PROVISION OF INFORMATION FOR APPROPRIATE ASSESSMENT SCREENING FOR

N6 GALWAY CITY RING ROAD

PREPARED FOR GALWAY COUNTY COUNCIL

Project Reference	Status	Author	Reviewed By	Approved By	Issue Date
140014	Final	AS	AC	AC	02.06.17

Scott Cawley, College House, 71-73 Rock Road, Blackrock, Co. Dublin
Tel+353(1)676-9815 Fax +353(1) 676-9816

Contents

Scott Cawley, College House, 71-73 Rock Road, Blackrock, Co. Dublin

Tel+353(1)676-9815 Fax +353(1) 676-9816

1 Introduction

Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (hereafter referred to as the Habitats Directive) requires that, any plan or project not directly connected with or necessary to the management of European sites[1], but likely to have significant effects thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment (AA) of its implications for the European sites in view of their conservation objectives. The requirements of Article 6(3) of the Habitats Directive, as relevant to this proposed project, have been transposed into Irish law by Part XAB of the Planning and Development Act 2000.

This report, which contains information to assist the competent authorities, to undertake screening for AA in respect of the proposed N6 Galway City Ring Road (hereafter referred to as the proposed road development) was prepared by Scott Cawley Ltd. It provides information and appraises the potential, in view of best scientific knowledge, for the proposed road development to have significant effects, either individually or in combination with other plans or projects, on any European sites.

This report provides information to enable Galway County Council to perform its statutory function to undertake screening for AA.

2 Methodology

2.1 Guidance and Approach

This report has been prepared with regard to the following guidance documents, 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 NPW 1/10 & PSSP 2/10
- *Applications for approval for Local Authority Developments made to An Bord Pleanála under 177AE of the Planning and Development Act, 2000, as amended (Appropriate Assessment); Guidelines for Local Authorities. An Bord Pleanála, Dublin* (An Bord Pleanála, 2013)

[1] Natura 2000 sites are defined under the Habitats Directive (Article 3) as a European ecological network of special areas of conservation composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats. In Ireland these sites are designed as *European sites* – as defined under the Planning and Development Acts and/or Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs).

- *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, 2001); 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 Habitat's Directive 92/43/EEC* (EC Environment Directorate-General, 2000b);
- *Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC. Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence. Opinion of the European Commission* (European Commission, January 2007)
- *Communication from the Commission on the precautionary principle. European Commission (2000a),* and
- *Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive.* Findings of an international workshop on Appropriate Assessment in Oxford, December 2009

Guidance which has been followed in considering potential impact pathways and impact significance, includes:

- *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition* (CIEEM, 2016)
- *Guidelines on the Information to be contained in Environmental Impact Statements* (Environmental Protection Agency, 2002)
- *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (Environmental Protection Agency, 2003)
- *Advice notes for Preparing Environmental Impact Statements* (Environmental Protection Agency, Draft September 2015a)
- *Revised Guidelines on the information to be contained in Environmental Impact Statements* (Environmental Protection Agency, Draft September 2015b)
- *Environmental Guidelines Series for Planning and Construction of National Roads* (National Roads Authority, 2005-2009), and
- *Environmental Impact Assessment of National Road Schemes – A Practical Guide* (National Road Authority, 2008)
- *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (National Road Authority, 2009)

2.2 Desktop Study

The sources of desktop data relied upon in the preparation of this report are listed below:

- The results of ecological surveys undertaken as part of the route selection study (*N6 Galway City Transport Project: Route Selection Report* (Arup, 2015)[2]) and EIA studies for the N6 Galway City Ring Road
- The results of bird surveys carried out for the 2006 N6 Galway City Outer Bypass EIS (RPS, 2006)
- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie
- Online data available on European sites, including habitat and species GIS datasets, and conservation objectives (and supporting) documents, as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie
- Online protected species datasets held by the National Biodiversity Data Centre from http://maps.biodiversityireland.ie
- Environmental information/data for the area available from www.epa.ie (Envision Online Environmental Map Viewer - http://gis.epa.ie), and
- Information on the status of EU protected habitats and species in Ireland (National Parks & Wildlife Service, 2013a and 2013b)

2.3 Screening Assessment Methodology

The screening for Appropriate Assessment test is as follows: can any likelihood of the proposed road development giving rise to significant effects on any European sites be ruled out?

This is assessed in consideration of the nature of the proposed road development and its potential relationship with European sites in view of their conservation objectives, as well as considering other plans and projects, and applying the precautionary principle. The risk of the proposed road development having a significant effect on any European site(s) is assessed in the absence of considering any mitigation measures that may be required to avoid, reduce or remedy any potential impact.

The following process was followed in this report to assist in answering this question:

- Establishing whether the proposed road development is directly connected with or necessary to the conservation management of any European sites[3]
- Describing the proposed road development

[2] The Route Selection Report is available from http://www.n6galwaycity.ie
[3] In this instance the proposed development is not directly connected with or necessary to the conservation management of any European Sites.

- Defining the Zone of Influence (ZoI) of the proposed road development. The ZoI is the effect area over which impacts to European sites may occur, defined through identifying potential impact pathways between the proposed road development and European sites, in consideration of the nature of the proposed road development and how it could affect European sites' conservation objectives. In general terms, a European site's conservation objectives are to maintain or restore the favourable conservation condition of the Qualifying Interest (QI) habitats and/or species. QI habitats and species are those habitats and species for which European sites have been selected and are the basis of European sites' designations. In the case of SPAs the reasons for designation of these sites are generally known as Special Conservation Interests (SCIs) rather than QIs (although throughout this document may for simplicity have been on occassions referred to as QIs). Where detailed site specific conservation objectives for Euorpean sites have been published by the NPWS, the favourable conservation condition of a European site's QI habitats and/or QI/SCI species are defined in the site's conservation objectives as a set of specific attributes, measures and targets
- Identifying the European sites which lie within the ZoI of the proposed road development and are potentially, or likely, to be subject to significant effects in view of their conservation objectives which, in general terms, relate to maintaining or restoring the favourable conservation condition of the species and habitats for which the European sites are designated
- Identifying any other plans or projects that may act in-combination to significantly affect any European sites

3 Provision of Information for Screening for Appropriate Assessment

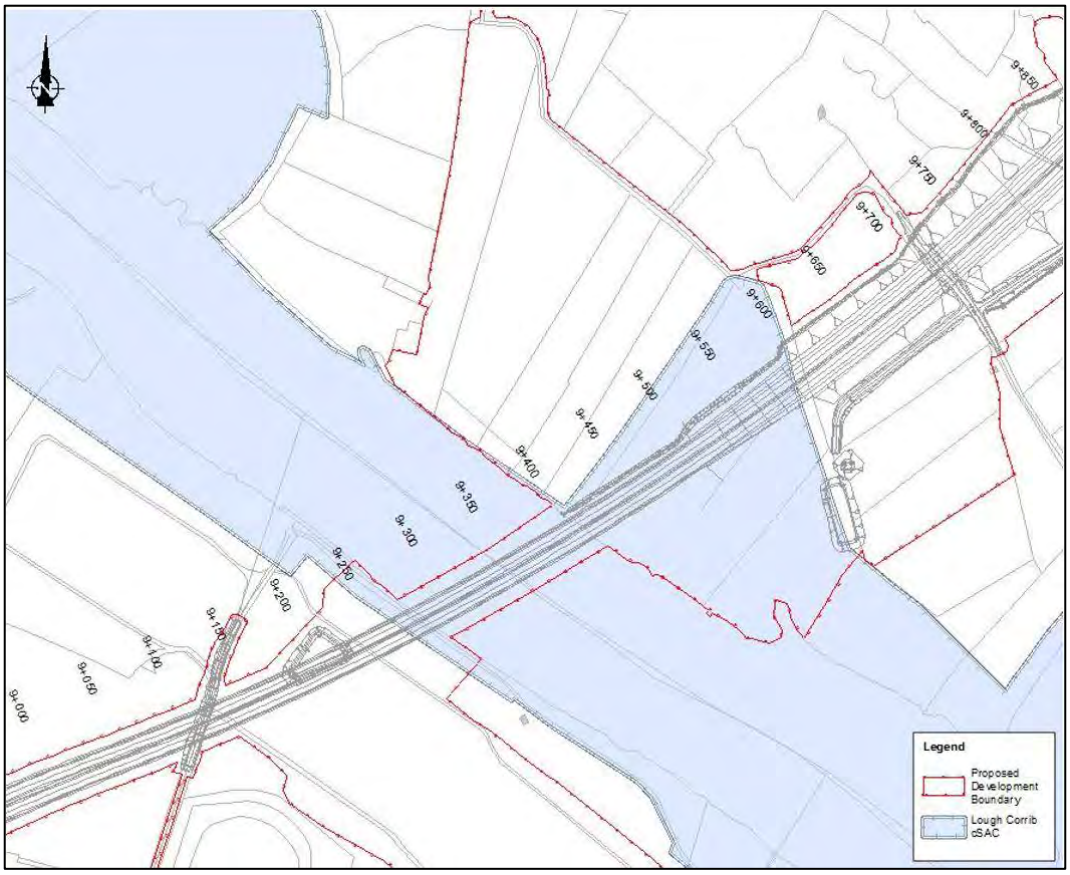
3.1 Description of the Proposed Road Development

The proposed road development comprises of the construction of approximately 5.6km of a single carriageway (typically 12.3m of paved surface with 3.0m grass verge either side) from the western side of Bearna as far as the Ballymoneen Road and approximately 11.9km of a dual carriageway (typically 21.6m of paved surface with 3.0m grass verge either side) from there to the eastern tie in with the existing N6 at Coolagh, Briarhill, along with associated link roads, side roads, junctions and structures.

The proposed road development ties into the existing R336 Coast Road in An Baile Nua with an at-grade roundabout junction approximately 2km to the west of Bearna Village and then proceeds north and east as a single carriageway to the north of Bearna Village and onwards towards Ballymoneen. An at-grade roundabout is proposed at the Bearna to Moycullen Road L1321, and at-grade signalised junctions are proposed at Cappagh Road and Ballymoneen Road.

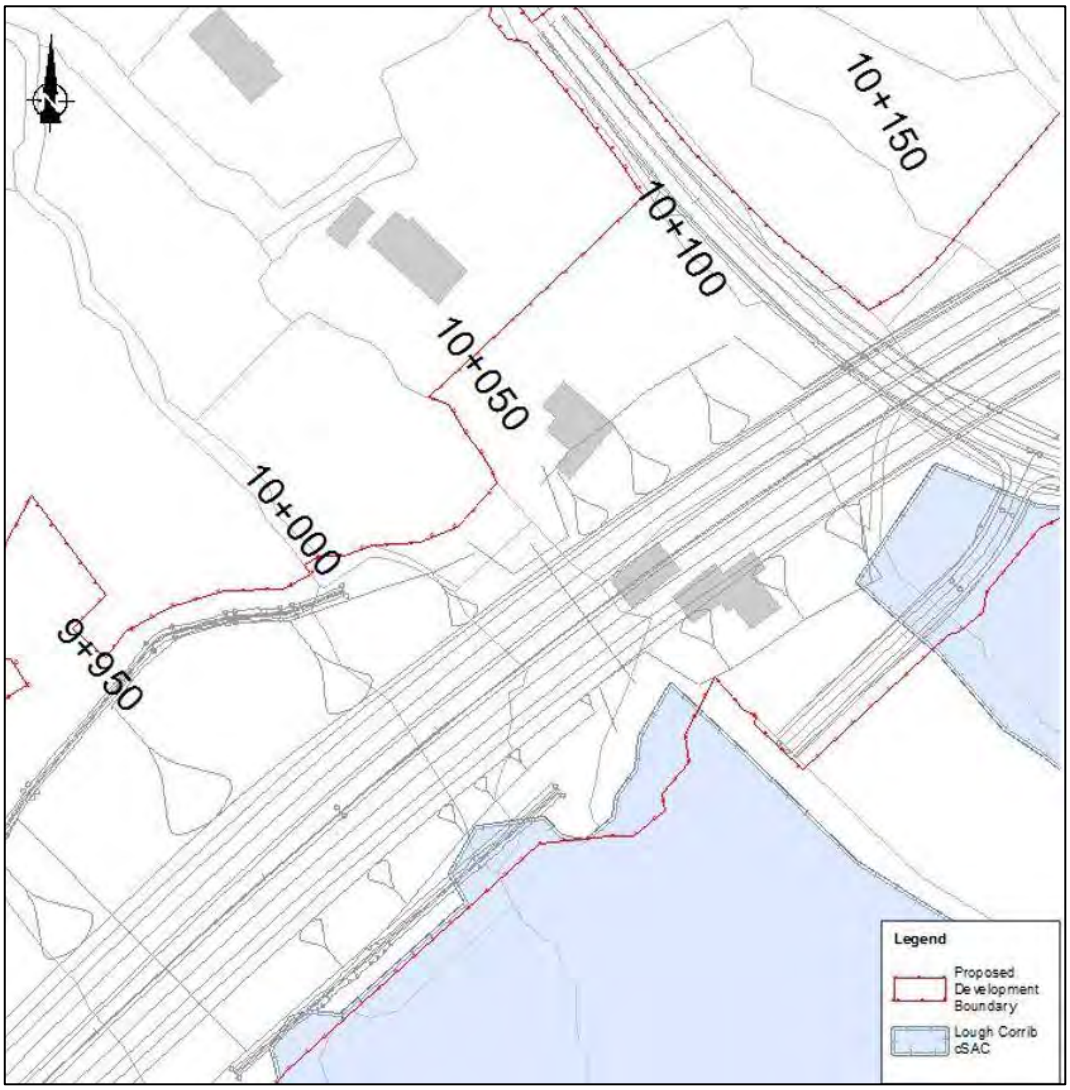
To the east of the Ballymoneen Road Junction the proposed road development is a dual carriageway and continues east with a grade separated N59 Letteragh Junction located in Letteragh. The junction connects to the N59 Moycullen Road via the proposed N59 Link Road North, and to the Letteragh Road and Rahoon Road via the proposed N59 Link Road South. The proposed road development continues eastwards to cross the existing N59 Moycullen Road at Dangan and travels on a viaduct over the NUIG Recreational Facilities before crossing the River Corrib and Lough Corrib cSAC on a bridge structure. The width of the bridge structure across the River Corrib is 21m. The footprint of the proposed road development widens to 27.5m on the eastern bank of the River Corrib and within the Lough Corrib cSAC between Ch. 9+250 to Ch. 9+550 widens to a maximum width of approximately 90m to allow for the road embankment and drainage design (ref **Plate 1** below). There is no road lighting proposed along this section of the proposed road development.

Plate 1: Proposed Road Development Ch. 9+250 to Ch. 9+550



East of the River Corrib, the proposed road development continues east on embankment toward the townland of Menlough. Between Ch. 9+850 and Ch. 10+150 sections the proposed road development lie within, or immediately adjacent to the Lough Corrib cSAC (ref **Plate 2** below). There is no road lighting proposed along this section of the proposed road development.

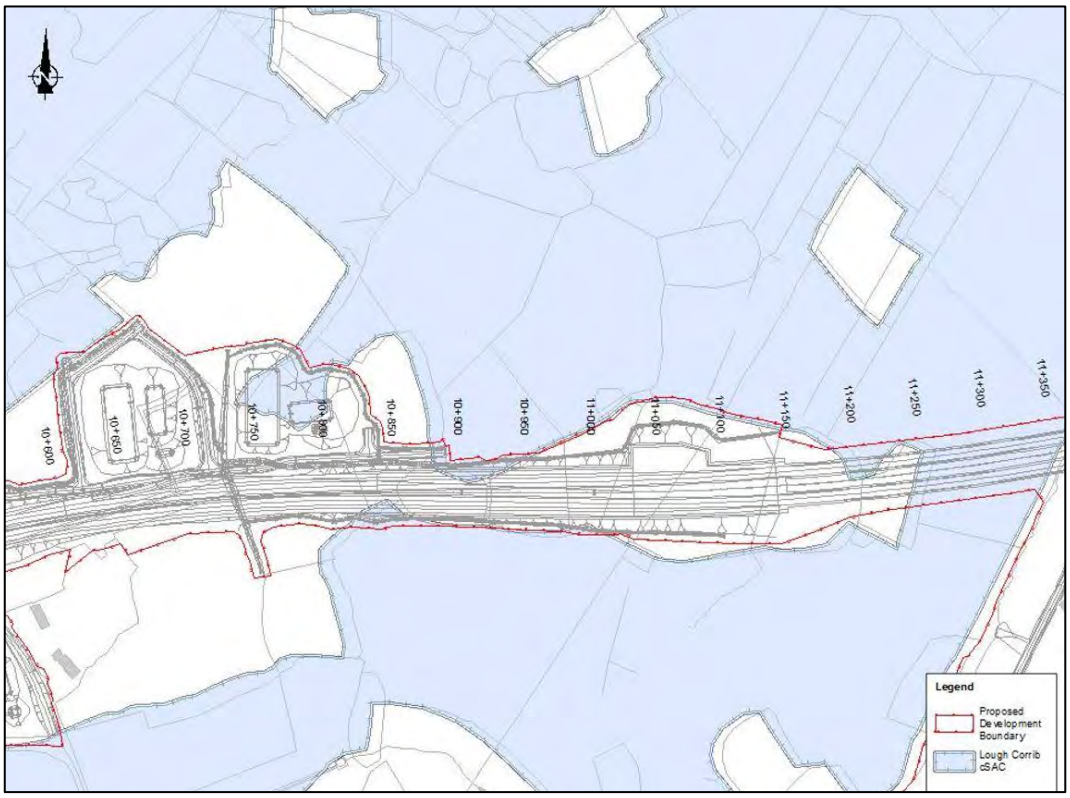
Plate 2: Proposed Road Development Ch. 9+950 to Ch. 10+150



Continuing east the proposed road development crosses over Bóthar Nua and remains on a viaduct section, the Menlough Viaduct, towards Sean Bóthar before entering a section of cut preceding Lackagh Tunnel, immediately west of Lackagh Quarry, and exits the tunnel in the quarry. The western approach to Lackagh Tunnel and the associated drainage lies partly within Lough Corrib cSAC (Ch. 10+600 to Ch. 11+00), with the tunnel itself passing

beneath the cSAC (Ch. 10+150 to Ch. 11+400, ref **Plate 3** below). There is no road lighting proposed along this section of the proposed road development.

Plate 3: Proposed Road Development Ch. 10+600 to Ch. 11+400



The proposed road development continues east with a grade separated junction located at the N84 Headford Road Junction at Ballinfoyle and continues east through the townland of Castlegar to the grade separated junction at the N17 Tuam Road. This junction provides access to both the N17 Tuam Road and the proposed Parkmore Link Road between the Ballybrit Business Park and the Parkmore Industrial Estate via the proposed City North Business Park Link road to provide full connectivity at this location.

The proposed road development then continues southeast entering the Galway Racecourse Tunnel at Ballybrit to the north of the racetrack. On emerging from the tunnel the proposed road development continues southeast, crossing over the R339 Monivea Road on embankment and continuing south to enter a cutting as it reaches its junction with the existing N6 at Coolagh Junction. The proposed Coolagh Junction will be a fully grade separated junction with partial free flow on the major movements.

The proposed road development involves the construction of a new drainage system which includes the provision of a surface water collection system, earthworks drainage, sub-surface drainage, attenuation and pollution control, and the culverting of existing streams. The proposed road development has been designed such that surface water drainage and sub-surface drainage will be provided for the proposed mainline carriageway, junctions, link roads and all new sections of local roads.

Due to the contrasting geological features across the proposed road development extents, the type of natural drainage can be split into two different broad categories west and east of the N59 Moycullen Road.

- The natural discharge of rainfall and surface water drainage west of the N59 Moycullen Road is overland to low points in the topography where shallow ditches and streams are present. The underlying bedrock is granite. This is a low importance, poor aquifer where the bedrock is generally unproductive except for local zones. In general the water table is quite close to the surface.

- The natural discharge of rainfall and surface water drainage east of the N59 Moycullen Road is directly to ground with extreme events accumulating at low points and seasonal lakes within the topography. The underlying bedrock is limestone. The aquifer is a regionally important karstified aquifer which is dominated by conduit flow. Except for the River Corrib, Terryland River, Ballindooley Lough and Coolagh Lakes there are no other significant waterbodies in the area east of the N59 Moycullen Road.

The two different categories of natural drainage informs the approach to drainage design for the proposed road development. As well as the efficient removal of water from the road surface and pavement, the drainage design aims to minimise the impact of runoff from the proposed road development on the receiving environment by replicating, as much as possible, the natural water flows across the proposed road development. This is achieved using a variety of sustainable drainage measures.

All surface water collected by the proposed carriageway drainage system will be discharged to watercourses or existing storm sewers crossed by or adjacent to the proposed road development if present, or will be discharged to ground via infiltration. Attenuation measures will be provided at all outfalls and discharge points along the length of the proposed road development to ensure discharge does not cause any adverse effects upstream or downstream of the receiving watercourse or sewer and to allow sufficient time for infiltration to discharge to the ground. Pollution control measures will be provided on all networks prior to outfalling/discharging to ensure that receiving water bodies are not contaminated by runoff from the proposed road development.

In summary, the design basis for the drainage strategy is as follows:

- West of the N59 Moycullen Road the surface water collected by the carriageway drainage system will be discharged into watercourses crossed by, or adjacent to, the proposed road development that eventually outfall to Galway Bay. A number of these watercourses outfall to either the area of Galway Bay that is within the Galway Bay Complex cSAC or to the River Corrib, directly or to a tributary, which is within the Lough Corrib cSAC.

- East of the N59 Moycullen Road the surface water collected by the carriageway drainage system will be discharged to ground via infiltration, with the exception of two drainage networks which will discharge directly to the River Corrib and three networks which will discharge to tributaries which eventually outfall to the River Corrib cSAC. One infiltration basin for the drainage design is within the Lough Corrib cSAC and the

groundwater to which this and other infiltration basins discharge interacts with the groundwater and water bodies within the Lough Corrib cSAC.

- The drainage design will include combined filter drains, attenuation ponds, grassed surface water channels, petrol and oil interceptors, wetlands and infiltration basins.

3.2 Identification of Potential Impact Pathways in the Absence of Mitigation

European sites are at risk of significant effects from the proposed road development where a source-pathway-receptor link exists between the proposed road development and the European site. In order for an impact to occur there must be a risk enabled by having a 'source' (*e.g.* construction), a 'receptor' (*e.g.* a cSAC/SPA or their QI habitats/species), and a pathway between the source and the receptor (*e.g.* a watercourse which connects the impact source at a site of proposed works to a cSAC/SPA). The risk of the impact does not automatically mean it will occur, nor that it will be significant. However, identification of the risk does mean that there is a possibility of ecological or environmental impact occurring, with the level and significance of the impact depending upon the nature and exposure to the risk, and the characteristics of the receptor. The risk of the proposed road development having a significant effect on European sites is assessed in the absence of considering any mitigation measures that might reduce or remedy any potential impact.

The principal potential impact sources and pathways associated with the proposed road development are:

- direct habitat loss, fragmentation and/or degradation as a result of tunnelling, excavation or other construction works
- direct habitat loss or degradation as a result of shading from elevated structures
- indirect habitat degradation and/or direct impacts to fauna species as a result of impacts to the existing hydrogeological regime
- indirect habitat degradation and/or direct impacts to fauna species as a result of a reduction in water quality in receiving watercourses/waterbodies
- indirect habitat degradation as a result of the introduction or spread of non-native invasive plant species (including both terrestrial and surface water pathways)
- indirect habitat degradation as a result of a reduction in air quality
- either direct or indirect disturbance, damage and/or displacement impacts to fauna species including to their breeding, resting and feeding sites/resources as a result of construction works, and
- mortality risks which the proposed road development may pose to fauna species during construction or operation

3.3 Defining the Zone of Influence (ZoI) of the Proposed Road Development

The ZoI is a distance within which the proposed road development could have significant effects on European sites, or more specifically within which it could affect the conservation condition of QI habitats or species. There is no set recommended distance for which European sites are considered as being relevant (*i.e.* within the ZoI of a proposed road development) for AA. Available guidance (NPWS, 2010) recommends that "the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects". As a general rule of thumb, it is often considered appropriate to examine all European sites within 15km as a starting point. In some instances, where there are far reaching hydrological/hydrogeological connections, a whole river catchment or a groundwater aquifer may need to be included in determining the ZoI.

In consideration of the identified impact sources, pathways and receptors, the potential ZoI with respect to European sites was defined as:

- all European sites within or adjacent to the proposed road development boundary
- those downstream of any watercourses crossed by the proposed road development
- those selected for groundwater-dependent habitats and species and which fall within the groundwater ZoI defined for the road development [4]
- those which fall within a distance of the proposed road development where disturbance effects to QI fauna species could potentially occur during construction or operation (*i.e.* within 300m or within 800m in areas where prolonged blasting may occur)
- those that fall within a distance where air quality effects of the proposed road development during operation could affect habitats

Consideration was also given to whether more distant Europoean sites fall within the ZoI of the proposed road development for *ex situ* impacts on QI/SCI species, considering the species' foraging range, home range and connections between maternity, breeding and hibernation sites. This is discussed in more detail below in **Section 3.4**.

The maximum possible extent of the ZoI of the proposed road development, and the European sites therein, are shown on **Figure 1**. Table 1 below provides details on the four European sites which fall within the ZoI of the proposed road development. The table in Appendidx A lists all European sites within the wider area within which the proposed road development lies, summarising why all

[4] The potential ZoI of the proposed road development with respect to hydrogeological impact pathways has been defined based upon detailed hydrogeological investigations and advice of the design team's hydrogeologists. In poorly productive bedrock, the ZoI was considered to be more local (*i.e.* in the western part of the proposed road development where granite is the underlying rock), compared with karst areas in the eastern part of the proposed road development. However in a worst case scenario the zone of influence for hydrogeological impacts would be well below 300m.

Euorpean sites with the excpetion of the four listed in Table 1 below fall outside of its ZoI.

Table 1: Details of European sites which fall within ZoI of the Proposed Road Development

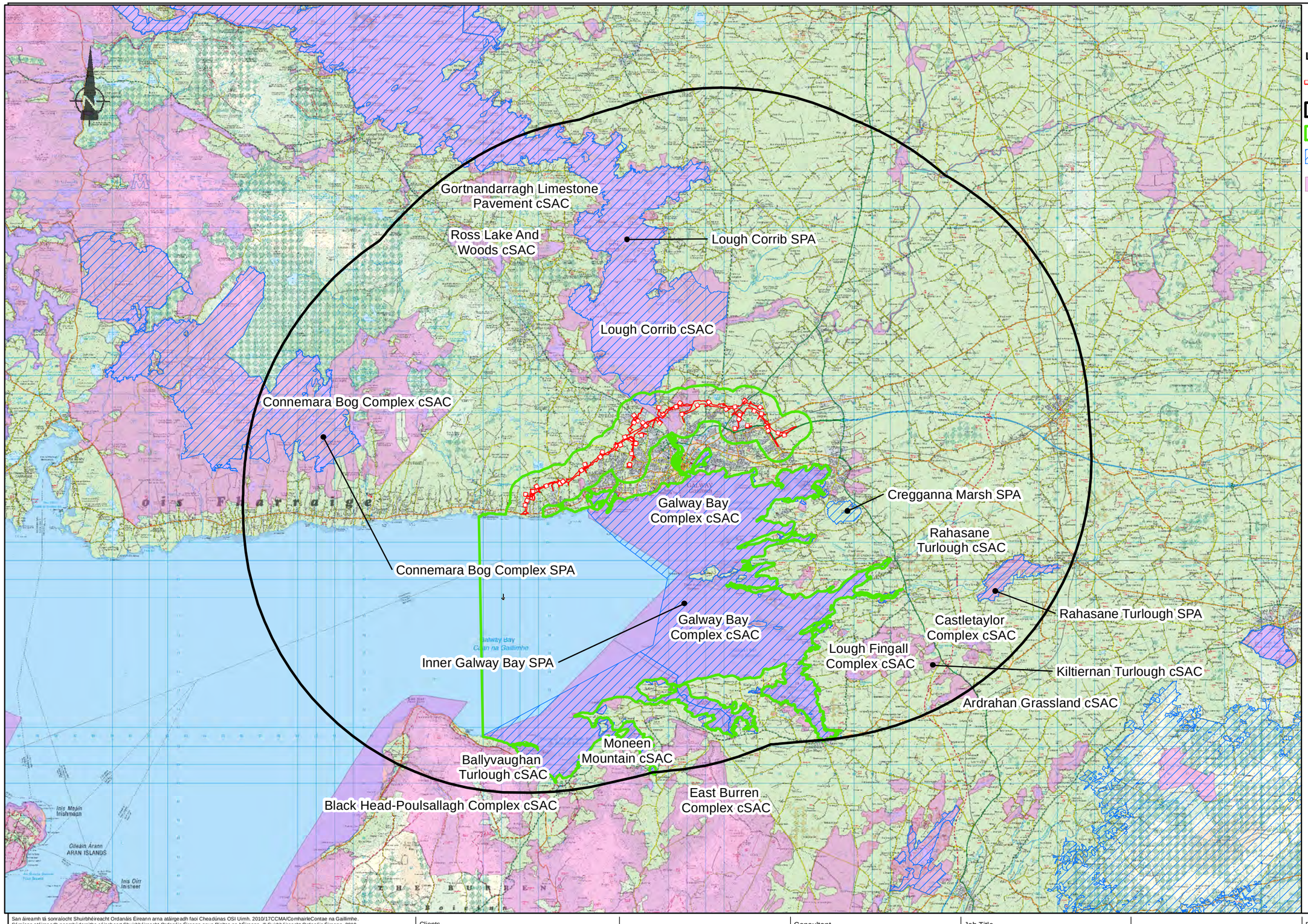
Site Name	Location with respect to Proposed Scheme	Qualifying Interests/Special Conservation Interests (* = Priority Annex I Habitats)
candidate Special Areas of Conservation (cSAC)		
Lough Corrib cSAC **000297**	The proposed road development passes through Lough Corrib cSAC at the River Corrib crossing point and beneath it in the vicinity of Lackagh Quarry.	**Annex I Habitats:** • [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflora*e) • [3140] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp • [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) • [6410] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • [7110] Active raised bogs * • [7120] Degraded raised bogs still capable of natural regeneration • [7150] Depressions on peat substrates of the *Rhynchosporion* • [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* * • [7220] Petrifying springs with tufa formation (*Cratoneurion*) * • [7230] Alkaline fens • [8240] Limestone pavements * • [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • [91D0] Bog woodland * • [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the Isoëto-Nanojuncetea[5] **Annex II Species:** • [1029] Freshwater Pearl Mussel - *Margaritifera margaritifera* • [1092] White-clawed Crayfish - *Austropotamobius pallipes* • [1095] Sea Lamprey - *Petromyzon marinus*

[5] Although not yet listed on the version of the sites conservation objectives available from the NPWS, Conservation objectives for Lough Corrib cSAC [000297], the NPWS have advised that this Annex I habitat has been approved for inclusion as a qualifying interest of the Lough Corrib cSAC

		• [1096] Brook Lamprey - *Lampetra planeri* • [1106] Atlantic Salmon - *Salmo salar* (only in fresh water) • [1303] Lesser Horseshoe Bat - *Rhinolophus hipposideros* • [1355] Otter - *Lutra lutra* • [1393] Slender green feather-moss - *Drepanocladus* (*Hamatocaulis*) *vernicosus* • [1833] Slender Naiad - *Najas flexilis*
Galway Bay Complex cSAC **000268**	The proposed road development is approximately 160m from the cSAC at Bearna Woods and crosses various watercourses which drain to Galway Bay	**Annex I Habitats:** • [1140] Mudflats and sandflats not covered by seawater at low tide • [1150] Coastal lagoons * • [1160] Large shallow inlets and bays • [1170] Reefs • [1220] Perennial vegetation of stony banks • [1310] *Salicornia* and other annuals colonising mud and sand • [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • [1410] Mediterranean salt meadows (*Juncetalia maritimi*) • [3180] Turloughs * • [5130] *Juniperus communis* formations on heaths or calcareous grasslands • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) • [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* * • [7230] Alkaline fens **Annex II Species:** • [1355] Otter *Lutra lutra* • [1365] Harbour seal *Phoca vitulina*
Special Protection Area (SPA)		
Lough Corrib SPA **004042**	The proposed road development is approximately 203m from the SPA at its closest point	• Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] (Wintering) • Gadwall (*Anas strepera*) [A051] (Wintering) • Shoveler (*Anas clypeata*) [A056] (Wintering) • Pochard (*Aythya ferina*) [A059] (Wintering) • Tufted Duck (*Aythya fuligula*) [A061](Wintering) • Hen Harrier (*Circus cyaneus*) [A082](Wintering) • Coot (*Fulica atra*) [A125] (Wintering) • Golden Plover (*Pluvialis apricaria*) [A140] (wintering) • Black-headed Gull (*Chroicocephalus ridibundus*) [A179](Breeding)

		• Common Gull (*Larus canus*) [A182] (Breeding) • Common Tern (*Sterna hirundo*) [A193] (Breeding) • Arctic Tern (*Sterna paradisaea*) [A194] (Breeding) • Common Scoter (*Melanitta nigra*) [A065](breeding) • Wetlands
Inner Galway Bay SPA **004031**	The proposed road development is approximately 1.1km from the SPA at both Oranmore Bay and at Rusheen Bay	• Great Northern Diver (*Gavia immer*) [A003] (Wintering) • Cormorant (*Phalacrocorax carbo*) [A017] (Breeding) • Grey Heron (*Ardea cinerea*) [A028] (Wintering) • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] (Wintering) • Wigeon (*Anas penelope*) [A050] (Wintering) • Teal (*Anas crecca*) [A052] (Wintering) • Shoveler (*Anas clypeata*) [A056] (Wintering) • Red-breasted Merganser (*Mergus serrator*) [A069] (Wintering) • Ringed Plover (*Charadrius hiaticula*) [A137] (Wintering) • Golden Plover (*Pluvialis apricaria*) [A140] (Wintering) • Lapwing (*Vanellus vanellus*) [A142] (Wintering) • Dunlin (*Calidris alpina*) [A149] (Wintering) • Bar-tailed Godwit (*Limosa lapponica*) [A157] (Wintering) • Curlew (*Numenius arquata*) [A160] (Wintering) • Redshank (*Tringa totanus*) [A162] (Wintering) • Turnstone (*Arenaria interpres*) [A169] (Wintering) • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] (Wintering) • Common Gull (*Larus canus*) [A182] (Wintering) • Sandwich Tern (*Sterna sandvicensis*) [A191] (Breeding) • Common Tern (*Sterna hirundo*) [A193] (Breeding) • Wetlands & Waterbirds [A999]

A3



FOR INFORMATION

Legend

- Proposed Development Boundary
- Proposed Development Boundary 15km Buffer
- 20170602_N6GCRR_ZoI...
- Special Protection Area (SPA)
- candidate Special Area of Conservation (cSAC)

Clients

Consultant

ARUP
Corporate House
City East Business Park
Ballybrit, Galway, Ireland
Tel +353 (0)91 460675
www.N6GalwayCity.ie
www.arup.ie

Job Title
N6 Galway City Ring Road

Scale: **1:200,000**

Date: **June 2017**

Issue	Date	By	Chkd	Appd
I1	02/06/2017	AG	MH	EM

Drawing Title
European sites within the ZoI of the proposed road development

Drawing Status
FOR INFORMATION

Job No	Drawing No	Issue
233985-04	Figure 1	I1

3.4 Identifying European sites within the ZoI of the Proposed Road Development

The nature and scale of the proposed road development, the identified potential impact pathways and their relationship to European sites were considered in order to determine which European sites were within the ZoI of the proposed road development, and therefore potentially at risk of significant effects.

In the absence of mitigation measures the proposed road development was assessed as being likely to have significant effects on the following European sites:

- Lough Corrib SAC
- Lough Corrib SPA
- Galway Bay Complex SAC
- Inner Galway Bay SPA

The locations of these European sites relative to the proposed road development, and the ZoI, are shown on **Figure 1**.

There are four other European sites within 10km of the proposed road developmentfor which *ex situ* impacts on QI/SCI species were considered. These have been considered in the context of whether the proposed road development poses any risk to the QI/SCI species' conservation objectives, despite the fact that the European sites themselves are beyond its ZoI. This is focussed on certain species where their foraging ranges, home ranges, nesting/roosting sites (and connections between same) may extend beyond the cSAC/SPA boundaries, independent of the absence of any hydrological or hydrogeological pathways between the European sites and the proposed road development.

These are Connemara Bog Complex cSAC (and the Marsh fritillary butterfly *Euphydryas aurinia*), Connemara Bog Complex SPA (and breeding populations of Cormorant, Merlin *Falco columbarius*, Golden plover and Common gull), Ross Lake and Woods cSAC (and the Lesser horseshoe bat) and Cregganna Marsh SPA (and the Greenland white fronted goose *Anser albifrons flavirostris*).

1. Connemara Bog Complex cSAC lies c. 6km to the north-west of the proposed road development. The Marsh fritillary butterfly is a species that requires a network of suitable habitat patches within its range to maintain the local metapopulation. Although long distance movements have been recorded (i.e. up to 20km), the species is generally relatively sedentary and 6.5km would be beyond the normal dispersal range of the species (Lavery, 1993; Hula et al.2004; Betzholtz et al. 2007; Junker & Schmitt, 2010; Botham et al., 2011; and, Zimmermann et al., 2011). Therefore, the proposed road development will not influence the existing population dynamic of the Connemara Bog Complex cSAC's Marsh fritillary population in any way or affect the conservation objectives supporting its conservation condition in the Connemara Bog Complex cSAC.
2. Connemara Bog Complex SPA lies c.9km to the north-west of the proposed road development. At this distance the proposed road development poses no

risk of affecting breeding success at the nesting sites within the SPA: the lakes for Cormorant and Common gull, and upland habitats for merlin and Golden plover.

3. Ross Lake and Woods cSAC lies c.10km to the north of the proposed road development and is the closest European site selected for the Lesser horseshoe bat *Rhinolophus hipposideros*. The roost that forms the QI population for this European site (buildings at Ross House) is more than 13km from the proposed road development. This distance is regarded as being beyond the normal core foraging range of the Ross House population and beyond the normal commuting range of this species, except on exceptional occasions or over long periods of time; for example, bats dispersing and moving between areas in the wider landscape over a period of many years/generations. Furthermore, radio-tracking surveys of the Menlough population of bats (which were located within the scheme study area) undertaken for this project in 2014 and 2015 showed no evidence of linkage between that population and the Ross House roost. Due to the lack of a linkage between the proposed road development and the Ross House roost, the proposed road development will not influence the existing population dynamic of Ross Lake and Woods cSAC's Lesser horseshoe bat population in any way or affect the conservation objectives supporting its conservation condition in Ross Lake and Woods cSAC. Given that conclusion, it follows that the proposed road development will not have any impact on the Lesser horseshoe bat in any of the other cSACs selected for this species (which are all further removed from the proposed road development).
4. Cregganna Marsh SPA lies c.4km south-east of the proposed road development. There were no records of Greenland white-fronted geese from any of the winter bird sites surveyed for the proposed road development. Therefore, the proposed road development poses no risk to the winter population at this site.

All other SPAs are located more than 10km from the proposed road development. That distance is considered to be beyond the normal commuting range of wintering or breeding SCI species. The exception is birds wintering in Ireland migrating to/from their breeding grounds; for example, Whooper swans returning to winter in Ireland from their Icelandic breeding grounds. Current best scientific knowledge is that roads do not pose any risk of population level effects to wintering birds during these migratory movements (once habitat loss is considered in the context of staging areas; which does not arise in the context of the proposed road development), and breeding sites or supporting home ranges will not be affected beyond a distance of 10km. Accordingly, the proposed road development poses no risk to the conservation objectives of any other SPA sites.

3.5 Identifying Likely Significant Effects of the Proposed Road Development on European sites

The source-pathway-receptor relationship between the proposed road development and the four European sites which fall within its ZoI is summarised below in **Table 2**.

Table 2: Identified impact pathways and European sites (receptors) at risk of Significant Effects from the Proposed Road Development in the absence of mitigation

Impact Source	Impact Pathway and European site(s) at risk of Likely Significant Effects
Habitat Loss	The proposed road development passes through Lough Corrib cSAC at the River Corrib crossing and under the cSAC in the vicinity of Lackagh Quarry. In the absence of mitigation there is potential for temporary and/or permanent loss of both QI and non-QI habitats within the cSAC.
Habitat Fragmentation	As the proposed road development will cross, and result in habitat loss within Lough Corrib cSAC, some degree of fragmentation impacts will occur.
Habitat degradation – tunnelling/excavation	Tunnelling and/or deep excavations at Lackagh Quarry could have the potential to affect the structural stability of surface-level QI habitat within Lough Corrib cSAC.
Habitat degradation – hydrogeology	Tunnelling and excavations at the Lackagh Tunnel has the potential to affect the existing hydrogeological regime that supports the lake and wetland habitats within Lough Corrib cSAC at Coolagh Lakes. Other deep excavations or cuttings have the potential to affect the hydrogeological regime supporting wetland habitat that in turn supports SCI bird species of Lough Corrib SPA and/or Inner Galway Bay SPA at *ex-situ* sites.
Habitat loss or degradation – shading	A reduction in sunlight and direct precipitation has the potential to affect the vegetation composition and structure in habitats beneath the elevated deck of the proposed River Corrib Bridge which spans Lough Corrib cSAC at Menlough/Dangan.
Habitat degradation – water quality	A reduction in water quality in receiving watercourses during construction or operation (from contaminated surface water runoff and/or accidental spillage or pollution events) has the potential to affect QI habitats and/or species in the downstream areas of Lough Corrib cSAC, Galway Bay Complex cSAC and Inner Galway Bay SPA.
Habitat degradation – air quality	A reduction in air quality associated with construction and/or operation has the potential to affect QI habitats (and in a worst case scenario consequently on habitats upon which QI fauna species rely) within Lough Corrib cSAC (*e.g.* negatively affect vegetation composition and structure of QI habitats).

Impact Source	Impact Pathway and European site(s) at risk of Likely Significant Effects
Habitat degradation – non-native invasive species	Introducing or spreading non-native invasive species during construction works or from maintenance works during operation of the proposed road development, has the potential to affect QI habitats within Lough Corrib cSAC, and potentially downstream in Galway Bay Complex cSAC and Inner Galway Bay SPA (*e.g.* to negatively affect vegetation composition and structure of QI habitats).
Damage/disturbance/displacement	Disturbance during construction or operation (*e.g.* noise, vibration, artificial lighting or increased human activity) has the potential to result in damage, disturbance and/or displacement of QI species from breeding/resting/feeding sites or supporting habitat (*e.g.* foraging habitat), potentially at key life-cycle stages, including consideration of *ex-situ* sites[6] and their role in supporting the SCI bird species of affected SPAs and QI species of affected cSACs. This has the potential to affect the QI/SCI species and conservation objectives of Lough Corrib cSAC, Lough Corrib SPA, Galway Bay Complex cSAC and Inner Galway Bay SPA.
Barrier effect	The proposed road develomepnt could pose a barrier to aquatic species passage during either construction (during works to bridges/culverts/stream realignments) or operation (e.g. if bridges/culverts were not designed to be passable by aquatic species). This has the potential to affect the QI species and conservation objectives of Lough Corrib cSAC and Galway Bay Complex cSAC.
Mortality risk	The proposed road development poses a mortality/road traffic collision risk to fauna species during construction (*e.g.* mortalities arising from construction works) and operation (*e.g.* road traffic collision risk). This has the potential to affect the QI species and conservation objectives of Lough Corrib cSAC and Galway Bay Complex cSAC.

[6] The need to consider use of *ex situ* habitat areas outside of an SPA by SCI bird species is set out in NPWS conservation objective documents (e.g. Section 3.1 and 5.2 of the *Inner Galway Bay Special Protection Area (Site Code 4031), Conservation Objectives Supporting Document, Version 1).* In the absence of a site specific conservation objectives document for Lough Corrib SPA, this is also applied in assessing impacts on this site. These areas are termed *ex-situ* sites in this report and are defined as areas of habitat situated within the hinterland of the SPA, or in areas ecologically connected to it, which support SCI bird species.

3.6 Potential for In-combination Effects

Any other plans or projects which have impact pathways connecting them to the same European sites as those within the ZoI of the proposed road development have the potential to act in-combination to have significant effects on these European sites—Lough Corrib cSAC, Lough Corrib SPA, Galway Bay Complex cSAC and Inner Galway Bay SPA.

The following key plans and projects have been identified as having a potential to act in-combination with the proposed road development to affect these European sites[7]:

- **National Plans**

  Climate Action and Low-Carbon Development – National Policy Position Ireland

  National Spatial Strategy for Ireland 2002 – 2020

  Smarter Travel a Sustainable Transport Future 2009-2020

  Foodwise 2025

  Ireland's Rural Development Programme 2014-2020

  Wild Atlantic Way Operational Programme 2015-2019

- **Regional Plans**

  Regional Planning Guidelines for the West Region 2010 – 2022

  West Catchment Flood Risk Assessment and Management Study

- **County/Local Plans**

  Galway County Development Plan 2015-2021

  Galway City Council Development Plan 2017-2023

  Draft Clare County Development Plan 2017-2023

  Mayo County Development Plan 2014-2020

  Galway City Local Economic and Community Plan 2015-2021

  Gaeltacht Local Area Plan 2008-2018

  Athenry Local Area Plan 2012-2018

  Bearna Local Area Plan 2007 – 2017

  Gort Local Area Plan 2013-2019

  Headford Local Area Plan 2015-2021

[7] Note that list is not intended to be exhaustive but to highlight the key plans and projects which have the potential to act in-combination with the proposed development to adversely affect the integrity of European Sites

Loughrea Local Area Plan 2011-2018

Maigh Cuilinn Local Area Plan 2013-2019

Oranmore Local Area Plan 2012 – 2018

Tuam Local Area Plan 2011-2017

Galway Transport Strategy

- **Transport Infrastructure Projects**

  M6 Motorway Service Area (Rathmorrissy Interchange)

  M17 Galway to Tuam

  N18 Oranmore to Gort

  N17 Tuam Bypass

  N59 Clifden to Maam Cross Proposed Road Development

  N59 Maam Cross to Oughterard Proposed Road Development

  N59 Maigh Cuilinn (Moycullen) Bypass Road Project

  R336 Bearna to Scríb via Ros an Mhíl Road Scheme

  Galway to Dublin Cycleway

  Galway to Oughterard Greenway

  Bearna Greenway

- **Coastal Protection Schemes**

  Sáilín to Silverstrand Coastal Protection Scheme

  Salthill Coastal Protection Works (Blackrock to Galway Golf Club)

- **Other Infrastructure Projects**

  Proposed Galway Harbour Port Extension

  Water supply schemes

  Wastewater Treatment Works

4 Conclusions

Following an examination, analysis and evaluation of the relevant information, including in particular, the nature of the proposed road development and its potential relationship with European sites, as well as considering other plans and projects, and applying the precautionary principle, it is the professional opinion of the authors of this report that it is not possible to rule out the possibility of significant effects on four European sites; Lough Corrib cSAC, Lough Corrib SPA, Galway Bay Complex cSAC and Inner Galway Bay SPA.

This judgement has been reached on the basis of the following potential impact sources and pathways associated with the proposed road development which QI/SCI species and habitats may be at risk from:

- direct habitat loss, fragmentation and/or degradation as a result of tunnelling, excavation or other construction works
- direct habitat loss or degradation as a result of shading from elevated structures
- indirect habitat degradation as a result of impacts to the existing hydrogeological regime
- indirect habitat degradation as a result of a reduction in water quality in receiving watercourses/waterbodies
- indirect habitat degradation as a result of the introduction or spread or non-native invasive plant species (including both terrestrial and surface water pathways)
- indirect habitat degradation as a result of a reduction in air quality
- either direct or indirect disturbance and/or displacement impacts to fauna species including to their breeding, resting and feeding sites/resources
- construction works or permanent structures creating a barrier to species movement and mortality risks which the proposed road development may pose to fauna species

For these reasons, it is the professional opinion of the authors of this report that the application for consent for the proposed road development requires an AA to assess whether the proposed road development would adversely affect the integrity of four European sites; Lough Corrib cSAC, Lough Corrib SPA, Galway Bay Complex cSAC and Inner Galway Bay SPA.

It is the professional opinion of the authors of this report that the scope of the AA may be limited to the stated four European sites as it has been demonstrated in this report, that all other European sites fall outside of the ZoI of the proposed road development and therefore any likelihood of significant effects on any other European sites can be ruled out.

5 References

An Bord Pleanála. (2013) *Applications for approval for Local Authority Developments made to An Bord Pleanála under 177AE of the Planning and Development Act, 2000, as amended (Appropriate Assessment); Guidelines for Local Authorities:* An Bord Pleanála, Dublin.

CIEEM**.** (2016) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal,* 2nd edition: Winchester, U.K Chartered Institute of Ecology and Environmental Management.

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

Environmental Protection Agency. (2002) *Guidelines on the Information to be contained in Environmental Impact Statements*.

Environmental Protection Agency. (2003) *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*.

Environmental Protection Agency. (2015a) *Advice Notes for Preparing Environmental Impact Statements (draft September 2015).*

Environmental Protection Agency. (2015b) *Revised Guidelines on the Information to be Contained in Environmental Impact Statements (draft September 2015).*

European Commission. (2000a) *Communication from the Commission on the precautionary principle.*

European Commission. (2000b) Managing Natura 2000 sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (EC Environment Directorate-General, 2000); hereinafter referred to as "MN2000".

European Commission. (2001) Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission Environment Directorate-General).

European Commission. (2007) *Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC. Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence.*

National Parks & Wildlife Service. (2010). *Circular NPW 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities*: (Department of Environment, Heritage and Local Government).

National Parks & Wildlife Service. (2013a) *The Status of EU Protected Habitats and Species in Ireland.* Habitat Assessments Volume 2. Version 1.0. Unpublished Report, National Parks & Wildlife Services: Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

National Parks & Wildlife Service. (2013b) *The Status of EU Protected Habitats and Species in Ireland.* Species Assessments Volume 3, Version 1.0. Unpublished Unpublished Report, National Parks & Wildlife Services: Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

RPS. (2006) *N6 Galway City Outer Bypass. Environmental Impact Statement.:* Galway County Council and Galway City Council.

Appendix A

Table of European sites and identification of those which fall within the ZoI of the proposed road development. European sites which fall within the ZoI have been highlighted in grey rows in this table.

Description of European sites and identification of those which fall within the ZoI of the proposed road development. European sites which fall within the ZoI have been highlighted in grey rows in this table.		
Site Name & Code	**Reason why site does/does not fall within ZoI**	**Qualifying Interests/Special Conservation Interests**
Candidate Special Areas of Conservation		
Lough Corrib cSAC 297	The proposed road development traverses Lough Corrib cSAC at the River Corrib crossing point and beneath it in the vicinity of Lackagh Quarry. Due to a range of possible impact pathways this European site falls within the ZoI of the proposed road development.	**Annex I Habitats *(*Priority habitats)*:** • [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflora*e) • [3140] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp • [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) • [6410] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • [7110] Active raised bogs * • [7120] Degraded raised bogs still capable of natural regeneration • [7150] Depressions on peat substrates of the *Rhynchosporion* • [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* * • [7220] Petrifying springs with tufa formation (*Cratoneurion*) * • [7230] Alkaline fens • [8240] Limestone pavements * • [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

		• [91D0] Bog woodland * **Annex II Species *(** Also Annex IV Species)*:** • [1029] Freshwater Pearl Mussel - *Margaritifera margaritifera* • [1092] White-clawed Crayfish - *Austropotamobius pallipes* • [1095] Sea Lamprey - *Petromyzon marinus* • [1096] Brook Lamprey - *Lampetra planeri* • [1106] Atlantic Salmon - *Salmo salar* (only in fresh water) • [1303] Lesser Horseshoe Bat - *Rhinolophus hipposideros* ** • [1355] Otter - *Lutra lutra* ** • [1393] Slender green feather-moss - *Drepanocladus* (*Hamatocaulis*) *vernicosus* • [1833] Slender Naiad - *Najas flexilis* **
Galway Bay Complex cSAC 268	The proposed road development is approximately 160m from the cSAC at Bearna Woods and crosses various watercourses which drain to Galway Bay. Due to a range of possible impact pathways this European site falls within the ZoI of the proposed road development.	**Annex I Habitats *(* Priority habitats)*:** • [1140] Mudflats and sandflats not covered by seawater at low tide • [1150] Coastal lagoons * • [1160] Large shallow inlets and bays • [1170] Reefs • [1220] Perennial vegetation of stony banks • [1310] *Salicornia* and other annuals colonising mud and sand • [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • [1410] Mediterranean salt meadows (*Juncetalia maritimi*) • [3180] Turloughs *

		• [5130] *Juniperus communis* formations on heaths or calcareous grasslands • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) • [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* * • [7230] Alkaline fens **Annex II Species *(**Also Annex IV Species)*:** • [1355] Otter *Lutra lutra* ** • [1365] Harbour seal *Phoca vitulina*
Ardrahan Grassland cSAC (002244)	Located *c.* 13km to the south-east of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	**Annex I Habitats *(* Priority habitats)*:** • [4060] Alpine and Boreal heaths • [5130] *Juniperus communis* formations on heaths or calcareous grasslands • [8240] Limestone pavements *
Kiltiernan Turlough cSAC (001285)	Located *c.* 12km to the south-east of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend to include any ground water pathways to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	**Annex I Habitats *(* Priority habitats)*:** • [3180] Turloughs *

Rahasane Turlough cSAC (000322)	Located *c.* 11.5km to the south-east of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend to include any ground water pathways to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	**Annex I Habitats *(* Priority habitats)*:** • [3180] Turloughs *
Lough Fingall Complex cSAC (000606)	Located *c.* 9.5km to the south-east of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend to include any ground water pathways to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	**Annex I Habitats *(* Priority habitats)*:** • [3180] Turloughs * • [4060] Alpine and Boreal heaths • [5130] Juniperus communis formations on heaths or calcareous grasslands • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco Brometalia) (*important orchid sites) • [7210] Calcareous fens with Cladium mariscus and species of the *Caricion davallianae* * • [8240] Limestone pavements * **Annex II Species *(**Also Annex IV Species)*:** • [1303] Lesser horseshoe bat (*Rhinolophus hipposideros*) **
Connemara Bog Complex cSAC (002034)	Located *c.* 6km to the west of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend to include any ground water pathways to this	**Annex I Habitats *(* Priority habitats)*:** • [1150] Coastal lagoons * • [1170] Reefs

	European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	• [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) • [3160] Natural dystrophic lakes and ponds • [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • [4010] Northern Atlantic wet heaths with *Erica tetralix* • [4030] European dry heaths • [6410] *Molinia* meadows on calcareous, peaty or clavey-silt-laden soils (*Molinion caeruleae*) • [7130] Blanket bog (*active only) • [7140] Transition mires and quaking bogs [7140] • [7150] Depressions on peat substrates of the *Rhynchosporion* • [7230] Alkaline fens • [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in British Isles **Annex II Species *(**Also Annex IV Species)*:** • [1065] Marsh fritillary (*Euphydryas aurinia*) • [1106] Salmon (*Salmo salar*) • [1355] Otter (*Lutra lutra*) ** • [1833] Slender naiad (*Najas flexilis*)
Ross Lake and Woods cSAC (001312)	Located *c.* 10km to the north-west of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend	**Annex I Habitats *(* Priority habitats)*:** • [3140] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.

	to include any ground water pathways to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	• [6410] Molinia meadows on calcareous, peaty or clavey-silt-laden soils (Molinion caeruleae) • [7230] Alkaline fens • [91E0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) * **Annex II Species *(**Also Annex IV Species)*:** • [1303] Lesser horseshoe bat (*Rhinolophus hipposideros*) ** • [1355] Otter (Lutra lutra) **
Gortnandarragh Limestone Pavement cSAC (001271)	Located *c.* 12.5km to the north-west of the proposed road development. There are no hydrological or other linkages to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	**Annex I Habitats *(* Priority habitats)*:** • [8240] Limestone pavements *
Castletaylor Complex cSAC (000242)	Located *c.* 12km to the south-east of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend to include any ground water pathways to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	**Annex I Habitats *(* Priority habitats)*:** • [3180] Turloughs * • [4060] Alpine and Boreal heaths • [5130] *Juniperus communis* formations on heaths or calcareous grasslands • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) • [8240] Limestone pavements *

Black Head-Poulsallagh cSAC (000020)	Located *c.* 11km to the south of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend to include any ground water pathways to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	**Annex I Habitats *(* Priority habitats)*:** • [1170] Reefs • [1220] Perennial vegetation of stony banks • [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • [4060] Alpine and Boreal heaths • [5130] *Juniperus communis* formations on heaths or calcareous grasslands • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) • [6510] Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) • [7220] Petrifying springs with tufa formation (*Cratoneurion*) * • [8240] Limestone pavements * • [8330] Submerged or partly submerged sea caves **Annex II Species *(**Also Annex IV Species)*:** • [1395] Petalwort (Petalophyllum ralfsii)
Moneen Mountain cSAC (000054)	Located *c.* 13km to the south of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend to include any ground water pathways to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to	**Annex I Habitats *(* Priority habitats)*:** • [3180] Turloughs * • [4060] Alpine and Boreal heaths • [5130] *Juniperus communis* formations on heaths or calcareous grasslands • [6130] Calaminarian grasslands of the *Violetalia calaminariae* • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites)

	this European site.	• [7220] Petrifying springs with tufa formation (*Cratoneurion*) ***** • [8240] Limestone pavements ***** **Annex II Species *(**Also Annex IV Species)*:** • [1065] Marsh fritillary (*Euphydryas aurinia*) • [1303] Lesser horseshoe bat (*Rhinolophus hipposideros*)**

East Burren Complex cSAC (001926)	Located *c.* 13km to the south of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend to include any ground water pathways to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	**Annex I Habitats *(* Priority habitats)*:** • [3140] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. • [3180] Turloughs* • [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • [4060] Alpine and Boreal heaths • [5130] *Juniperus communis* formations on heaths or calcareous grasslands • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) • [6510] Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) • [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* * • [7220] Petrifying springs with tufa formation (*Cratoneurion*) * • [7230] Alkaline fens • [8240] Limestone pavements * • [8310] Caves not open to the public • [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) * **Annex II Species *(**Also Annex IV Species)*:** • [1065] Marsh fritillary (*Euphydryas aurinia*) • [1303] Lesser horseshoe bat (*Rhinolophus hipposideros*) ** • [1355] Otter (*Lutra lutra*) **

Ballyvaughan Turlough cSAC (996)	Located *c.* 15km to the south of the proposed road development. There are no hydrological or hydrogeological linkages to this European site. The unmitigated zone of influence for hydrogeology does not extend to include any ground water pathways to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	**Annex I Habitats *(* Priority habitats)*:** • [3180] Turloughs *
Special Protection Areas		
Lough Corrib SPA (004042)	The proposed road development is approximately 203m from the SPA at its closest point. Due to the possibility of *ex situ* impacts on SCI species including in supporting wetland areas within the ZoI of the proposed road development this European site falls within the ZoI.	• Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] • Gadwall (*Anas strepera*) [A051] • Shoveler (*Anas clypeata*) [A056] • Pochard (*Aythya ferina*) [A059] • Tufted Duck (*Aythya fuligula*) [A061] • Common Scoter (*Melanitta nigra*) [A065] • Hen Harrier (*Circus cyaneus*) [A082] • Coot (*Fulica atra*) [A125] • Golden Plover (*Pluvialis apricaria*) [A140] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Common Tern (*Sterna hirundo*) [A193]

		• Arctic Tern (*Sterna paradisaea*) [A194] • Wetlands
Inner Galway Bay SPA (004031)	The proposed road development is approximately 1.1km from the SPA at both Oranmore Bay and at Rusheen Bay. Due to a range of possible impact pathways this European site falls within the ZoI of the proposed road development.	• Great Northern Diver (Gavia immer) [A003] • Cormorant (Phalacrocorax carbo) [A017] • Grey Heron (*Ardea cinerea*) [A028] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Wigeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Shoveler (*Anas clypeata*) [A056] • Red-breasted Merganser (*Mergus serrator*) [A069] • Ringed Plover (*Charadrius hiaticula*) [A137] • Golden Plover (*Pluvialis apricaria*) [A140] • Lapwing (*Vanellus vanellus*) [A142] • Dunlin (*Calidris alpina*) [A149] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Turnstone (*Arenaria interpres*) [A169] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Sandwich Tern (*Sterna sandvicensis*) [A191]

		• Common Tern (*Sterna hirundo*) [A193] • Wetlands & Waterbirds [A999]
Connemara Bog Complex SPA (004181)	Located *c*. 9km to the west of the proposed road development. There are no hydrological or other linkages to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	• Cormorant (*Phalacrocorax carbo*) [A017] • Merlin (*Falco columbarius*) [A098] • Golden Plover (*Pluvialis apricaria*) [A140] • Common Gull (*Larus canus*) [A182]
Cregganna Marsh SPA (4142)	Located *c*. 4km to the south-east of the proposed road development. There are no hydrological or other linkages to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There are no potential *ex situ* impacts relevant to this European site.	• Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
Rahasane Turlough SPA (004089)	Located *c*. 12km to the south-east of the proposed road development. There are no hydrological or other linkages to this European site. There are no impact pathways, either direct or indirect, by which this European site could be impacted. There	• Whooper Swan (*Cygnus cygnus*) [A038] • Wigeon (*Anas penelope*) [A050] • Golden Plover (*Pluvialis apricaria*) [A140] • Black-tailed Godwit (*Limosa limosa*) [A156] • Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

	are no potential *ex situ* impacts relevant to this European site.	• Wetlands & Waterbirds [A999]