonium, nitrate, fluoride, chloride and sulphate.

Potential Impact	Affected Habitat /Species	Recommended Mitigation
Potential impacts to the hydrological conditions upon which the Spring is reliant.		The footprint of construction activities in the area will be minimised to that required for construction of the road and drainage only and the existing bank and hedgerow which acts as a barrier between the road and this habitat area shall be retained. The area shall be clearly marked and areas to be retained/protected shall be cordoned off in advance of works; Temporary signage will be installed to highlight the location of the Petrifying Spring to construction personnel accessing the site; Any requirement for stockpiling, re-fuelling of machinery, etc. during the construction phase will be sited >50 m away from the Petrifying Spring; There will be no interference with areas of the Petrifying Spring during site works, all works will be confined to those within the existing footprint. Silt fencing and silt traps will be installed along the boundaries of the route and flowing from any pre earthworks drainage to ensure run any runoff from the works area is captured. The petrifying spring is located 9.7m from the boundary of the SAC. A boundary fence will be erected on the roadside of the current hedgerow along the boundary line of the SAC. No works shall be undertaken outside of this area which gives a minimum buffer of 10m for all works away from the spring. Construction Phase Mitigation Clearance of topsoil/substrate is to be kept to an absolute minimum within 50 meters of this habitat area To prevent any impacts to the petrifying spring, imported material for base fill used within 100 meters of the spring habitat would be made of limestone and would be of a size that permits flow of waters through it. Limestone should be washed prior to laying as fill.

Potential Impact	Affected Habitat /Species	Recommended Mitigation
		Weekly visual checks will be undertaken of the spring during construction works, with photographs taken and written descriptions of flow recorded. Potential for hydrological impacts exists due to changes in surface waters runoff adjacent to this habitat area as a result of the Proposed Road Development. The design of the overall proposed drainage scheme will preclude such impacts. Road alignment is to be kept as close to existing at grade alignment as possible to reduce works in this area. Surface water runoff during construction will be intercepted to ensure no impact to the spring during works with 30 meters of the spring. Excavations for the new road carriageway will require a typical excavation depth of approximately 900 mm. Groundwater strikes encountered between 0.9m and 6.0m during drilling. It should be noted that groundwater investigations have concluded that it is unlikely that the construction works will impact on groundwater conditions. Therefore, it is highly unlikely that any hydrological impacts will occur on the petrifying spring habitat here. Nonetheless, precautionary mitigation will be undertaken. With respect to the petrifying springs, the following is proposed: • The minor cutting approx. 100 m to the east is only 0.5-1.0 m deep and is unlikely to impact upon the spring's flow regime. During site investigation, the trial pits closest to the cutting and spring (TP06, to 2.5 m bgl and TP07 to 3.0 m bgl) were noted in logs to be dry. The borehole closest to the cutting and springs (BH10A/RC10) was noted to have slow water ingress at 1.3 m bgl, beneath the proposed cut level. However, as a precautionary measure a groundwater risk assessment will be undertaken ahead of works. • A groundwater risk assessment will be carried out ahead of works/prior to construction works.

Potential Impact	Affected Habitat /Species	Recommended Mitigation
		• A quarterly sampling programme will be undertaken for one year before, during and two years after construction works. This will include scheduling samples for an inorganic suite of analysis, to include pH, electrical conductivity, ammonium, nitrate, fluoride, chloride and sulphate. • Weekly visual checks will be undertaken of the spring during construction works, with photographs taken and written descriptions of flow recorded. The ZoI of construction works will be confirmed by the hydrogeologist following risk assessment to inform appropriate mitigation during the construction phase. Operational Phase Mitigation Surface water infrastructure will ensure that runoff is directed away from this habitat area during the operational phase of the proposed development. A quarterly sampling programme will be undertaken for two years after construction works. This will include scheduling samples for an inorganic suite of analysis, to include pH, electrical conductivity, ammonium, nitrate, fluoride, chloride and sulphate. Ecological monitoring is to be undertaken as per guidelines given by the NPWS (2016). This monitoring is to employ suitable indicator criteria as per Lyons & Kelly (2016) such as tufa type, surface water characteristics and field/ground flora. Cumulative Impacts No Cumulative Impacts are predicted therefore no mitigation measures are required

Potential Impact	Affected Habitat /Species	Recommended Mitigation
Potential changes to surface water quality (nutrient enrichment and turbidity) due to the proposed works	Sea Lamprey Brook Lamprey Atlantic Salmon Crayfish	Construction Phase Mitigation Control measures implemented though a Construction Environmental Management Plan (CEMP) including silt fencing, silt traps and cut off drains will be used throughout the construction phase to reduce the risk of losses of soil, sediments, and other potentially polluting material to the Abbert River. Regular monitoring and recording of the effectiveness of the control measures would be implemented. This to include daily monitoring of turbidity, pH, and conductivity, as well as weekly monitoring of the above parameters as well as suspended solids, total petroleum hydrocarbons and volatile organic compounds. The Proposed Road Development will incorporate an embedded drainage system design that will allow storm-water management. This will include petrol interceptors when out-falling to the Abbert River and attenuation ponds that will ensure adequate sufficient protection to water for all these QI species Sheet piling will be required for abutment construction within 10 m of the riverbank. Piling of the proposed bridge abutments adjacent to the Abbert River should be programmed so as to avoid sensitive lifecycle periods for QI Atlantic Salmon and Brook Lamprey. Piling is advised to be scheduled from July to September inclusive, unless otherwise agreed with IFI; Light spill onto the river channel during hours of darkness has the potential to affect QI Atlantic Salmon. Turning off lights during periods of darkness whilst the construction phase is in close proximity to the river will be carried out. Light spill from construction onto the Abbert River will not exceed 1 lux (equivalent to moonlight); Dewatering of open trenches requires silt mitigation. This could include the use of silt bags, settlement tanks and/or attenuation ponds. Excavation of drains will require waters to be over-pumped/piped/diverted and silt mitigation installed where necessary. Drain works should be undertaken in a manner, and in a timeframe to be agreed with Inland Fisheries Ireland. It is noteworthy that some drain works are classified as ‘instream works’ and therefore time restrictions for these works may

Potential Impact	Affected Habitat /Species	Recommended Mitigation
		apply. Drain works could require the use of silt bags, settlement tanks and/or attenuation ponds to ensure no pollution to watercourses; To avoid negative effects on water quality in the Abbert River, all sections of river/stream channel within the Proposed Road Development boundary, but not within the footprint of the Proposed Road Development and associated infrastructure, will be protected from site clearance and construction works. Rivers/streams will be fenced off at a minimum distance of 10 m from the river bank (unless otherwise agreed with the ECoW to within 5 m for specific circumstances (bridge development) and within this zone the natural riparian vegetation will be retained. No abstraction of water for dust suppression from the Abbert River will occur; The drain identified as having fishery potential will need to have fish captured and removed, under licence, in a manner to be agreed with Inland Fisheries Ireland (e.g. by 1. electrofishing and netting/2. dewatering with a pump (with a mesh suitable to stop fish suction into the pump) and netting. Live fish will need to be captured and released to the Abbert River. De-fishing will need to be undertaken under licence from IFI. No fishing will be required if the drain has dried out of natural causes and there is no fish potential in the drain; and No discharge of pollutants to the adjacent river, should occur. Operation Phase Mitigation The Proposed Road Development will incorporate an embedded drainage system design that will allow storm-water management. This will include petrol interceptors when outfalling to the Abbert River and attenuation ponds. Cumulative Impacts No Cumulative Impacts predicted therefore no mitigation measures are required

Potential Impact	Affected Habitat /Species	Recommended Mitigation
Potential changes to surface water quality (nutrient enrichment and turbidity) due to the proposed works	Otter	Construction Phase Mitigation Control measures, implemented though a Construction Environmental Management Plan(CEMP) including silt fencing, silt traps and cut off drains will be used throughout the construction phase to reduce the risk of losses of soil, sediments and other potentially polluting material to the Abbert River. Regular monitoring and recording of the effectiveness of the control measures would be implemented with additional control measures employed. This to include daily monitoring of turbidity, pH, and conductivity, as well as weekly monitoring of the above parameters as well as suspended solids, total petroleum hydrocarbons and volatile organic compounds The Proposed Road Development will incorporate an embedded drainage system design that will allow storm-water management. This will include petrol interceptors when out-falling to the Abbert River and attenuation ponds that will ensure adequate sufficient protection to water for all these QI species Piling of the proposed bridge abutments adjacent to the Abbert River should be programmed so as to avoid sensitive lifecycle periods for QI Atlantic ***S***almon and Brook ***L***amprey. Piling is advised to be scheduled from July to September inclusive, unless otherwise agreed with IFI. Dewatering of open trenches requires silt mitigation. This may include the use of silt bags, settlement tanks and/or attenuation ponds. Excavation of drains would require waters to be over-pumped/ piped/ diverted and silt mitigation installed where necessary. Drain works should be undertaken in a manner, and in a timeframe to be agreed with Inland Fisheries Ireland. It is noteworthy that some drain works are classified as 'instream works' and therefore time restrictions for these works may apply. Drain works may require the use of silt bags, settlement tanks and/or attenuation ponds. As in the future Otter could potentially establish new holt or couch sites within the ZoI of the Proposed Road Development, a pre-construction survey of all suitable Otter habitat will be required within 12 months of any constructions works commencing.

Potential Impact	Affected Habitat /Species	Recommended Mitigation
		Operational Phase Mitigation To avoid Otter road casualties, Otter passage will be enabled under the clear-span bridge structure. Otter passage will also generally be enabled via the (minimum diameter 600 mm pipes) used on crossing drainage ditches, which have been designed primarily for drainage purposes. Mammal-resistant fencing will be incorporated on either side of all watercourses at which otter presence is known and will stretch to at least 25m up to 50m or more either side of the crossing. The construction of mammal resistant fencing will adhere with the specification outlined in 'Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes', and TII's mammal resistant fencing specification (currently CC-SCD-00320/00319), and will include Badger proofing of emergency access roads and other similar access points, in areas where mammal-resistant fencing is to be installed
Impacts to spawning due to sedimentation of gravel beds	Atlantic Salmon	Construction Phase Mitigation Control measures such as silt fencing would be used throughout the construction phase to reduce the risk to the River Abbert. Regular monitoring and recording of the effectiveness of the control measures would be implemented with additional control measures employed if and when required. Piling of the proposed bridge abutments adjacent to the Abbert River should be programmed so as to avoid sensitive lifecycle periods for QI Atlantic Salmon and Brook Lamprey. Piling is advised to be scheduled from July to September inclusive, unless otherwise agreed with IFI. As there will be no piling works in stream or any other in-stream works, the piling will not, it is believed, give rise to any significant impacts when works are carried out outside of the sensitive period for salmonid species. Dewatering of open trenches requires silt mitigation. This may include the use of silt bags, settlement tanks and/or attenuation ponds. Excavation of drains would require waters to be over-pumped/ piped/ diverted and silt mitigation installed where necessary. Drain works should be undertaken in a manner, and in a timeframe to be agreed with Inland Fisheries Ireland. It is noteworthy that some drain works are classified as 'instream works' and therefore time restrictions for these works may apply. Drain works may require the use of silt bags, settlement tanks and/or attenuation ponds.

Potential Impact	Affected Habitat /Species	Recommended Mitigation
Indirect impacts through impacts to prey species listed above.	Atlantic Salmon Crayfish Otter	Construction Phase Mitigation Control measures such as silt fencing would be used throughout the construction phase to reduce the risk to the Abbert River. Regular monitoring and recording of the effectiveness of the control measures would be implemented with additional control measures employed if and when required. Piling of the proposed bridge abutments adjacent to the Abbert River should be programmed so as to avoid sensitive lifecycle periods for QI Atlantic salmon and Brook lamprey. Piling is advised to be scheduled from July to September inclusive, unless otherwise agreed with IFI. Dewatering of open trenches requires silt mitigation. This may include the use of silt bags, settlement tanks and/or attenuation ponds. Excavation of drains would require waters to be over-pumped/ piped/ diverted and silt mitigation installed where necessary. Drainage works should be undertaken in a manner, and in a timeframe to be agreed with Inland Fisheries Ireland. It is noteworthy that some drainage works are classified as 'instream works' and therefore time restrictions for these works may apply. Drain works may require the use of silt bags, settlement tanks and/or attenuation ponds.

Other recommendations for the protection of water quality and aquatic qualifying interests

- Any diesel or fuel oils stored on site must be bunded to 110% of the capacity of the storage tank. Design and installation of fuel tanks must be in accordance with best practice guidelines BPGCS005, oil storage guidelines. Drip trays and spill kits must be kept available onsite;
- All stationary plant must be placed on drip trays to prevent leaking oils reaching the river or entering groundwater;
- No washings or waste materials of any kind can be directed into the river; and
- Machinery on site must have pollution control kits on hand in the event of an emergency.

Best Practice Guidelines

In addition to the above mitigation measures, the following best practice guidelines shall be followed during construction works:

- IFI. (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters. Inland Fisheries Ireland, Dublin.
- Murnane, E., Heap, A. and Swain, A. (2006). Control of water pollution from linear construction projects. Technical guidance (C648). CIRIA.
- TII. (2005). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. Transport Infrastructure Ireland, Dublin...
- TII. (2006). Guidelines for the Treatment of Otters during the Construction of National Road Schemes, Transport Infrastructure Ireland, Dublin...

Implementing Best Practice

1. A Construction Environmental Management Plan (CEMP) shall be devised prior to the commencement of any works. This shall be approved for works prior by the client and adopted by the contractors.
2. To oversee the implementation of the CEMP, the Contractor would be required to appoint a suitably qualified person, or persons, to the role of Ecological Clerk of Works (ECoW) to monitor the construction works. The ECoW would be required to work closely with the Contractor's Site Supervisor to monitor activities and ensure that all relevant environmental legislation is complied with and that the requirements of the CEMP are implemented.
3. All site contractors should be briefed regarding the environmental sensitivity of the site, including the importance of the European designated site and its qualifying interests. Toolbox talks should be held to inform site staff of best practice required in these areas.
4. When working near the Abbert River, other watercourses or other sensitive areas, the ECoW shall carry out daily inspections of the site of works.

3.3 Residual Effects

An overview of the potential for adverse impacts and associated effects and the mitigation measures proposed for this SAC is presented in Table 3-5:. Taking account of the relative ease of implementation of these mitigation measures, there can be a high level of confidence in their efficacy and success. It is considered that there is no potential for residual adverse effects on these Annex I species.

Residual impacts adverse impacts to an area of *Molinia* Meadow will occur as a result of the proposed development this is outside the SAC boundary and not connected to or in close proximity to any areas of *Molinia* meadow found within the SAC boundary. Therefore, no residual impacts to this Annex I habitat will occur as a result of the Proposed Road Development. No residual negatives effects to the Petrifying Spring habitat are predicted as a result of the Proposed Road Development. Minor beneficial effects may occur due to reductions in runoff from the existing roadway overtime. It is further believed that when mitigation is applied, the Proposed Road Development would not adversely affect the integrity of this SAC, given the site's conservation objectives.

3.4 Conclusion

This NIS and the preceding Appropriate Assessment Screening Assessment have considered the potential for significant effects arising from the Proposed Road Development that would have the potential to adversely affect any Natura 2000 site; with regard to their qualifying interests and conservation objectives. The Proposed Road Development would include works immediately adjacent to the Lough Corrib SAC.

The potential for direct, indirect and cumulative impacts affecting the above designations has therefore been assessed in this NIS. The appraisal undertaken in this NIS has been informed by project-specific site surveys and specialist reporting with reference to the ecological communities and habitats potentially affected by the Proposed Development, in order to provide a scientific basis for evaluations.

Measures for impact reduction have been incorporated into the project proposal, including avoidance, in addition to mitigation measures proposed in the NIS for the avoidance and reduction of impacts on the qualifying interests and conservation objectives of the designated Natura 2000 site within the study area.

With the implementation of these measures the Proposed Road Development would not result in direct, indirect or cumulative impacts which would have the potential to adversely affect the qualifying interests/special conservation interests of the Natura 2000 site with regard to the range, population densities or the site-specific conservation objectives of the habitats and species for which this site is designated.

Given the determination of no residual adverse impacts after the predicted impacts have been mitigated. It may therefore be concluded in view of the best scientific knowledge and in view of the conservation objectives of the site, that the Proposed Road Development with the implementation of the prescribed mitigation measures, would not give rise to significant adverse effects individually or in combination with other plans or projects (either directly or indirectly) on the integrity of the Lough Corrib SAC or any other designated sites within the Natura 2000 network.

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Appendix I: Maps

N

Lough Corrib SAC

Lough Lurgeen Bog/Glenamaddy Turlough SAC

Camderry Bog SAC

Levally Lough SAC

Shankill West Bog SAC

Curraghlehanagh Bog SAC

Derrinlough (Cloonkeenleananode) Bog SAC

Carrownagappul Bog SAC

15km

10km

5km

1km

Lough Corrib SAC

Lough Corrib SAC

Lough Corrib SPA

Monivea Bog SAC

Tuam

Moylough

Mountbellew

Castleblakeney

Caltra

Lackagh

Baile Chláir

Attymon

Ballybrit

Athenry

Galway Airport

Woodlawn Woods

R332 R362 R364 R328 R363 R333 R315 R358 R359 R354 R347 R339 R381 R348 N83 N17 N63 N84 M17 M6

0 2.5 5 Kilometers

© OpenStreetMap (and) contributors, CC-BY-SA

Filename: \\na.aecomnet.com\ifs\EMEA\Dublin-IEDBL2\Legacy\DU-MAN-002\Data\CoDublin-Jobs\GIS\60597858_N63_Ph1-4\GIS\02_Maps\Figure X - Designated sites within 15km of the Proposed Road Development.mxd

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Project Title:

N63 LISS TO ABBEY REALIGNMENT SCHEME

Client:

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project Ireland 2040 Building Ireland's Future

Comhairle Chontae na Gaillimhe Galway County Council

LEGEND

- N63 Liss to Abbey Realignment Scheme
- 15km Study Area

Designated Sites

- Speacial Areas of Conservation (SAC)
- Special Protection Areas (SPA)

AECOM Internal Project No:

60597858

Drawing Title:

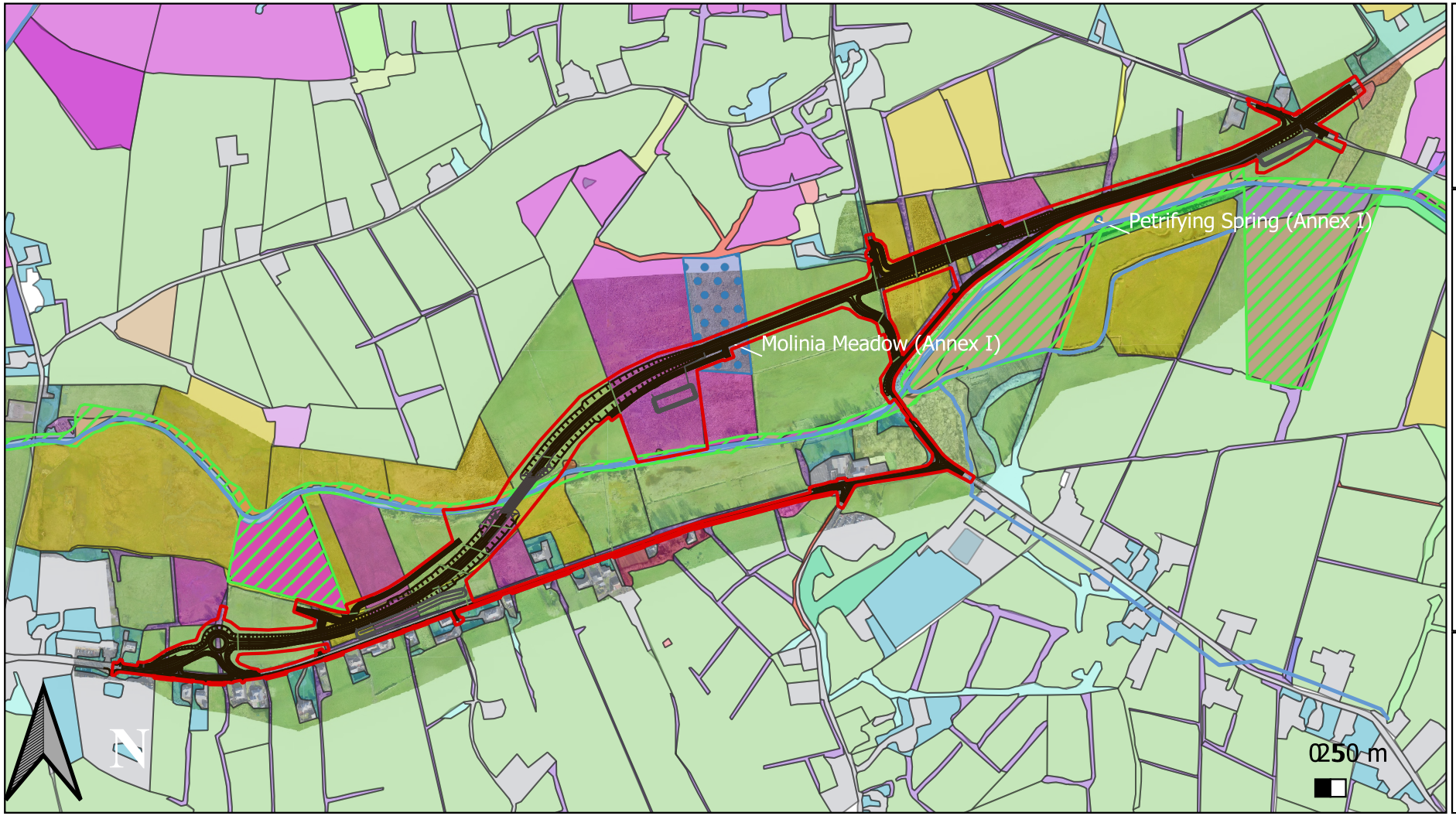
DESIGNATED SITES WITHIN 15KM OF THE PROPOSED ROAD DEVELOPMENT

Scale at A3: 1:125,000

Drawing No:

Drawn:	Chk'd:	App'd:	Date:
DG	LM	EK	16/07/2021

Overview Map



FLYNN FURNEY
ENVIRONMENTAL CONSULTANTS

Prepared by:
Ian Douglas

Date:
29/11/2021

Job:
N63 Liss to Abbey Realignment Scheme Natura Impact Statement Report

Client: AECOM

Disclaimer: This map has been prepared in accordance with the scope of services described in the contract or agreement between Flynn Furney and the Client. Any findings only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client.

Legend

- Route and associated Infrastructure
- Bridge Structure
- CPO Line
- Attenuation Ponds
- Culverts
- Water Courses
- Lough Corrib SAC
- Annex I Habitats

Habitats Types

- Amenity grassland
- Amenity grassland/Stone walls and stonework
- Buildings and artificial surfaces
- Calcareous spring (Annex 1)
- Conifer plantation
- Drainage ditches
- Dry calcareous and neutral grasslands
- Dry calcareous and neutral grasslands/ Scrub
- Hedgerow
- Hedgerow/Scrub
- Hedgerow/Treeline
- Immature woodland
- Improved grasslands
- Improved grasslands/Scrub
- Improved grasslands/Wet grasslands
- Mixed broadleaved woodland
- Mixed broadleaved woodland/Improved grassland
- Mixed broadleaved woodland/Treelines
- Molinia Meadow (Annex I)
- Non-calcareous spring
- Ornamental/non-native Shrubs
- Pond
- Riparian woodland
- Scrub
- Scrub/Hedgerow
- Scrub/Mixed broadleaved woodland
- Spoil and bare ground
- Stone walls and stone work
- Tilled Land
- Treeline
- Upland Eroding River
- Wet grassland

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- Lough Corrib SAC

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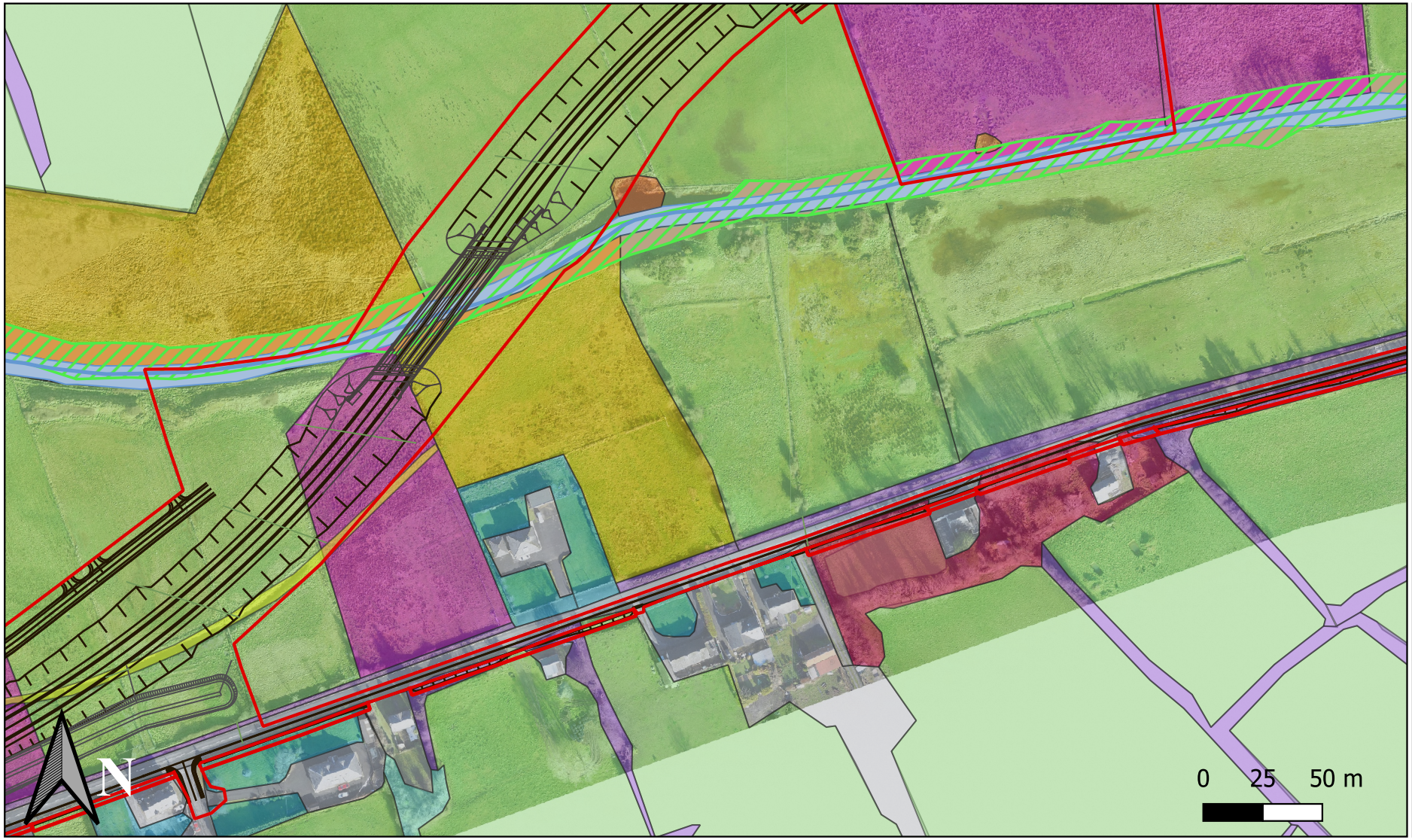
- Buildings and artificial surfaces
- Drainage ditches
- Hedgerow
- Improved grasslands
- Improved grasslands/Wet grasslands
- Treeline
- Upland Eroding River
- Wet grassland



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- Treeline
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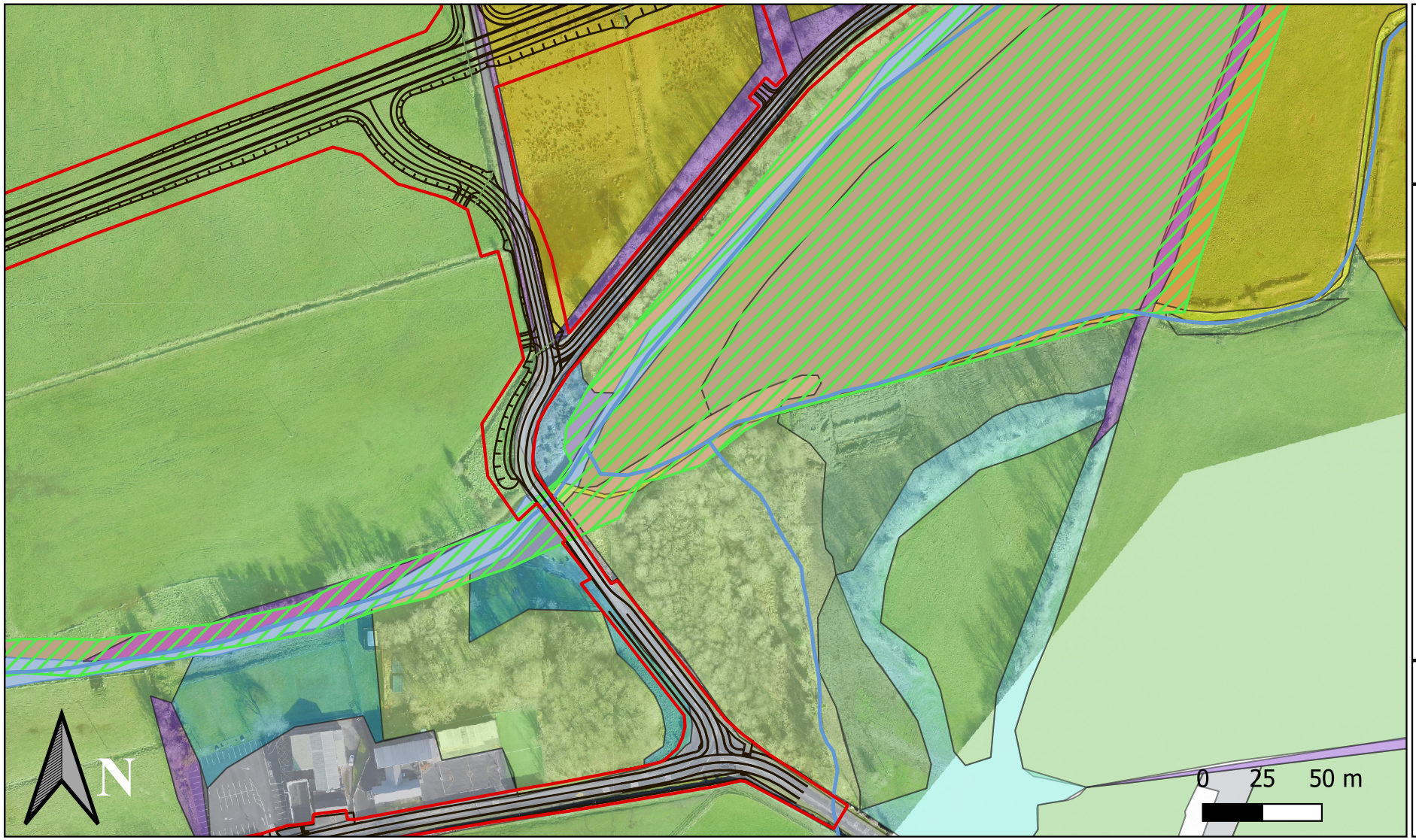
- Dry calcareous and neutral grasslands/ Scrub
- Hedgerow
- Hedgerow/Treeline
- Improved grasslands
- Improved grasslands/Wet grasslands
- Mixed broadleaved woodland
- Molinia Meadow (Annex I)
- Non-calcareous spring
- Scrub
- Scrub/Mixed broadleaved woodland
- Upland Eroding River
- Wet grassland



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- Scrub
- Treeline
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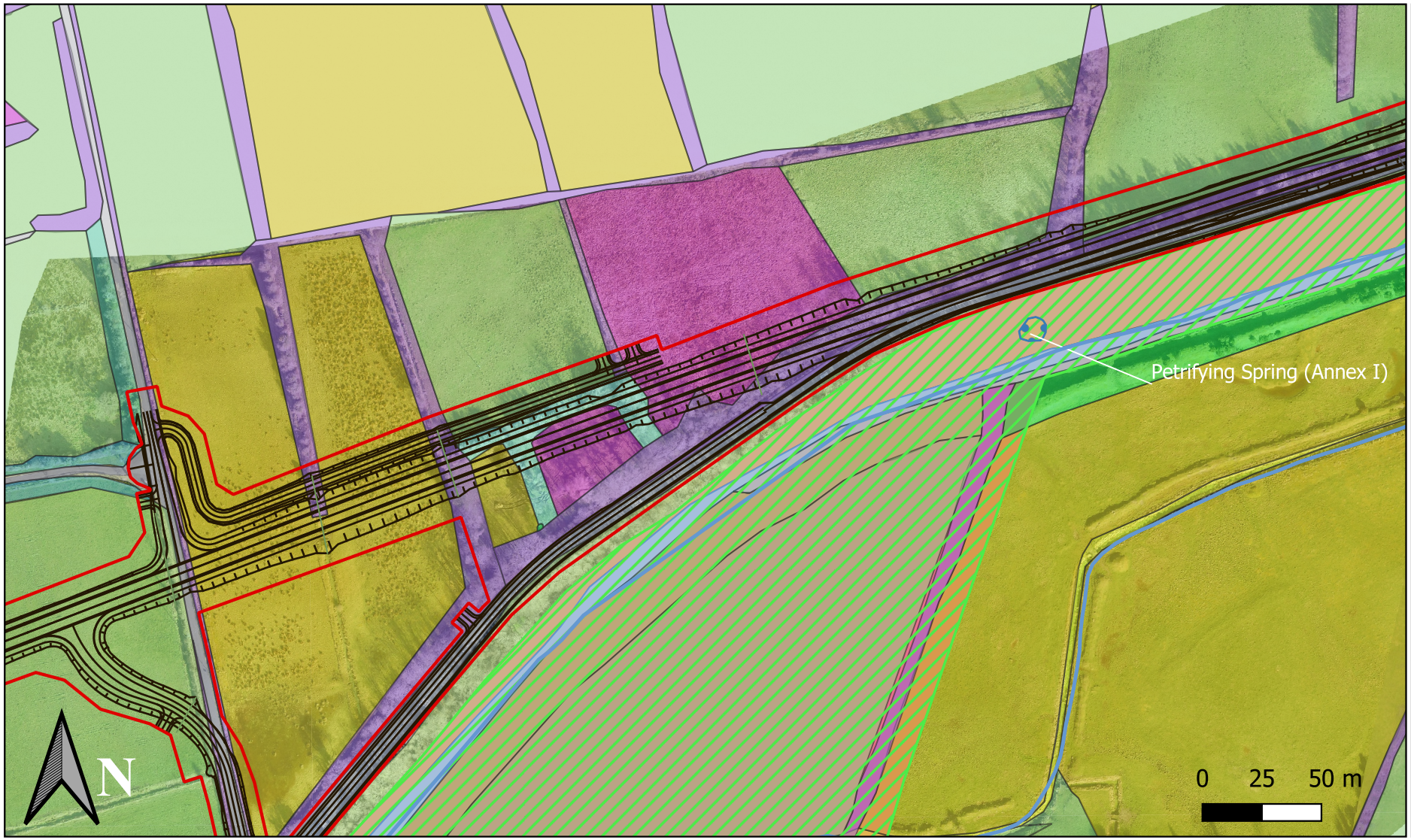

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- Route and associated Infrastructure
- Attenuation Ponds
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- Lough Corrib SAC
- Annex I Habitats

Habitats Types

- Amenity grassland
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- Calcareous spring (Annex 1)
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- Hedgerow/Scrub
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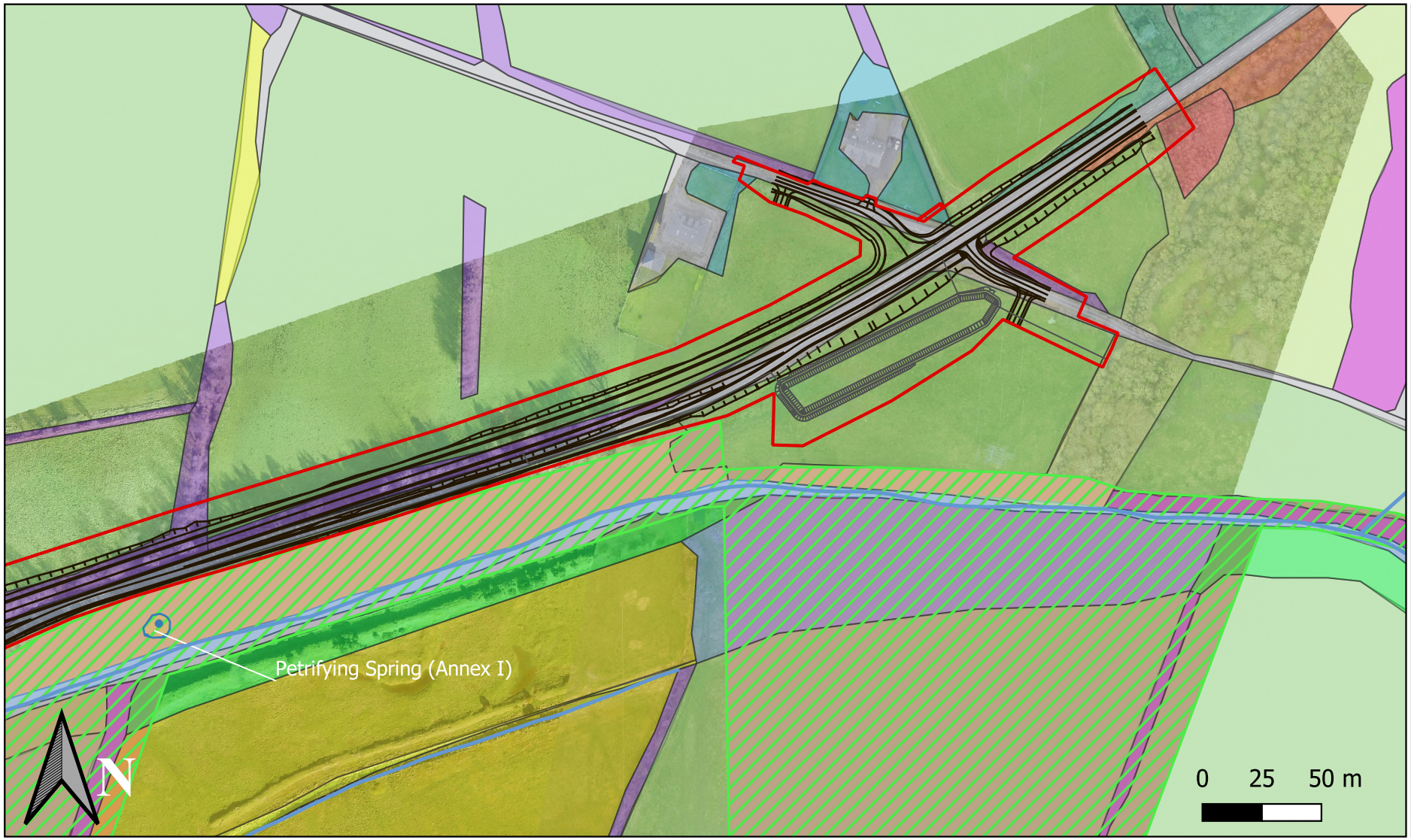

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- Attenuation Ponds
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- Lough Corrib SAC
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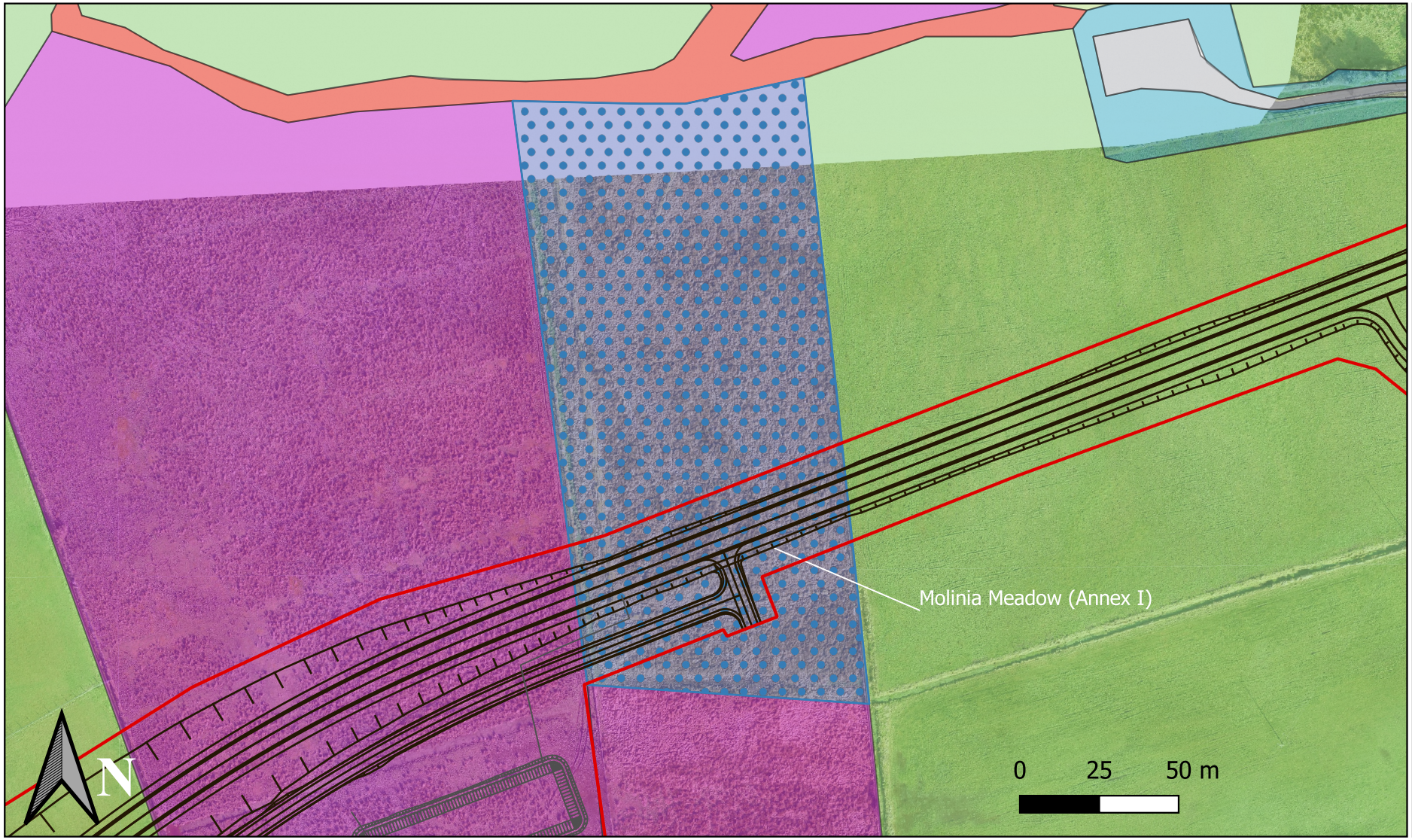
- Improved grasslands/Scrub
- Improved grasslands/Wet grasslands
- Mixed broadleaved woodland
- Riparian woodland
- Treeline
- Upland Eroding River
- Wet grassland

Molinia Meadow Habitat Area and Sourounds



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ENVIRONMENTAL CONSULTANTS

Prepared by:
Ian Douglas

Date:
29/11/2021

Job:
N63 Liss to Abbey Realignment Scheme Natura Impact Statement Report

Client: AECOM

Legend

- Route and associated Infrastructure
- 15km Buffer
- Attenuation Ponds

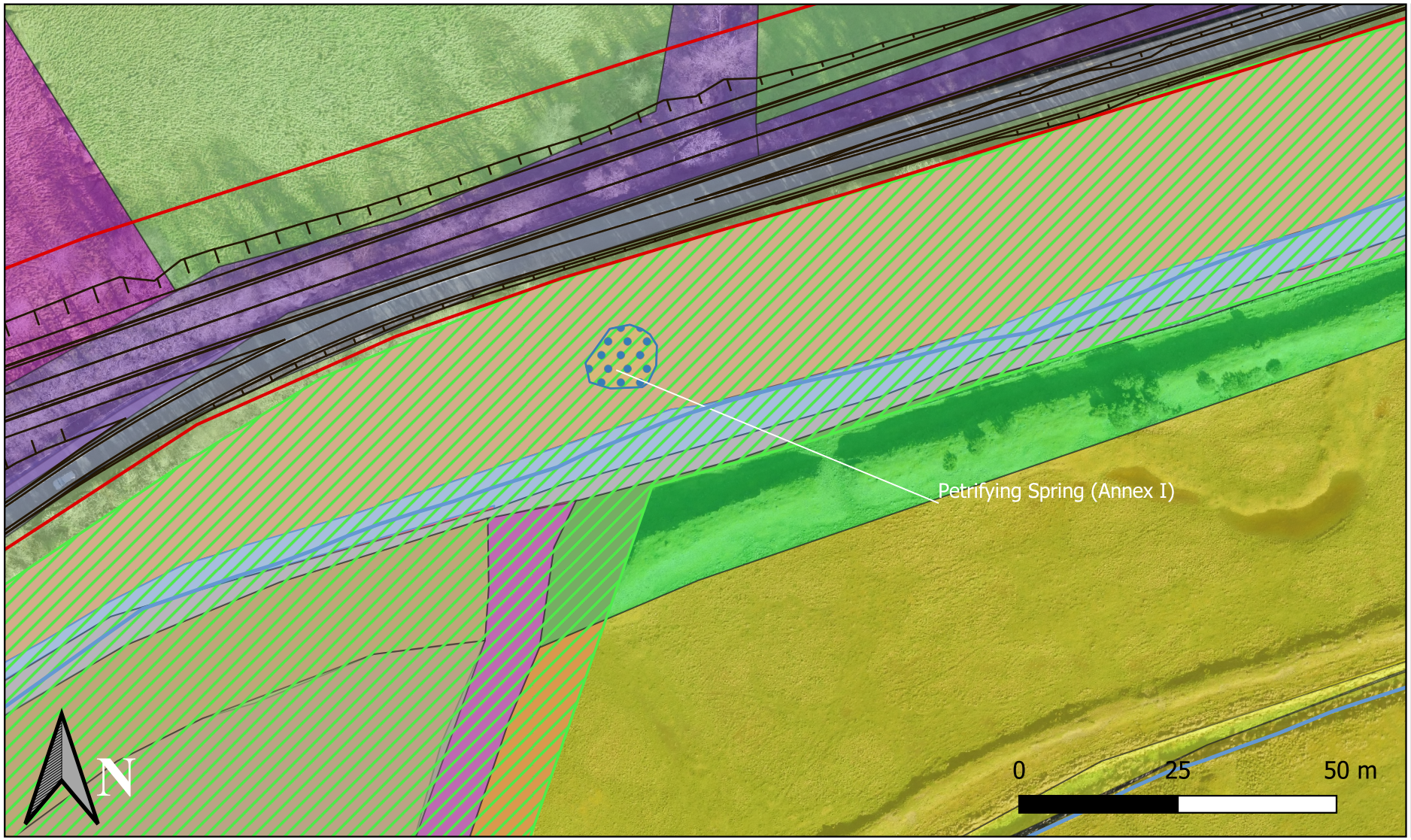
centrs

- Molinia Meadow (Annex I)
- Annex I Habitats

Habitats Types

- Amenity grassland
- Buildings and artificial surfaces
- Hedgerow/Treeline
- Improved grasslands
- Mixed broadleaved woodland
- Molinia Meadow (Annex I)
- Wet grassland

Petrifying Spring Habitat Area and Sourounds



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Prepared by:
Ian Douglas

Date:
29/11/2021

Job:
N63 Liss to Abbey Realignment Scheme Natura Impact Statement Report

Client: AECOM

Legend

- Route and associated Infrastructure
- 15km Buffer
- Water Courses
- Lough Corrib SAC

centrs

Petrifying Spring (Annex I)

- Annex I Habitats

Habitats Types

- Buildings and artificial surfaces
- Calcareous spring (Annex 1)
- Drainage ditches
- Dry calcareous and neutral grasslands
- Dry calcareous and neutral grasslands/ Scrub
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- Improved grasslands
- Improved grasslands/Wet grasslands
- Mixed broadleaved woodland
- Treeline
- Upland Eroding River
- Wet grassland

Appendix II: Appropriate Assessment Determination by Galway County Council

Comhairle Chontae na Gaillimhe
Galway County Council

Chief Executive Order NO.: 1329 **FILE No:** _____

SUBJECT: N63

Screening for Appropriate Assessment of the N63 Liss to Abbey Realignment Scheme

I, Eileen Ruane, Director of Services, Planning, Environment & Emergency Services,

by virtue of the powers conferred on me by the Local Government Acts 1925 to 2019, it is hereby ordered that:

In accordance with Regulation 250(1) of the Planning and Development Regulations, 2001, (S.I. No. 600 of 2001) as inserted by Regulation 26 of the Planning and Development (Amendment) (No. 3) Regulations, 2011 (S.I. No. 476 of 2011), concerning 'Screening for appropriate assessment,' which states:

'In order to ascertain whether an appropriate assessment is required in respect of a development which it proposes to carry out a local authority shall carry out a screening of the proposed development to assess, in view of best scientific knowledge, if the development, individually or in combination with other plans or projects, would be likely to have a significant effect on a European site,

and having considered the report entitled N63 Liss to Abbey Realignment Scheme Appropriate Assessment(AA) Screening Report – (AECOM - ROD December, 2020), and having agreed with the conclusions of same, I have determined that the proposed N63 Liss to Abbey Realignment Scheme could give rise to a significant effect on a European site, i.e. I conclude that significant effects on any European site, individually or in combination with other plans and projects, cannot be excluded on the basis of objective information.

Signed this 18th **day of December, 2020.**

Eileen Ruane

Eileen Ruane,

Director of Services, Planning, Environment & Emergency Services.

ORDÚ PRÍOMH - FHEIDHMEANNACH

CHIEF EXECUTIVE'S ORDER

Appendix III: Appropriate Assessment Screening

N63 Liss to Abbey Realignment Scheme

Appropriate Assessment (AA) Screening Report

Galway County Council

AECOM Project Number: 60597858
GCC Project Number: GC/16/13416

Document Reference: N63-ACM-PH03-ZZ-RP-EC-0001

December 2020

FLYNN FURNEY
ENVIRONMENTAL CONSULTANTS

N63 Liss to Abbey Realignment Scheme

Appropriate Assessment Screening Report.

Date: December 2020

For: AECOM

Contents

1 Introduction

Flynn Furney have been commissioned by AECOM to carry out a Stage 1 Appropriate Assessment (AA) Screening for proposed N63 Liss to Abbey Realignment Scheme (hereafter referred to as the 'Proposed Road Development'). This screening exercise aims to determine whether the proposed works associated with the Proposed Road Development have the potential to significantly impact upon the conservation objectives, qualifying interests or overall integrity of any Natura 2000 sites.

This assessment is based upon desk study and field work carried out by suitably qualified ecologists. This report has been completed to provide information regarding the ecological status of the proposed site of works. The report includes a general ecological assessment of the potential impacts of the proposed works on the ecology of the surrounding area, including designated sites. This report has been completed to provide the information necessary to allow the competent authority to conduct an Article 6[3] AA Screening of the proposed works. The legislation and methodology for which is detailed in the following sections.

Sections 5 of the report comprises the AA Screening that specifically focuses on the potential for impacts to the Lough Corrib Special Area of Conservation (SAC) the only designated site deemed to be potentially at risk of impact from the Proposed Road Development.

1.1 Proposed Works

The overall length of the Proposed Road Development is circa 2.3 km of new Type 2 Single Carriageway road (predominantly offline). The Proposed Road Development site covers an area of circa 12 ha.

An overview of the Proposed Road Development includes the following;

- One new roundabout at the western end of the scheme to provide connection with the existing N63;
- Two new priority junctions to provide connection to the existing L6159 and L6234, including some minor local road realignments;
- One new clear span bridge crossing of the River Abbert;
- New piped culverts over existing field ditches;

- Improved and new pedestrian and cycle facilities, predominantly located along the existing N63;
- Associated earthworks including excavation of unacceptable material, excavation and processing of rock and other material, provision of material deposition areas and deposition and recovery of unacceptable material for reuse in the works;
- Accommodation works, including the provision of access roads and accesses;
- Drainage works, including the construction of attenuation ponds;
- Utilities and services diversion works;
- Safety barrier, public lighting, fencing;
- Landscaping works; and
- Environmental measures and other ancillary works.

2 Legislative context

The methodology for this screening statement is clearly set out in a document prepared for the European Commission's Directorate-General for the Environment (Environment DG) of the European Commission entitled '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' (EC, 2001). This report and contributory fieldwork were carried out in accordance with the Department of Environment, Heritage and Local Government (DoEHLG) guidance document on the 'Appropriate Assessment of Plans and Projects in Ireland' (DoEHLG, 2009; updated 2010).

The process is given in Articles 6(3) and 6(4) of the Habitats Directive and is commonly referred to as 'Appropriate Assessments' (which in fact refers to Stage 2 in the sequence under the Habitats Directive Article 6 assessment). Article 6 of the Habitats Directive sets out provisions which govern the conservation and management of Natura 2000 sites. Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). 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 and 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 implication 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."

Article 6(4) of the same directive states: If, in spite of a negative assessment of the implications for the 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 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.

It is the responsibility of the proponent of the plan or project to provide the relevant information (ecological surveys, research, analysis etc.) for submission to the 'competent national authority'. If satisfied that the information is complete and objective, the competent authority will use this information to screen the project, i.e. to determine if an AA is required and to carry out the AA, if one is deemed necessary. The competent authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned.

The AA process has four stages. Each stage determines whether a further stage in the process is required. If, for example, the conclusions at the end of Stage One are that there will be no significant impacts on the Natura 2000 site, there is no requirement to proceed further. The four stages are:

1. Screening to determine if an AA is required;
2. AA;
3. Consideration of alternative solutions; and
4. Imperative Reasons of Overriding Public Interest/Derogation.

2.1 Stage 1 Screening for Appropriate Assessment

This report provides stage one: Screening for AA. It aims to establish whether the proposed works are likely to have an effect on any Natura 2000 sites. The study is based on a preliminary impact assessment using both publicly available data, data collected during site visits, ecological surveys and methods statements for the proposed works. This is followed by a determination of whether there is a risk that the effects identified could significantly impact any Natura 2000 sites, and if so, an AA is required.

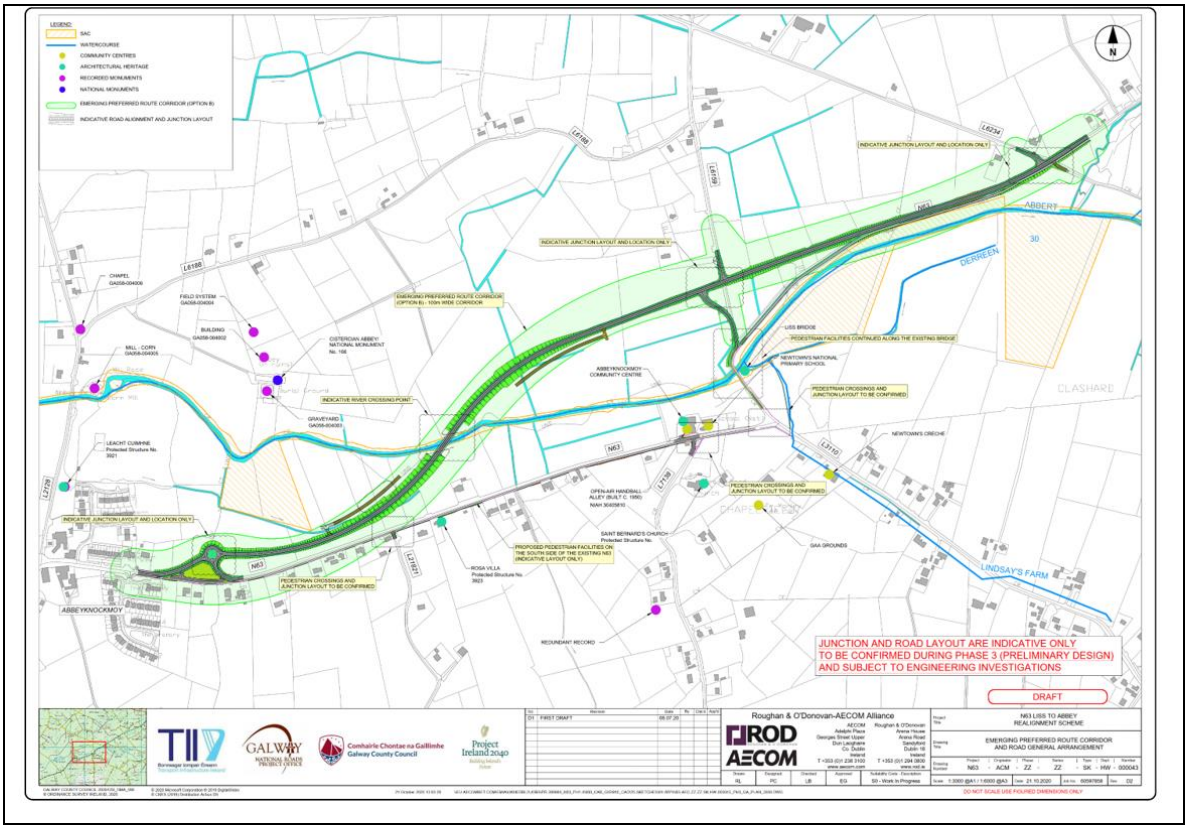
The need to apply the precautionary principle in making any key decisions in relation to the tests of AA has been confirmed by European Court of Justice case law. Therefore, where significant effects are likely, possible or uncertain at screening stage, AA will be required.

3 Description of the Project and Local Site Characteristics

3.1 Site location

The Proposed Road Development is situated to the northeast of Galway City, located along the N63 corridor. The N63 is a national secondary route, and this section of the N63 is located directly to the east of Abbeyknockmoy village. The Proposed Road Development extends from the eastern edge of Abbeyknockmoy, across the Abbert River, to the townland of Derreen and on towards the junction of the N63 with the L6234. The Abbert River forms part of the Lough Corrib SAC.

Figure 1: Location Map



The surrounding landscape is dominated by pasture-based agricultural lands separated by ditches and hedgerows. Grasslands were generally wet unless agricultural improvements had taken place. Areas of scrub and woodlands were also common locally.

3.2 Works, Site Characteristics and Risks to the Environment

The Proposed Road Development is circa 2.3 km new Type 2 Single Carriageway road. A detailed description of works is provided in Section 1.1. Risks to the environment posed by the Proposed Road Development include possible:

- Losses of soil, sediments and other polluting material to the Abbert River directly or via other drainage feature;
- Impacts to protected bird, mammal and aquatic vertebrate species as a result of the loss of above polluting material;
- Impacts due to noise, nuisance, disruption to normal function or disturbance due to works associated with the construction phase of the project; and
- Impacts due to noise, nuisance, disruption to normal function or disturbance due to the operational phase of the project.

4 Ecological Assessment

4.1 Desk Study

Prior to the main fieldwork contributing to this assessment, a desktop survey of available information sources was carried out, these included:

- The National Biodiversity Data Centre (NBDC) Online Database;
- The National Biodiversity Network Online Atlas;
- The National Parks and Wildlife Service (NPWS) Protected Species Database and Online Mapping; and
- The Environmental Protection Agency Database.

Records available through the NBDC mapping system were reviewed. Records were requested for all species previously recorded as appearing within the study area or within a 2 km radius of the study area.

Designated sites were identified using the current boundary shapefiles downloaded from the NPWS website. Habitat mapping also included a review of Irish Semi-Natural Grassland Surveys (ISGS), the National Survey of Native Woodland (NSNW) and Ancient Woodland Inventory data.

NPWS data on protected species including Freshwater Pearl Mussel and important Salmonid rivers was also accessed and reviewed as part of this assessment.

A review of data gathered from the NBDC is presented Appendix 2. This lists all species that have been recorded within or within a 2 km radius of the boundary of the site since records began. The most recent records the NBDC held relate to surveys conducted as part of the Bird Atlas 2007 – 2011.

Important species recorded included red listed bird species the Barn Owl (*Tyto alba*), Black-headed Gull (*Larus ridibundus*) and the Eurasian Curlew (*Numenius arquata*). Amber listed species including Eurasian Teal (*Anas crecca*), Common Snipe (*Gallinago gallinago*) and the Common Pochard (*Aythya ferina*).

No areas of woodland, grassland, wetlands or waterways are considered important for the protection of species and habitats were recorded within publicly available data within the footprint of the proposed development or within 1 km of the boundary of the site. The exception being the Abbert River which forms part of the Lough Corrib SAC. This is discussed in detail below.

4.2 Designated Sites

Sites designated for the conservation of nature in Ireland include:

- SACs;
- Special Protection Areas (SPAs);
- Natural Heritage Areas (NHAs); and
- proposed Natural Heritage Areas (pNHAs).

SPAs and SACs form the *Natura 2000* network of sites. It is these sites that are of relevance to the screening process for this AA.

SPAs and SACs are prime wildlife conservation areas in the country, considered to be important on a European as well as Irish level. SPAs and SACs are designated under EU Habitats Directive, transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended.

NHA is the basic designation for wildlife in Ireland. These are areas considered important for their habitats or species of plants and animals whose habitat needs protection. They first entered into European Law under the 1976 Wildlife Act, then were transposed into Irish law with the 1997 Natural Habitats Regulations (S.I. No. 94 of 1997) finally gaining full statutory backing in Ireland with the passing of the Wildlife (Amendment) Act 2000.
pNHA sites were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. These sites are designated as being of significance for species and habitats. While not afforded the same protection as sites protected under the Habitats Directive, they are subject to protection through the following mechanisms:

- Agri-environmental farm planning schemes such as GLAS (Formally the Rural Environment Protection Scheme);
- Forest Service requirement for NPWS approval before they will pay afforestation grants on pNHA lands; and

- Recognition of the ecological value of pNHAs by Planning and Licencing Authorities.

The DoEHLG (2010) guidance states that European sites with the potential to be affected by a plan or project should be identified taking into consideration the potential for direct, indirect and/or cumulative (in-combination) effects. It also states that the specific approach in each case is likely to differ depending on the scale and likely effects of the plan or project. However, it advises that the following sites should generally be included:

- all European sites within or immediately adjacent to the plan or project area;
- all European sites within the likely 'zone of impact' of the plan or project; and,
- adopting the precautionary principle, all European sites for which there is doubt as to whether or not such sites might be significantly affected.

The likely zone of impact (also referred to as the likely 'zone of influence') of a plan or project is the geographic extent over which significant ecological effects are likely to occur. The DoEHLG guidance document prescribes a 15 km distance threshold for European sites from the boundary of a plan area. In the case of projects, the guidance acknowledges that the zone of influence must be devised on a case by case basis with reference to the following criteria: the nature, size / scale and location of the project, sensitivity of ecological features under consideration and cumulative effects.

All designated sites within 15 km of the Proposed Road Development were considered during the desktop study stage of this screening assessment in order to assess the potential for significant effects upon their Qualifying Interests / Special Conservation Interests and Conservation Objectives. This stage of the process is used to determine whether any of the designated sites may be 'screened out'. That is, that they can be regarded as not being relevant to the process, having no potential to be significantly affected or impacted upon.

4.3 Designated Sites Within 15 km of the Proposed Works

All designated sites with 15 km of the proposed works are shown in Table 1 (below).

Table 1: Designated sites with 15 km of the Proposed Works

SITE CODE	SITE NAME	DESIGNATION	POTENTIAL IMPACT FROM PROPOSED WORKS
307	Lough Tee Bog	NHA	Nil
1254	Derrinlough Bog	NHA	Nil
1255	Derrynagran Bog and Esker	NHA	Nil

SITE CODE	SITE NAME	DESIGNATION	POTENTIAL IMPACT FROM PROPOSED WORKS
1280	Killaclogher Bog	NHA	Nil
326	Shankill West Bog	SAC	Nil
2352	Monivea Bog	SAC	Nil
295	Levally Lough	SAC	Nil
2197	Derrinlough (Cloonkeenleananode) Bog	SAC	Nil
1242	Carrownagappul Bog	SAC	Nil
297	Lough Corrib	SAC	Possible
234	Belclare Turlough	pNHA	Nil
263	Drumbulcaun Bog	pNHA	Nil
282	Killower Turlough	pNHA	Nil
289	Knockavanny Turlough	pNHA	Nil
295	Levally Lough	pNHA	Nil
311	Monivea Bog	pNHA	Nil
323	Richmond Esker Nature Reserve	pNHA	Nil
326	Shankill West Bog	pNHA	Nil
1242	Carrownagappul Bog	pNHA	Nil
1288	Knockmaa Hill	pNHA	Nil
1319	Summerville Lough	pNHA	Nil
1709	Tiaquin Bog	pNHA	Nil

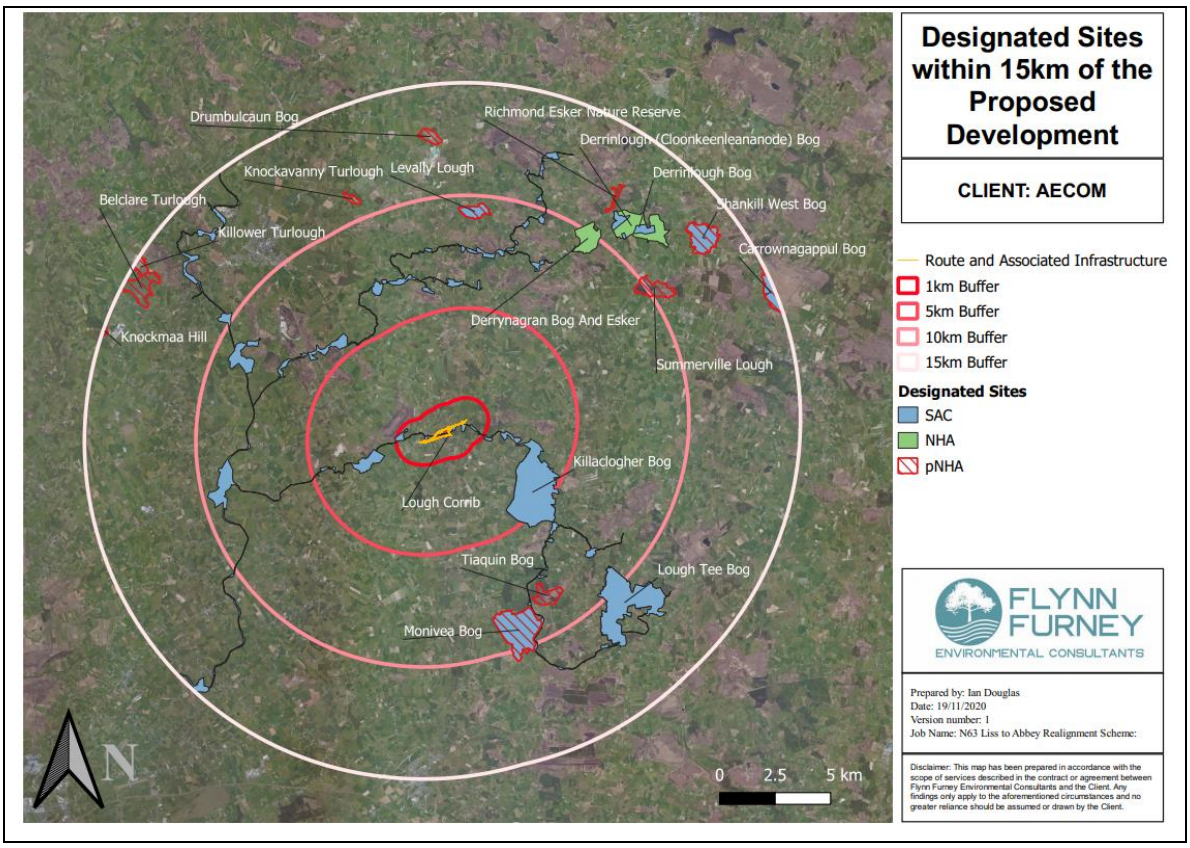
A total of 22 areas designated as either SAC, SPA, NHA or pNHAs have been identified within 15 km of the Proposed Road Development.

All sites located within 15 km from the Proposed Road Development were investigated. The only site considered to have the potential for impacts was Lough Corrib SAC, due to the proximity of the SAC (via the Abbert river). The Proposed Road Development route passes close to the boundary of the SAC at one location. A bridge over the Abbert river is also required as part of this Proposed Road Development.

No risks to the conservation objectives of any other Natura 2000 sites, NHAs or pNHAs are considered likely due one or more of the following:

- Lack of connectivity between the proposed works areas and the designated area;
- Significant buffer between the proposed works area and the designated area;
- No impact or change to the management of the designated area; or
- No change to chemical or physiological condition of the designated site as a result of the proposed development.

Figure 2: Protected sites with 15km of the Proposed Road Development



4.4 Field Surveys

The field surveys were carried out during January, March, May, June and September 2020. Baseline ecological conditions were assessed. The habitat types and their usage at the time of the survey were readily identifiable due to the presence of certain species, evident throughout the year. Habitats were classified and dominant plant species noted according to the guidelines given by the JNCC (2010). Habitats were classified according to Fossitt (2000).

4.5 Habitats Description

The following habitats were recorded during the field survey. A map of these habitat areas can be seen in Appendix 1. These surveys did not Identify any rare, threatened or protected species of plants as per the Red Data Book (Curtis and McGough, 1988) or Red List (Wyse Jackson et al., 2016). One Annex I habitat as per the Habitats Directive was found to occur within the proposed works area. This is discussed in detail below.

4.5.1 GA1 Improved Grassland

This is the dominant habitat within the landscape. Improved grassland is dominated by Rye grass (*Lolium spp*) and other grass species that could not be identified due to the time of year. These pastures are likely used for extensive or intensive grazing by cattle, sheep and horses. Grasses recorded included Rye-grasses (*Lolium spp*), Meadow-grasses (*Poa spp.),* Timothy (*Phleum pratense*), Crested Dog's-tail (*Cynosurus cristatus*) and Yorkshire-fog (*Holcus lanatus*). Species of agricultural herbs identified included Dandelion (*Taraxacum spp.*), Creeping Buttercup (*Ranunculus repens*), Plantains (*Plantago spp.*), Nettle (*Urtica dioica*), Thistles (*Cirsium arvense, C. vulgare*) and Docks (*Rumex spp.*).

4.5.2 GS4 Wet Grassland

Areas of Wet Grassland were likely the precursor to improved grassland areas before drainage, fertilisation and reseeding. These areas were characterised by a dominance of Rushes (*Juncus Spp*) and grasses including Yorkshire-fog (Holcus lanatus), Creeping Bent (Agrostis stolonifera) and Purple Moor-grass (Molinia caerulea). Herb species included Wild Angelica (*Angelica sylvestris*), Cuckooflower (Cardamine pratensis) Meadowsweet (*Filipendula ulmaria*), Water Mint (*Mentha aquatica*), Yellow Iris (*Iris pseudacorus*) and Bramble (*Rubus fruticosus agg*.) were observed.

One large area of wet grassland was noted as having linkage to an Annex I habitat: 'Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) (6410)'.

4.5.3 GA2 Amenity Grassland

Unsurveyed as these areas were within the grounds of a primary school and private properties. Likely to be composed of species poor swards of Rye grass (*Lolium spp*).

4.5.4 FW1 Eroding/upland rivers

The study area is bisected by the Abbert River. The river has been highly modified here and there is evidence of channel deepening and realignment. Nonetheless, the river offers excellent examples of habitat for Atlantic Salmon (*Salmo salar*) and Brook Lamprey (*Lampetra planeri*) both of these are Annex II (Habitats Directive) species and are qualifying interests of the SAC. Evidence of Otter (*Lutra lutra*), another Annex II species was also recorded (See Section 4.6, below).

4.5.5 WL1 Hedgerows

Hedgerows containing trees including Oak (*Quercus Spp*), Sycamore (*Acer pseudoplatanus*) and Ash (*Fraxinus excelsior*) interspersed with Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*) were observed. Trees were observed to be host to an abundance of Ivy (*Hedera helix*). The understory of the hedgerows contained Bramble (*Rubus fruticosus agg*.), Herb-Robert (*Geranium robertianum*) and Creeping Buttercup (*Ranunculus repens*).

4.5.6 Drainage Ditch

One large drainage ditch was recorded toward the north eastern extent of the proposed roadway. This ditch was approximately 100m long and steeped sided. The western bank was overhung with mature Willow (*Salix Spp*) and Bramble (*Rubus fruticosus agg*.). The ditch contained Fool's Water-cress (*Apium nodiflorum*) and Duckweeds (*Lemna spp.*) within standing water.

4.5.7 SW1 Scrub

Small areas of scrub were found throughout the broad study areas on field boundaries, around abandoned buildings and on the edges of wet grasslands. Vegetation structure was dominated by Willows (*Salix Spp.*), Bracken (*Pteridium aquilinum*) and Bramble (*Rubus fruticosus agg.*).

4.5.8 WD1 Mixed broadleaved woodland

Mixed woodland was found to contain Oak (*Quercus Spp*), Sycamore (*Acer pseudoplatanus*) and Ash (*Fraxinus excelsior*), Willow (*Salix Spp.*), and Beech (*Fagus sylvatica*). Understory species contained Bracken (*Pteridium aquilinum*) and Bramble (*Rubus fruticosus agg.*), Ground-elder (*Aegopodium podagraria*), Nettle (*Urtica dioica*) and Enchanter's-nightshade (*Circaea lutetiana*).

4.5.9 WD2 Mixed broadleaved and conifer woodland

Found in a linear strip between the N63 and the Abbert River at the western end of the study area. Species included Scots Pine (*Pinus* sylvestris), Sitka Spruce (*Picea sitchensis*), Beech (*Fagus sylvatica*). Ash (*Fraxinus excelsior*) and Hawthorn (*Crataegus monogyna*).

4.6 Mammals and Bird Activity

4.6.1 Otters

Potential Otter couches and spraints were found in a number of locations along the course of the Abbert River. A dead adult Otter was noted upstream of the proposed route in May 2020. No Otter holts were noted within or near the zone of influence of the upcoming works.

4.6.2 Badgers

Signs of Badger activity were limited within the study area. No badger setts were recorded. One Badger latrine was noted in the north-eastern extent of the study area. It is not considered that the proposed works will have a negative impact upon badgers.

4.6.3 Bats

Works are not considered likely to have significant impacts on bat species. No suitable bat roosting habitats were recorded within the vicinity of the proposed works.

4.6.4 Breeding Birds

A dedicated bird survey was not carried out. Birds observed travelling within and using the site included robin (*Erithacus rubecula*), Blackbird (*Turdus merula*) and Wren (*Troglodytes Troglodytes*), Blue Tit (*Cyanistes caeruleus*) and Coal Tit (*Parus ater*), Buzzard (*Buteo buteo*), Mallard (*Anas platyrhynchos*) and Cormorant (*Phalacrocorax carbo*). Red listed birds seen and heard within and immediately surrounding the study area included King Fisher (*Alcedo atthis*), Meadow Pipet (*Anthus pratensis*) and Grey Wagtail (*Motacilla cinerea*).

4.6.5 Wetland and Wading birds

A dedicated wetland and wading birds survey were carried out and the results shall be included in the EIA Report. Birds observed travelling within and using the site included Snipe (*Gallinago gallinago*), Mallard Duck (*Anas platyrhynchos*) and Sand Piper (*Actitus hypoleucos*).

5 ARTICLE 6(3) SCREENING ASSESSMENT

This screening assessment questionnaire (EC, 2001) is used to assess whether the Proposed Road Development has the potential to impact upon Natura 2000 sites. The consideration criteria of potential for impacts on Natura 2000 sites is detailed below.

5.1 Article 6(3) Assessment Criteria

Description of the individual elements of the project likely to give rise to impacts on the Natura 2000 site.

This project will involve excavation and bridge construction adjacent and across the banks of the Abbert River which forms part of the Lough Corrib SAC. Possible impacts to the watercourse may arise during construction works as a result of sediments or other polluting materials entering the watercourse. Disturbance impacts to qualifying interest species may be predicted as arising from the construction phase. Disturbance impacts from the operational phase may also be predicted.

Description of any Likely Direct, Indirect or Secondary Impacts of the Project on the Natura 2000 Site.

Any likely direct, indirect or secondary impacts of the proposed development, both alone and in-combination with other plans or projects, on the SAC by virtue of the following criteria: size and scale, land take, distance from the Natura 2000 site or key feature thereof, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operational and decommissioning phases of the works are detailed in the Table 2 below.

Table 2: Assessment of Likely Impacts

ASSESSMENT OF LIKELY IMPACTS	
Size and scale	The scale of the project is not considered significant. The Proposed Road Development totals 2.30 km. The footprint of the scheme is approximately 12 ha. Lough Corrib SAC is 20, 556ha. Therefore, significant impacts as a result of the size and scale of this project are not considered likely.
Land-take	Works on the construction of the bridge over the Abbert River will take place within the boundary of the Lough Corrib SAC; a Natura 2000 site. Land-take from the SAC will exist but will be negligible. Therefore, no significant impacts as a result of land-take are considered likely.
Distance from the Natura 2000 site or key features of the site;	The closest Natura 2000 site to the Proposed Road Development is Lough Corrib SAC. This is within the footprint of the scheme. Works on the bridge over the Abbert River

ASSESSMENT OF LIKELY IMPACTS	
	will take place within the SAC. Significant effects may therefore not be definitively ruled out.
Resource requirements (water abstraction etc.);	No materials for construction will be sourced from within Lough Corrib SAC. There are no known plans that will require water to be abstracted from the River Abbert during the construction of the bridge.
Emissions (disposal to land, water or air);	Potential pollution emissions for consideration include increases in exhaust emissions to air as a result of construction machinery and through potential losses of pollutants to water. There will be no additional emissions to air beyond those typical of small-scale road infrastructure projects. No emissions to air are predicted that will impact upon the local environment or Lough Corrib SAC. The risk of emissions to water as a result of losses of soil, silt and other polluting material during construction may also exist. Significant effects may not therefore be ruled out. Drainage design will prevent emissions to the river during the operational phase of the Proposed Road Development.
excavation requirements;	Some excavation for the construction of the bridge may take place within Lough Corrib SAC. Negative effects on the SAC or its qualifying interests cannot therefore be ruled out.
Transportation requirements;	Access for construction will be via existing roads. No access requirements are necessary for the Proposed Road Development are known that would impact upon Lough Corrib SAC.
Duration of construction, operation, decommissioning, etc.;	Not known at time of writing. Owing to the size and scale of the project it is estimated to be 3 years.
Timing of works	Not known at time of writing. Works will be timed to avoid the clearance of any vegetation during the bird nesting season. No in-stream works will be carried out.
Cumulative or In-	A desktop planning application search, using publicly available

ASSESSMENT OF LIKELY IMPACTS	
combination Impacts with other Projects and Plans	data from MyPlan.ie's National Planning Application database, GCC planning application portal, and An Bord Pleanála's (ABP) online database was undertaken. The majority of planning applications for the lands situated around the Proposed Road Development, predominantly relate to small scale residential developments, amendments and extensions. A list of relevant (larger-scale) planning application is given below.

5.1.1 Other Local Projects and Plans

Figure 3: Other plans or projects

Planning Ref. No.	Development Address	Development Proposal	Status
17728	Pollawarla, Co. Galway	for the permanent placement of soil and topsoil on part of a land plot with an area of 2.58 hectares. The plot of land is adjacent to the proposed upgrade of the N63 at Ballyglunin. Fill depth will vary between 0.1mt - 3.60mt approximately. Access to the plot of land for the placement of soil and topsoil will be via the N63 in the Townland of Polara, Abbeyknockmoy on behalf of Johnston Plant Hire ltd	Approved Subject to Conditions by GCC on 26/01/2018
121577	Brooklodge Demesne, Co. Galway	Extension of duration for the conservation, restoration, refurbishment and conversion, including alterations, additions and new buildings to an existing, disused farm complex to provide 15 no. tourism-related holiday homes. The Tower House and associated buildings existing on site are Protected Structures. The proposed development will provide 8 no. tourist dwelling units through the refurbishment, extension and alteration of the existing protected structures. 7 no. tourist dwelling units will be new-build in the form of 2 no. single-storey units and 5 no. detached 2-storey units.	Approved Subject to Conditions by GCC on 19/02/2013

Planning Ref. No.	Development Address	Development Proposal	Status
		The proposed development will also include 2 no. single-storey utility buildings for use as central boiler/plant room and maintenance store ancillary to the propose development, all site development/enabling works and the provision of an on-site sewerage treatment plant (previous planning ref. no. 07/3365) (Gross floor area 2392 sqm)	
121003	Ballynapark, Co. Galway	to construct a residential development consisting of 21 no. detached dwelling houses, 21 no. garages, 1 no. access road, 1 no. access point onto public road and carry out all associated site development works including provision of proprietary sewage treatment system and percolation area - Gross floor space 3929.1 sqm house, 504 sqm garage (previous planning reference number 07/2174)	Approved Subject to Conditions by GCC on 01/10/2012
11278	Liss, Co. Galway	Extension of duration for the construction of a rural cluster residential development comprised as follows: A) 13 residential units consisting of 9 detached dwellings and 4 semi-detached dwellings B) domestic garages on sites number 1,3 & 10 in the development scheme C) the construction of a proprietary treatment system and percolation area/polishing filter D) all ancillary site works, services, traffic calming, hard and soft landscaping and the holding of existing natural hedgerows within the development site. (gross floor space 2100.64 m^2) (previous pl. ref. 06/2371)	Approved Subject to Conditions by GCC on 13/06/2011

No significant effects are therefore predicted as likely as arising for cumulative or in combination effects.

5.2 Description of any Likely Changes to the Natura 2000 Sites

Any likely changes to the Natura 2000 site are described in the table below with reference to the following criteria: reduction of habitat area, disturbance to key species, habitat or

species fragmentation, reduction in species density, changes in key indicators of conservation value and climate change.

Table 3: Likely changes to the Nature 2000 site

Likely Changes to the Natura 2000 Site	
Reduction of habitat area	Some works will take place within the boundary of Lough Corrib SAC. The scale of the works within the SAC is unlikely to lead to a significant reduction in the overall habitat area of any habitat type.
Disturbance to key species	Among the qualifying interests of Lough Corrib SAC are Otter (*Lutra lutra*), Salmon (*Salmo salar*) and Brook Lamprey (*Lampetra planeri*). Short-term disruption disturbance to these species normal function may exist during the bridge construction for this road scheme.
Habitat or species fragmentation	A small area of Molinia meadows (Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]) will be bisected as a result of the proposed realignment scheme. As such some habitat fragmentation is likely. This is however outside the boundary of the SAC. Therefore, no significant effects arising from species or habitat fragmentation are predicted.
Reduction in species density	It is unlikely that a reduction in species density will occur to any of the qualifying interest species as a result of the Proposed Road Development. Otter (*Lutra lutra*), Salmon (*Salmo salar*) and Brook Lamprey (*Lampetra planeri*) are designated species that may occur within the Abbert River in the vicinity of the site of works. Otters are known to occur within this stretch of the river. It is unlikely given the mobility of these species that reductions in the density of this species will occur as a result of the Proposed Road Development.
Changes in key indicators of conservation value (water quality etc.);	Temporary or short-term impacts to water quality may occur as a result of works (e.g. the loss of sediments during bank excavations or associated bridge construction works). Therefore, a significant effect on a key indicator may not be ruled out.

Likely Changes to the Natura 2000 Site	
Climate change	No damage to any sites as a result of or in combination with enhanced climate change are predicted as a consequence of the Proposed Road Development.

Likelihood of Interference with the key relationships that define the structure and function of the Natura 2000 Site as a whole:

Possible impacts to an area of Lough Corrib SAC may occur as a result of the Proposed Road Development. Significant impacts upon the key relationships that define the structure and function of Lough Corrib SAC are however unlikely. This is considered so based on the size, scale and nature of the scheme as described above.

Indicators of Significance as a Result of the Identification of Effects

Indicators of significance as a result of the identification of effects as set out below in terms of loss, fragmentation, disruption, disturbance and changes to the key elements of the Proposed Road Development site.

Table 4: Indicators of significance

Indicators of Significance	
Loss	There may be minor loss of riparian fringe habitat along the banks of the Abbert river which forms part of the Lough Corrib SAC as a result of the Proposed Road Development It is not anticipated that the loss of any species of conservation interest will occur as a result of the proposed works due to injury or mortality.
Fragmentation	No habitat fragmentation to any habitats within the Lough Corrib SAC are predicted. No habitats of high ecological significance within the SAC will be impacted upon as part of the proposed works. The banks of the Abbert river where the bridge is proposed to be located has been highly modified with only remnants of riparian habitats present.
Disruption	Minor disruption to Lough Corrib SAC via the Abbert river is likely as a result of the Proposed Road Development in the following forms: • Possible temporary or short-term impacts to water

Indicators of Significance	
	quality • Possible disruption and disturbance to qualifying interest species as a result of works.
Disturbance	As above
Change to key elements of the site (e.g. water quality etc.)	Some temporary or short-term impacts to the water quality within the Abbert River (Lough Corrib SAC) are predicted as possible as a result of the Proposed Road Development.

Description of any Likely Significant Impacts or Indeterminate Impacts of the Project on the Natura 2000 Site

Based on a consideration of the likely impacts arising from the proposed works and a review of their significance in terms of the conservation interests, possible impacts have been identified to Lough Corrib SAC as a result of the Proposed Road Development.

The construction of this roadway and the associated bridge over the Abbert has the potential to lead to impacts to the SAC. These impacts are associated with changes in a key element of conservation value: Water Quality. Bank works, bridge construction, dewatering and concrete pouring all pose a potential risk to water quality within the SAC. Potential for possible temporary or short-term disruption and disturbance to fish and an aquatic mammal species may also exist as a result of the Proposed Road Development.

5.3 FINDINGS OF ARTICLE 6(3) SCREENING ASSESSMENT

Name of project or plan: N63 Liss to Abbey Realignment Scheme

Name and location of Natura 2000 Site: The nearest Natura 2000 site is Lough Corrib SAC

Description of project or plan: The project involves the construction of a roadway, bridge and associated infrastructure outside the village of Abbeyknockmoy Co. Galway. The 2.3 km road section will pass through lands currently used for pasture-based agriculture. A bridge over the Abbert river (which forms part of the Lough Corrib SAC) is also an element of this project.

Is the project or plan directly connected with or necessary to the management of the site?

The project is not directly connected with or necessary to the management of Lough Corrib SAC.

Are there other projects or plans that together with the project or plan being assessed could affect the site (provide details)?

No plans or projects were found that are likely to lead to cumulative, or in combination impacts to Lough Corrib SAC.

5.3.1 Assessment of Significance of Effects

Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site:

The Proposed Road Development has the potential to impact the Lough Corrib SAC by leading to temporary or short-term changes in the water quality of the Abbert River as a result of road and bridge construction works. Works may also lead to the temporary disruption to the normal functioning of a number of fish species and an aquatic mammal species.

Direct impacts upon the Natura 2000 Sites:

- Possible changes in a key element of conservation value: Water Quality.

Indirect impacts upon the Natura 2000 Site:

- Potential temporary or short-term disturbance to qualifying interest species.

5.3.2 Data Collected to Carry Out the Assessment

The following sources of data were employed:

- Environmental Protection Agency Envision Database
- NPWS protected species database and online mapping
- Historical OSI Maps
- NPWS protected species database and online mapping.
- Galway County Council Planning Database

Level of assessment completed

- Desk Study
- Site visits in 2019-2020

- JNCC Phase 1 Habitat Assessment
- Ecological constraints survey
- River Habitat Survey
- Botanical survey
- Mammal survey
- Bat roosting site survey
- Dawn and Dusk Bat surveys

5.3.3 Overall Conclusions

In conclusion, impacts to the Lough Corrib SAC as a result of the Proposed Road Development could not be definitively ruled out. Possible impacts associated with road works and bridge construction works upon water quality of the Abbert River may lead to indirect impact to a number of key species that form part of the conservation objectives of the Lough Corrib SAC. Disturbance disruption to qualifying interest species could not be ruled out. It is therefore concluded that a full AA is required.

5.4 References

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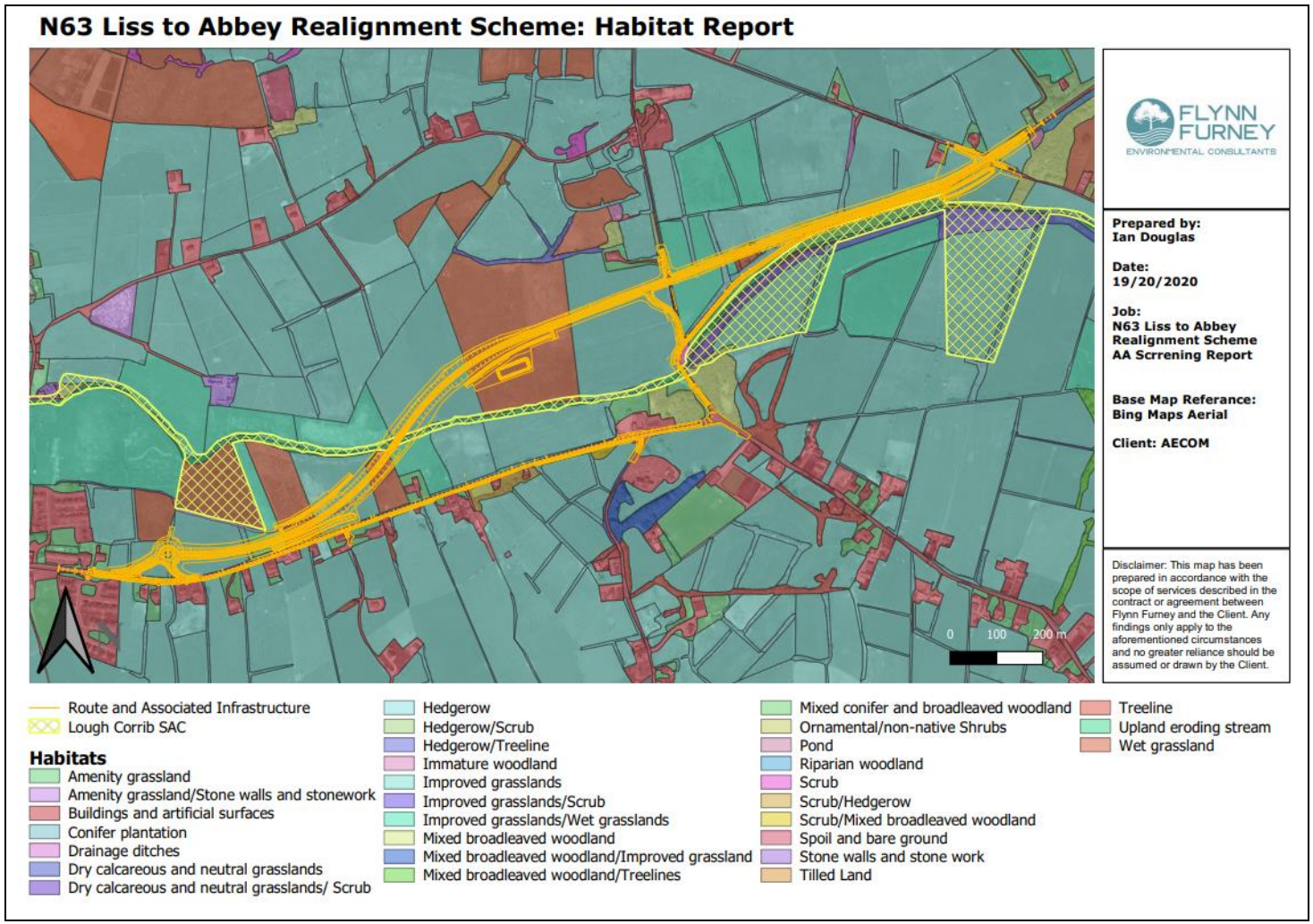
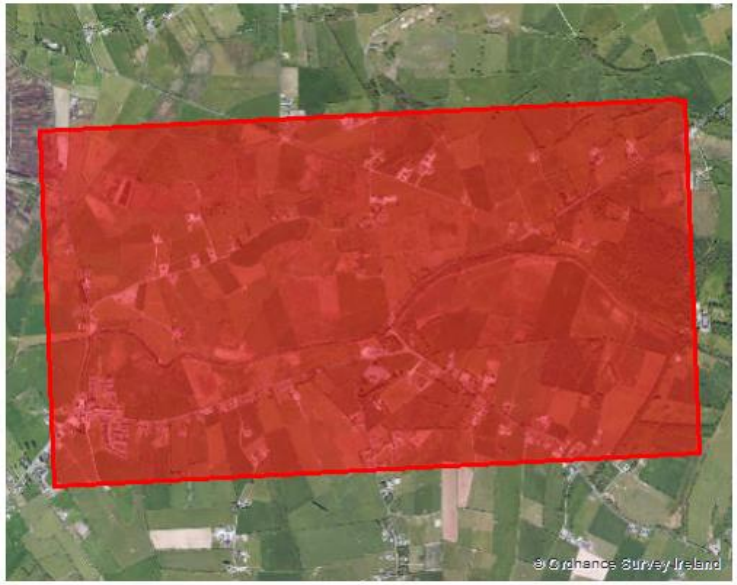
Appendix 1: Habitat Maps



Appendix 2: National Biodiversity Data Centre Species Records

National Biodiversity Data Centre

Species list for a User-Defined Polygon (Intersect)



Quality of information

The National Biodiversity Data Centre makes every effort to ensure the quality of the information available on this website and updates the information regularly. Before relying on the information on this site, however, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes. The National Biodiversity Data Centre cannot guarantee and assumes no legal liability or responsibility for the accuracy, currency or completeness of the information.

To assist the Centre in the provision of high quality information, should you identify an error in any of the information provided, please notify the Centre and every effort will be made to rectify the error.

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Barn Swallow (Hirundo rustica)	12	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Black-billed Magpie (Pica pica)	13	31/12/2011	Bird Atlas 2007 - 2011	
bird	Blackcap (Sylvia atricapilla)	2	31/12/2011	Bird Atlas 2007 - 2011	
bird	Black-headed Gull (Larus ridibundus)	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Blue Tit (Cyanistes caeruleus)	13	19/03/2015	Birds of Ireland	
bird	Chaffinch (Fringilla coelebs)	14	19/03/2015	Birds of Ireland	
bird	Coal Tit (Periparus ater)	10	31/12/2011	Bird Atlas 2007 - 2011	
bird	Common Blackbird (Turdus merula)	14	19/03/2015	Birds of Ireland	
bird	Common Bullfinch (Pyrrhula pyrrhula)	6	31/12/2011	Bird Atlas 2007 - 2011	
bird	Common Chiffchaff (Phylloscopus collybita)	5	31/12/2011	Bird Atlas 2007 - 2011	
bird	Common Coot (Fulica atra)	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Cuckoo (Cuculus canorus)	5	31/12/2011	Bird Atlas 2007 - 2011	
bird	Common Kestrel (Falco tinnunculus)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Kingfisher (Alcedo atthis)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Common Linnet (Carduelis cannabina)	8	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Moorhen (Gallinula chloropus)	8	31/12/2011	Bird Atlas 2007 - 2011	
bird	Common Pheasant (Phasianus colchicus)	12	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Common Pochard (Aythya ferina)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Raven (Corvus corax)	4	31/12/2011	Bird Atlas 2007 - 2011	
bird	Common Redshank (Tringa totanus)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Common Snipe (Gallinago gallinago)	7	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Starling (Sturnus vulgaris)	12	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Swift (Apus apus)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Whitethroat (Sylvia communis)	5	31/12/2011	Bird Atlas 2007 - 2011	
bird	Common Wood Pigeon (Columba palumbus)	13	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Corn Crake (Crex crex)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Eurasian Collared Dove (Streptopelia decaocto)	6	31/12/2011	Bird Atlas 2007 - 2011	
bird	Eurasian Curlew (Numenius arquata)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Eurasian Jackdaw (Corvus monedula)	13	31/12/2011	Bird Atlas 2007 - 2011	
bird	Eurasian Jay (Garrulus glandarius)	4	31/12/2011	Bird Atlas 2007 - 2011	
bird	Eurasian Siskin (Carduelis spinus)	6	31/12/2011	Bird Atlas 2007 - 2011	
bird	Eurasian Sparrowhawk (Accipiter nisus)	5	31/12/2011	Bird Atlas 2007 - 2011	
bird	Eurasian Teal (Anas crecca)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Eurasian Tree Sparrow (Passer montanus)	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Eurasian Treecreeper (Certhia familiaris)	8	31/12/2011	Bird Atlas 2007 - 2011	
bird	Eurasian Wigeon (Anas penelope)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Eurasian Woodcock (Scolopax rusticola)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	European Golden Plover (Pluvialis apricaria)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Protected Species: EU Birds Directive >> Annex II, Section II Bird

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
					Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	European Goldfinch (Carduelis carduelis)	12	31/12/2011	Bird Atlas 2007 - 2011	
bird	European Greenfinch (Carduelis chloris)	12	31/12/2011	Bird Atlas 2007 - 2011	
bird	European Robin (Erithacus rubecula)	14	19/03/2015	Birds of Ireland	
bird	Fieldfare (Turdus pilaris)	2	31/12/2011	Bird Atlas 2007 - 2011	
bird	Gadwall (Anas strepera)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Goldcrest (Regulus regulus)	8	31/12/2011	Bird Atlas 2007 - 2011	
bird	Great Black-backed Gull (Larus marinus)	1	14/05/2010	Kingfisher Survey 2010	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Great Cormorant (Phalacrocorax carbo)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Great Crested Grebe (Podiceps cristatus)	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Great Tit (Parus major)	11	31/12/2011	Bird Atlas 2007 - 2011	
bird	Green Sandpiper (Tringa ochropus)	2	31/12/2011	Bird Atlas 2007 - 2011	
bird	Grey Heron (Ardea cinerea)	10	31/12/2011	Bird Atlas 2007 - 2011	
bird	Grey Partridge (Perdix perdix)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Grey Wagtail (Motacilla cinerea)	9	19/03/2015	Birds of Ireland	
bird	Hedge Accentor (Prunella modularis)	14	19/03/2015	Birds of Ireland	
bird	Herring Gull (Larus argentatus)	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Hooded Crow (Corvus cornix)	10	31/12/2011	Bird Atlas 2007 - 2011	
bird	House Martin (Delichon urbicum)	7	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	House Sparrow (Passer domesticus)	10	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Lesser Redpoll (Carduelis cabaret)	8	31/12/2011	Bird Atlas 2007 - 2011	
bird	Little Grebe (Tachybaptus ruficollis)	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Long-tailed Tit (Aegithalos caudatus)	4	31/12/2011	Bird Atlas 2007 - 2011	
bird	Mallard (Anas platyrhynchos)	13	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Meadow Pipit (Anthus pratensis)	11	31/12/2011	Bird Atlas 2007 - 2011	
bird	Merlin (Falco columbarius)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Mew Gull (Larus canus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Mistle Thrush (Turdus viscivorus)	9	31/12/2011	Bird Atlas 2007 - 2011	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Mute Swan (Cygnus olor)	7	19/03/2015	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Northern Lapwing (Vanellus vanellus)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Northern Shoveler (Anas clypeata)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Pied Wagtail (Motacilla alba subsp. yarrellii)	1	19/03/2015	Birds of Ireland	
bird	Red Grouse (Lagopus lagopus)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Redwing (Turdus iliacus)	3	31/12/2011	Bird Atlas 2007 - 2011	
bird	Reed Bunting (Emberiza schoeniclus)	8	31/12/2011	Bird Atlas 2007 - 2011	
bird	Rock Pigeon (Columba livia)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
bird	Rook (Corvus frugilegus)	14	19/03/2015	Birds of Ireland	
bird	Sand Martin (Riparia riparia)	12	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Sedge Warbler (Acrocephalus schoenobaenus)	4	31/12/2011	Bird Atlas 2007 - 2011	
bird	Sky Lark (Alauda arvensis)	10	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Song Thrush (Turdus philomelos)	13	31/12/2011	Bird Atlas 2007 - 2011	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Spotted Flycatcher (Muscicapa striata)	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Stock Pigeon (Columba oenas)	3	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Stonechat (Saxicola torquata)	4	31/12/2011	Bird Atlas 2007 - 2011	
bird	Tufted Duck (Aythya fuligula)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	White Wagtail (Motacilla alba)	13	31/12/2011	Bird Atlas 2007 - 2011	
bird	White-throated Dipper (Cinclus cinclus)	5	31/12/2011	Bird Atlas 2007 - 2011	
bird	Whooper Swan (Cygnus cygnus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Willow Warbler (Phylloscopus trochilus)	10	31/12/2011	Bird Atlas 2007 - 2011	
bird	Winter Wren (Troglodytes troglodytes)	14	19/03/2015	Birds of Ireland	
bird	Yellowhammer (Emberiza citrinella)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
crustacean	Freshwater White-clawed Crayfish (Austropotamobius pallipes)	4	18/08/2005	Crayfish of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
crustacean	Gammarus duebeni	1	23/07/2009	River Biologists' Database (EPA)	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
fern	Polypodium vulgare Sensu lato	1	08/04/2020	Online Atlas of Vascular Plants 2012-2020	
flowering plant	Ash (Fraxinus excelsior)	2	23/07/2009	River Biologists' Database (EPA)	
flowering plant	Branched Bur-reed (Sparganium erectum)	2	23/07/2009	River Biologists' Database (EPA)	
flowering plant	Fine-leaved Water-dropwort (Oenanthe aquatica)	1	24/07/2006	River Biologists' Database (EPA)	
flowering plant	Ivy-leaved Duckweed (Lemna trisulca)	2	23/07/2009	River Biologists' Database (EPA)	
flowering plant	Primrose (Primula vulgaris)	2	08/04/2020	Online Atlas of Vascular Plants 2012-2020	
flowering plant	Reed Canary-grass (Phalaris arundinacea)	2	23/07/2009	River Biologists' Database (EPA)	
insect - beetle (Coleoptera)	Elmis aenea	2	23/07/2009	River Biologists' Database (EPA)	
insect - beetle (Coleoptera)	Limnius volckmari	1	24/07/2006	River Biologists' Database (EPA)	
insect - butterfly	Brimstone (Gonepteryx rhamni)	1	25/02/2019	Butterflies of Ireland	
insect - butterfly	Green-veined White (Pieris napi)	2	31/12/1972	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
insect - butterfly	Large White (Pieris brassicae)	1	31/12/1969	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
insect - butterfly	Marsh Fritillary (Euphydryas aurinia)	3	31/12/2010	All Ireland Marsh Fritillary Database	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Threatened Species: Vulnerable
insect - butterfly	Meadow Brown (Maniola jurtina)	1	31/12/1969	Distribution Atlas of Butterflies in Ireland 1979 (An Foras	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
				Forbartha)	
insect - butterfly	Orange-tip (Anthocharis cardamines)	1	31/12/1969	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
insect - butterfly	Peacock (Inachis io)	1	31/12/1969	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
insect - butterfly	Ringlet (Aphantopus hyperantus)	1	31/12/1972	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
insect - butterfly	Small Tortoiseshell (Aglais urticae)	1	31/12/1969	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
insect - butterfly	Small White (Pieris rapae)	1	31/12/1969	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
insect - butterfly	Speckled Wood (Pararge aegeria)	1	31/12/1969	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
insect - butterfly	Wall (Lasiommata megera)	1	31/12/1969	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	Threatened Species: Endangered
insect - dragonfly (Odonata)	Banded Demoiselle (Calopteryx splendens)	1	25/06/2001	Dragonfly Ireland	
insect - mayfly (Ephemeroptera)	Baetis rhodani	1	23/07/2009	River Biologists' Database (EPA)	
insect - mayfly (Ephemeroptera)	Serratella ignita	2	23/07/2009	River Biologists' Database (EPA)	
insect - stonefly (Plecoptera)	Isoperla grammatica	1	04/12/1981	Stoneflies (Plecoptera) of Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
insect - stonefly (Plecoptera)	Protonemura meyeri	1	04/12/1981	Stoneflies (Plecoptera) of Ireland	
liverwort	Bifid Crestwort (Lophocolea bidentata)	3	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	(Metzgeria violacea)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Bog-moss Flapwort (Odontoschisma sphagni)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Conocephalum conicum s.l.	1	30/04/1966	Bryophytes of Ireland	
liverwort	Creeping Fingerwort (Lepidozia reptans)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Dilated Scalewort (Frullania dilatata)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Endive Pellia (Pellia endiviifolia)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Even Scalewort (Radula complanata)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Fairy Beads (Microlejeunea ulicina)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Fingered Cowlwort (Colura calyptrifolia)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Forked Veilwort (Metzgeria furcata)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Notched Pouchwort (Calypogeia arguta)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Sea Scalewort (Frullania teneriffae)	1	30/04/1966	Bryophytes of Ireland	Threatened Species: Least concern

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
liverwort	Tamarisk Scalewort (Frullania tamarisci)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Toothed Pouncewort (Drepanolejeunea hamatifolia)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Tumid Notchwort (Lophozia ventricosa)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
liverwort	Western Earwort (Scapania gracilis)	1	09/03/2014	Bryophytes of Ireland : Data Compiled Post-Atlas	Threatened Species: Least concern
mollusc	Ancylus fluviatilis	2	23/07/2009	River Biologists' Database (EPA)	
mollusc	Arion (Kobeltia)	1	13/01/1972	All Ireland Non-Marine Molluscan Database	
mollusc	Brown Lipped Snail (Cepaea (Cepaea) nemoralis)	1	01/10/1965	All Ireland Non-Marine Molluscan Database	
mollusc	Cellar Snail (Oxychilus (Oxychilus) cellarius)	2	13/01/1972	All Ireland Non-Marine Molluscan Database	
mollusc	Common Bithynia (Bithynia (Bithynia) tentaculata)	1	13/01/1972	All Ireland Non-Marine Molluscan Database	
mollusc	Common Bladder Snail (Physa fontinalis)	1	13/01/1972	All Ireland Non-Marine Molluscan Database	
mollusc	Common Chrysalis Snail (Lauria (Lauria) cylindracea)	2	13/01/1972	All Ireland Non-Marine Molluscan Database	
mollusc	Common Garden Snail (Cornu aspersum)	1	13/01/1972	All Ireland Non-Marine Molluscan Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
mollusc	Dwarf Pond Snail (Galba (Galba) truncatula)	2	13/01/1972	All Ireland Non-Marine Molluscan Database	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
mollusc	Dwarf Snail (Punctum (Punctum) pygmaeum)	1	01/10/1965	All Ireland Non-Marine Molluscan Database	
mollusc	Eccentric Grass Snail (Vallonia cf. excentrica)	1	01/10/1965	All Ireland Non-Marine Molluscan Database	