

IN THE MATTER OF AN APPLICATION TO
AN BORD PLEANÁLA

FOR APPROVAL OF (I) THE N6 GALWAY CITY RING ROAD
PURSUANT TO SECTION 51 OF THE ROADS ACT 1993 (AS
AMENDED); (II) THE N6 GALWAY CITY RING ROAD
MOTORWAY SCHEME 2018; and (III) THE N6 GALWAY CITY
RING ROAD PROTECTED ROAD SCHEME 2018

ABP Ref. ABP-302848-18 and ABP-302885-18

ORAL HEARING

Statement of Evidence

Responses to Appropriate Assessment

Objection/Submissions

by

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1 Qualifications and Experience

1.1 Lead Ecologist - Aebhín Cawley

1.1.1 My name is Aebhín Cawley. I am managing director of Scott Cawley. I hold a degree in Zoology and a postgraduate diploma in Physical Planning both from the University of Dublin (Trinity College). I am a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). I am the vice-convenor of the Irish Section of CIEEM and I was recently appointed by Minister Bruton to the EPA's Advisory Committee.

1.1.2 I have 19 years' professional experience, 17 of which have been in ecological surveying and impact assessment for public and private sector projects including road and other large infrastructure projects. I have been undertaking Appropriate Assessment work in Ireland since 2002 and regularly provide training on Appropriate Assessment to the public sector.

1.2 Senior Ecologist - Andrew Speer

1.2.1 Andrew Speer is Technical Director with Scott Cawley. He holds an honours degree in Zoology from the National University of Ireland, Galway and a post-graduate diploma in Geographic Information Systems (GIS). He is a full member of the CIEEM. Andrew has over 14 years' professional experience in preparing Ecological Impact Assessments (EcIAs), Flora & Fauna/Biodiversity chapters of Environmental Impact Statements/Environmental Impact Assessment Reports (EISs/EIARs), Appropriate Assessment Screening reports (AA Scr) and Natura Impact Statements/Reports (NISs/NIRs) for a range of projects and development plans, including strategic infrastructure projects such as national road schemes. This includes designing, undertaking and managing a wide range of complex ecological field survey programmes, assessing impacts and designing/implementing mitigation measures for protected species and habitats.

2 Role in Proposed Road Development

2.1 Scott Cawley's role in the N6 Galway City Ring Road (GCRR) Project involved undertaking the biodiversity appraisal in respect of the proposed road development and providing expert ecological advice to Galway County Council and the project team throughout all stages of the proposed road development since 2013, in relation to constraints and route selection through to the development of the design and compilation of the EIAR and NIS. Scott Cawley was responsible for designing and delivering the ecological surveys carried out at the constraints, route selection and EIA phases and preparing both the ecological sections of the Route Selection Report, Chapter 8, Biodiversity, of the EIAR and the associated appendices, the Provision of Information for Appropriate Assessment Screening Report and the NIS.

- 2.2 I, Aebhín Cawley, had overall responsibility for the delivery of all of the ecological services for the proposed road development and had a supervisory and involved role in the design of survey methodologies and scope, assessment of impacts, and development of the mitigation strategy. I also undertook specific elements of the field survey work across all sections of the proposed road development over the course of the project.
- 2.3 Andrew Speer has been responsible for the delivery of the ecological surveys, assessment of impacts, and development of the mitigation strategy. He was responsible for coordinating the ecological field survey team and was the lead author of Chapter 8, Biodiversity of the EIAR and the associated appendices, the Provision of Information for Appropriate Assessment Screening Report and the Natura Impact Statement (NIS). As well as managing the field survey team, Andrew undertook substantial elements of the field survey work himself across all sections of the proposed road development over the course of the project.
- 2.4 Myself and Andrew were supported by a team of in excess of 50 field ecologists, which included a variety specialists (refer to Table 4.1 of the NIS for scope of surveys and survey team), as well as a team of ecologists who are employed by Scott Cawley.

3 Key aspects of Habitats Directive Assessments

- 3.1 It should be stated at the outset that this statement of evidence addresses issues raised in submissions and objections in relation to the assessments which must be carried out by the Board as competent authority for the purposes of the Habitats Directive and Part XAB of the Planning and Development Act 2000, as amended. A separate statement has been prepared which addresses issues raised in submissions and objections made in relation to potential impacts on biodiversity arising from the proposed road development for the purposes of the separate and distinct Environmental Impact Assessment, which must also be conducted by the Board. In the context of the Habitats Directive assessments to be carried out by the Board, the information previously submitted in the Appropriate Assessment Screening Report and the Natura Impact Statement [NIS] are taken as read in their entirety and are not replicated here. To assist the Board in its consideration of this application for approval and, in particular, for ease of reference of all participants at the oral hearing, the main aspects pertaining to the Habitat Directive appraisals carried out on behalf of Galway County Council in respect of the proposed N6 GCRR are summarised briefly below.
- 3.2 In the “Provision of Information for Appropriate Assessment Screening Report” (“the AA Screening Report”), it was concluded that it is not possible, at Stage One Screening, to rule out the possibility of significant effects on the four European sites within the Zone of Influence (ZoI) of the proposed road development; Lough Corrib cSAC, Lough Corrib SPA, Galway Bay Complex cSAC and Inner Galway Bay SPA. Therefore, the AA Screening Report concluded that the application for consent for the proposed road development requires a Stage Two Appropriate

Assessment (AA). Accordingly, a Natura Impact Statement was submitted to An Bord Pleanála with the application for the proposed road development.

- 3.3 The full description of the existing ecological environment, as it relates to the Habitats Directive assessments, is set out in Section 5 of the NIS. It should be noted at the outset that Lough Corrib cSAC is the only European site traversed by the proposed road development. Galway Bay Complex cSAC and Inner Galway Bay SPA are downstream of the proposed road development and are not traversed by the proposed road development. While Lough Corrib SPA is located generally upstream of the proposed road development, a single outfall (the proposed drainage outfall for the N59 Link Road North) eventually discharges to a part of the River Corrib which falls within the designated area of the Lough Corrib SPA designation. The NIS contains a detailed appraisal of the likely effects, if any, on those four European sites. For the reasons set out in the AA Screening Report, the Board may determine that a Stage Two Appropriate Assessment of the proposed road development is required as it cannot be excluded – on the basis of the objective information contained in the AA Screening Report and other documentation submitted in the application for approval – that the proposed road development, individually or in combination with other plans or projects, will have a significant effect on Lough Corrib cSAC, Lough Corrib SPA, Galway Bay Complex cSAC and Inner Galway Bay SPA. For the avoidance of doubt, the AA Screening Report did not consider the effect of any mitigation measures.
- 3.4 In terms of the four European sites in respect of which a Stage Two AA of the proposed development is required – because 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 those four European sites – the NIS concludes that the proposed road development will not adversely affect (either directly or indirectly) the integrity of any European site and there is no reasonable scientific doubt as to that conclusion. Indeed, the conclusion that there will be no adverse effect on the integrity of any European site has been reached following an examination, analysis and evaluation in light of best scientific knowledge of all relevant information in respect of the Qualifying Interests [QI], habitats and species of the four European sites within the ZoI of the proposed road development, the potential impacts and mitigation measures, and whether or not the predicted impacts would affect the conservation objectives that support the conservation condition for the QIs concerned.
- 3.5 In response to the Request for Further Information (RFI) received from An Bord Pleanála, additional relevés were provided for each location where the development boundary overlaps with the Lough Corrib cSAC. 116 no. relevés (i.e. basic field unit used to record vegetation sampling data) were recorded between June and August 2019 across these overlap areas. The results of this survey work were submitted to An Bord Pleanála in August 2019. The report entitled Habitat Survey Results 2019 for N6 Galway City Ring Road (Scott Cawley, 2019), included as Appendix A.3.1 to the RFI Response, outlined any implications the June to August 2019 survey work had for the NIS findings and conclusions. The identification of one additional area of Limestone pavement [*8240] habitat in

Menlough (between Ch. 10+050 and Ch. 10+100), within the overlap between the proposed development boundary and Lough Corrib cSAC (approximately 205m²), was the only change to the habitat mapping of relevance to the NIS.

- 3.6 It should be noted that, since the application for approval was submitted to the Board, there have been two updates to the context within which the Board should carry out its Habitats Directive assessments. The first, pursuant to the European Union Conservation of Wild Birds (Inner Galway Bay Special Protection Area 004031) Regulations 2019,¹ is the designation of the site as a Special Protection Area and the adjustment of the list of special conservation interest (SCI) species to add Black-throated diver (*Gavia arctica*) and remove Shoveler (*Anas clypeata*).² Secondly, arising from confirmatory survey work carried out in Summer 2019, certain adjustments were made in the habitat baseline³, and modifications proposed to the design of the proposed road development and the mitigation strategy proposed. Notwithstanding these additional considerations, the position remains as set out in the NIS: the proposed road development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects and there is no reasonable scientific doubt in relation to this conclusion.

Proposed Parkmore Link Road Modification

- 3.7 The proposed Parkmore Link Road Modification has no effect on the scope or conclusions of the assessment presented in the NIS and RFI Response. The lands affected by the proposed modification are outside of any European sites and do not provide a supporting role to the qualifying interest Annex I habitats or Annex II species of any European sites. As assessed in the NIS (Sections 9.3.4.3, 9.3.4.4, 9.4.4.3 and 9.4.4.4), this area does occasionally support wintering bird species listed as special conservation interests for the nearby Lough Corrib SPA and Inner Galway Bay SPA sites. However, the proposed modification does not affect the conclusion of the NIS assessment in that habitat loss, habitat fragmentation and/or disturbance effects to wintering birds, including in the vicinity of the Galway Racecourse (winter bird site WB23 in the NIS), will not have any effects on the special conservation interest populations of any European sites, including Lough Corrib SPA and Inner Galway Bay SPA.
- 3.8 With the implementation of the mitigation measures already proposed in the NIS, there is no risk of the proposed Parkmore Link Road Modification affecting the receiving environment in any European sites or undermining the conservation objectives of any European sites. The conclusion of the NIS assessment remains that following an examination, analysis and evaluation of the proposed Parkmore Link Road Modification, and with the implementation of the mitigation measures already proposed in the NIS, the proposed road development will not adversely

¹ S.I. No. 515/2019

² See Section 5.2.2 of the RFI Response, p. 71, para. 5.

³ RFI Response, Appendix A.3.1 Habitat Survey Results 2019 for N6 Galway City Ring Road, RFI Volume 2.

affect the integrity of any European sites, either alone or in combination with any other plans or projects.

Proposed Modification of Mitigation at NUIG Sporting Campus

- 3.9 The proposed removal of the sports pitches, as part of the mitigation measures at NUIG Sporting Campus from the design of the proposed road development will reduce the overall area of land being directly affected locally and, therefore, will reduce the potential biodiversity effects of the proposed road development at NUIG Sporting Campus. As assessed in the NIS (Sections 9.3.4.3, 9.3.4.4, 9.4.4.3 and 9.4.4.4), the NUIG Sports Pitches do support wintering bird species listed as special conservation interests for the nearby Lough Corrib SPA and Inner Galway Bay SPA sites. The proposed removal of the sports pitches, as part of the mitigation measures at NUIG Sporting Campus from the design of the proposed road development will reduce the scale of habitat loss and potential disturbance at this location to special conservation interest bird species that use the lands at the NUIG Sporting Campus. As a result, the proposed modification in the design of the proposed road development will have no effect on the scope or conclusions of the assessment presented in the NIS and RFI Response.
- 3.10 With the implementation of the mitigation measures already proposed in the NIS, there is no risk of the modification in the design of the proposed road development at the NUIG Sporting Campus affecting the receiving environment in any European sites or undermining the conservation objectives of any European sites. The conclusion of the NIS assessment remains that following an examination, analysis and evaluation of the proposed removal of the sports pitches, and with the implementation of the mitigation measures already proposed in the NIS, the proposed road development will not adversely affect the integrity of any European sites, either alone or in combination with any other plans or projects.
- 3.11 The proposal to remove the NUIG Sports Pitches from the design of the proposed road development arises in response to the making of a separate planning application by NUIG for additional pitches (Planning Ref 19372). This is a live application with no decision made yet.

4 Responses to Submissions/Objections

4.1 Overview

4.1.1 Approximately 15 of the 296 submissions made to An Bord Pleanála (ABP) in respect of the N6 Galway City Ring Road (GCRR) relate to Appropriate Assessment. Two of the 17 submissions made to ABP in respect to the RFI Response submitted August 2019 relates to Appropriate Assessment. The key issues raised in relation to Appropriate Assessment are:

- Potential changes to the Lough Corrib cSAC boundary
- Habitat impacts on Lough Corrib cSAC
- Lough Corrib cSAC and hydrogeological connections and interactions
- Scope of NIS assessment with regard to the conservation objectives of Lough Corrib cSAC
- Potential for in combination disturbance/displacement effects on otter in Lough Corrib cSAC
- Potential collision risk to birds from the proposed River Corrib Bridge
- Mitigation Measures – Birds
- Mitigation Measures and Monitoring
- Compliance with the requirements of the Habitats Directive and CJEU judgements in relation to Appropriate Assessment
- Construction impacts on Lough Corrib cSAC
- Impacts on Annex I habitats
- Impacts on the integrity of the Lough Corrib cSAC as a result of tunneling

Each of these is discussed in detail below.

4.2 Potential Changes to the Lough Corrib cSAC Boundary

Issue

4.2.1 The following issues were raised, including in the further submission (dated 24 January 2020) by the Development Applications Unit, Department of Culture, Heritage and the Gaeltacht [S_018.2]:

- Revisions to the boundary of Lough Corrib cSAC are possible pending finalisation of the process for the designation of this European site as an SAC.
- Only one of the potential alterations to the Lough Corrib cSAC boundary under consideration is at a location which interacts with the proposed road development, i.e. near Menlo, as a result of an NPWS mapping error, the correction of which will align the cSAC boundary to a small track to reflect the original survey intention. As a result, the boundary alteration will result

in an area of limestone pavement being located outside the Lough Corrib cSAC boundary.

Response

- 4.2.2 As a result of additional information submitted to An Bord Pleanála in the RFI Response, an area (of approximately 205m²) within the Lough Corrib cSAC boundary located in Menlough between Ch. 10+050 and Ch. 10+100, was identified as an area of Limestone pavement [*8240] habitat. The location in question was indicated on Plates 4.1 and 4.2 in the RFI Response.
- 4.2.3 In these circumstances, in order to ensure that there would not be an adverse effect on the European site, the design of the proposed access road AR 10/01 was modified so to avoid any direct and indirect impacts on this area of Limestone pavement (as indicated in Plate 4.3 of the RFI Response) by utilising an existing access road at this location, thereby avoiding the need for construction works within this area of Limestone pavement.
- 4.2.4 The Department's submission confirms that the proposed change to the Lough Corrib cSAC boundary – pursuant to the likely rectification of a minor mapping error in respect of the designated area of the cSAC – will result in this area of Limestone pavement [*8240] habitat being located outside of the cSAC.
- 4.2.5 The Department's submission also confirms that this possible correction of a minor mapping error "*is the only know alteration to the boundary of the Lough Corrib cSAC which will interact with the proposed motorway and road scheme*". In these circumstances, the possible change to the boundary of the Lough Corrib cSAC will not affect the assessment or conclusion presented in the NIS – i.e. that the proposed road development will not result in the loss of qualifying interest Annex I habitat within Lough Corrib cSAC.
- 4.2.6 It can also be confirmed, that even in the event that the the Lough Corrib cSAC boundary is changed, the design of the proposed access road AR 10/01 remains as proposed in the RFI Response submitted in August 2019. Accordingly, in the event that the possible revision to the European site boundary occurs, the alignment of the proposed road development will actually be located further away from the revised boundary of the Lough Corrib cSAC (see Plate 4.3 of the RFI Response). Therefore, the proposed road development will not result in the loss of qualifying interest Annex I habitat within Lough Corrib cSAC.

4.3 Habitat Impacts on Lough Corrib cSAC

Issues

4.3.1 The following issues were raised by the Development Applications Unit, Department of Culture, Heritage and the Gaeltacht [S_018.1] (dated 21 December 2018):

- *Approximately 4ha of the proposed development and/or proposed development boundary overlap directly with this SAC in multiple small and mainly peripheral locations. The extent and nature of habitat impacts and/or changes within the SAC are, at present, difficult to ascertain.*
- *It could assist interpretation if a clearer account of the direct and residual effects on habitats within the SAC, with clearer drawings, was provided.*
- *Areas for the extents of the predicted effects and overlaps with i) the proposed development boundary, and ii) the proposed development, would also be beneficial in supporting interpretation and the conclusions of the NIS in relation to the absence of implications for habitats and the conservation objectives of the SAC. The relationship of the road to nearby qualifying interest Annex I habitats within the SAC is also difficult to ascertain.*

Response

4.3.2 Habitats that will be directly affected within the proposed development boundary, at each of the locations where the proposed road development passes through, or close by, the boundary of Lough Corrib cSAC, are described in Sections 9.1.2.1.1 to 9.1.2.1.4 of the NIS. The potential direct and indirect impacts of the proposed road development are assessed in Section 9.1.4.1 of the NIS.

4.3.3 This includes the area of each habitat patch that will be directly affected by the proposed road development. These locations, and the specific habitat areas described, are shown on Figures 15.1 to 15.5 of the NIS. These figures also show where habitat areas are being retained within the proposed development boundary; which includes all areas of qualifying interest Annex I habitats within Lough Corrib cSAC. For clarity, these figures were updated in 2019 to clearly show the Lough Corrib cSAC boundary, the proposed development boundary and habitat mapping and were included in the RFI Response in Figures 2.7.01 to 2.1.5 in Appendix A.3.1 of the RFI Response submitted in August 2019.

4.3.4 Habitat mapping showing the relationship of the proposed road development to Annex I habitats, including QI habitats, within and adjacent to the proposed development boundary, and in the wider local area, is provided in the NIS (refer to Volume 2 of the NIS, Plate 9.1 pg.122 as well as Appendix G of the NIS - the Lough Corrib cSAC habitat surveys carried out in 2014) and includes all areas of the qualifying interest habitats of Lough Corrib cSAC recorded during the field surveys. More detailed maps showing the habitat classifications are presented in Figures 13.1 to 13.5 and Figures 14.1 to 14.5 in Volume 3 of the NIS, which include

larger scale inserts to aid interpretation of the data. Figures 13.1 to 13.5 show the general habitat classifications (after Fossitt, 2000) and Figures 14.1 to 14.5 the Annex I habitat classifications. Figures 13.1 to 13.5 show the general habitat classifications (after Fossitt, 2000) and Figures 14.1 to 14.5 the Annex I habitat classifications. The QI habitats of Lough Corrib cSAC present within the proposed development boundary are Limestone pavement [*8240] and Calcareous grassland [6210]. The other qualifying interest Annex I habitats present in Lough Corrib cSAC in the vicinity, but outside of the proposed road development, are Hard water lakes [3140], *Molinia* meadows [6410], *Cladium* fens [*7210] and Alkaline fens [7230].

- 4.3.5 Further to the information presented in the NIS, and at the request of An Bord Pleanála, additional vegetation data in the form of relevés were taken in June/July/August 2019 in each location where the proposed development boundary overlaps with the boundary of the Lough Corrib cSAC. The 2019 habitat survey results are presented in full in the Habitat Survey Report included as Appendix A.3.1 of the RFI Response submitted to An Bord Pleanála the 30 August 2019.
- 4.3.6 The location of these relevés and their extents are shown on Figures 2.3.01 to 2.3.05 in Annex 2 to Appendix A.3.1 and the full results of the 2019 habitat survey are shown on Figures 2.5.01 to 2.5.15 and 2.6.01 to 2.6.15 in Annex 2 to Appendix A.3.1 of the RFI Response. The digital GIS habitat mapping datasets are also provided with the RFI Response to provide further clarity as to the spatial relationship between the various habitat areas within both Lough Corrib cSAC and the proposed development boundary, including the qualifying interest Annex I habitats. These GIS datasets were forwarded to the Development Applications Unit, Department of Culture, Heritage and the Gaeltacht as part of the consultation process on the RFI Response, as well as being available to the public.
- 4.3.7 The findings of the 2019 habitat survey resulted in some changes to the habitat mapping in the areas where the proposed road development overlaps with Lough Corrib cSAC and these are described in Section 4.1.2 of the RFI Response. Further assessment of the implications of those habitat changes is presented in Section 5.1 of the Habitat Survey Report in Annex 2 to Appendix A.3.1 of the RFI Response which outlined any implications the June to August 2019 survey work had for the NIS findings and conclusions. The identification of one additional area of Limestone pavement [*8240] habitat in Menlough (between Ch. 10+050 and Ch. 10+100), within the overlap between the proposed development boundary and Lough Corrib cSAC (approximately 205m²), was the only change to the habitat mapping of relevance to the assessment presented in the NIS.
- 4.3.8 However as outlined in Section 4.2 above, the Department proposes a change in the Lough Corrib cSAC boundary at this location. This change in boundary does not affect the assessment or conclusion presented in the NIS submitted to ABP on October 2018 – i.e. that the proposed road development will not result in the loss of qualifying interest Annex I habitat within Lough Corrib cSAC.
- 4.3.9 A considerable amount of additional scientific data was collected and submitted in the RFI Response to support the analysis, assessment and conclusion that the

proposed road development will not adversely affect the integrity of any European site.

- 4.3.10 The issues raised in this submission/objective have been fully and comprehensively addressed both in the RFI Response and in this statement of evidence.

4.4 Lough Corrib cSAC and Hydrogeological Connections and Interactions

Issues

- 4.4.1 The following issues were raised:

- *The application would benefit from clarity on the changes in hydrogeological regime the Lackagh Tunnel will have on the groundwater catchment area. Boreholes were drilled in the area, and groundwater level data collected, but spatial information is absent on directions of groundwater flow and hydraulic gradients.*
- It is stated that the groundwater flow map is quite general and would benefit from groundwater levels from boreholes for example being indicated together with groundwater head contours. It is requested that the groundwater catchment divides should be indicated and delineated and the location/mapping of the Groundwater Dependent Terrestrial Ecosystems (GWDTEs), particularly the fen habitats within the Lough Corrib cSAC, should be shown.
- It is stated that while the NIS and the Request for Further Information Response Report state that the GWDTEs rely on 'seasonal groundwater levels', it is not clear what these are (baseflows for example?), and what groundwater levels need to be maintained to avoid negatively impacting on the conservation status of all GWDTEs in the Lough Corrib cSAC complex.
- *The tunnel is adjacent to the Lough Corrib Fen 1 (Lackagh) groundwater body (GWB) which contains groundwater-fed lakes and fens in the Lough Corrib SAC. The question of whether groundwater drainage associated with tunnelling construction work, during and post development, will not have an effect in Lough Corrib Fen 1 (Lackagh), may need interrogation.*
- *Whilst it is stated that the level of the tunnel will be below the groundwater table (and that "there will be no groundwater lowering within groundwater bodies that support groundwater dependent habitats within a European site"), it is also noted that groundwater seeps at the existing quarry face and base and that there are 'perched' water tables in local subsoil units above the limestone.*
- *The inclusion of 'water-tight' barriers is necessary for the operation, and this will divert groundwater flow. It is unclear what the hydrological connectivity between the groundwater dependent terrestrial ecosystems (GWDTEs) of the SAC are, particularly the habitats south of the proposed road.*

- *It is not clear how the GWDTEs in the Lough Corrib SAC are working 'hydrogeologically' and if flow paths may change post-construction.*
- *It appears that the lakes are underlain by significant thicknesses of low permeability substrate, with the fens developing on their margins, presumably due to artesian conditions and spring inputs (it is suggested the lake is fed by the [Western] Coolagh Spring), as indicated by the recorded alkaline conditions.*
- *The road will traverse the 'Lough Corrib Fen 1 (Menlough)' groundwater body. The road intercepts recharge and whilst the change in infiltration and aquifer loss is reported as minimal, it may be important considering the small catchment area(s) that appear to support the fen habitats. Further elucidation could be beneficial."*
- It is stated that it is difficult to assess the potential impacts of the proposed scheme and the adequacy of the mitigation measures being proposed. Clarification is sought in relation to how the GWDTEs in Lough Corrib cSAC are working hydrogeologically and if flow paths may change post-construction. A clearer hydrogeological conceptualization of the groundwater regime of the GWDTEs, and the changes that may or may not occur following construction, is requested. Additional cross-sections would assist in this regard.

4.4.2 The following submission/objection raised these points:

Development Applications Unit, Department of Culture, Heritage and the Gaeltacht [S_018.1 (dated 21 December 2018) and S_018.2 (dated 24 January 2020)].

Response

4.4.3 These issues were addressed in Sections 4.12 and 4.13 of the RFI submitted to An Bord Pleanála the 30 August 2019 and in hydrogeological statement of evidence prepared by Dr. Leslie Brown. The RFI response and the hydrogeological statement of evidence clarifies how the local hydrological regime functions, is connected to, and supports the groundwater dependant habitats within Lough Corrib cSAC associated with the Coolagh Lakes, along with an explanation of how the proposed Lackagh Tunnel interacts with the groundwater bodies that contribute groundwater to Lough Corrib cSAC, including the Lough Corrib Fen 1 (Menlough) GWB which supplies water to the Coolagh Lakes via the Western Coolagh Spring. The responses in both the RFI and the hydrogeological statement of evidence confirm that, although there is a groundwater connection between the Lackagh Tunnel area and the GWDTEs in Lough Corrib cSAC, with the implementation of the mitigation measures set out in Section 10.3 of the NIS there will not be any effects on groundwater levels in the Coolagh Lakes. Therefore, the proposed road development, and more specifically the construction or operation of the Lackagh Tunnel, will not impact upon any of the groundwater dependant QIs, or adversely affect the integrity, of Lough Corrib cSAC.

4.5 Scope of NIS Assessment with regard to the Conservation Objectives of Lough Corrib cSAC

Issues

4.5.1 The following issues were raised by the DAU in S_018.1 (dated 21 December 2019):

- *Lough Corrib SAC has site specific conservation objectives, and these specify whether the conservation objective is to maintain or to restore the favourable conservation condition of the individual qualifying interest habitats and species, as defined by certain attributes and targets that are listed, within that site*
- *Substantial analyses in the NIS are (or appear to be) undertaken without reference to the conservation objectives, as they are detailed first in Table 9.16.*
- *In Tables 9.1 and 9.15, prior to this, the qualifying interests, Petrifying springs of the tufa formation (Cratoneurion) and Lesser Horseshoe Bat, appear not to have been recorded in the 'zone of influence' and/or are omitted from further consideration and assessment of the likely effects on European sites. The justifications for these findings are unclear in Section 9 of the NIS, but may be explained elsewhere and that should be clarified.*

4.5.2 The following issues were raised by the DAU in S_018.2 (dated 24 January 2020):

- *The Department notes the clarification in relation to the matters raised under this heading in its previous observations in Section 4.15 of the Request for Further Information Request*

Response

4.5.3 Notwithstanding the submission from the Department (S_018.2), received further to the response to the RFI, that it notes the clarification provided in relation to the assessment of the conservation objectives of Lough Corrib cSAC, a detailed response to the issues raised in S_018.1 is provided below (and was also provided in Section 4.15.2 of the RFI response).

4.5.4 The conservation objectives of all the qualifying interests of all European sites within the potential zone of influence of the proposed road development, including Lough Corrib cSAC, have been considered in detail as part of the assessment undertaken and presented in the NIS.

4.5.5 The NIS is structured in a manner such that a high-level baseline description is provided (in Section 5), with the detailed discussion of the baseline and implications for the conservation objectives of each European site included in Section 9. Moreover, as set out in Section 7 of the NIS, the zone of influence was determined in consideration of the sensitivities of the ecological receptors; in the

context of an NIS assessment this includes the qualifying interest of the nearby European sites and their conservation objectives.

4.5.6 The overall conservation objectives of Lough Corrib cSAC are listed in Table 9.1 of the NIS (i.e. to maintain or restore the favourable conservation condition of the QI habitats and species). The ecological baseline for the Lough Corrib cSAC is then described in Section 9.1.2, which established the qualifying interests of Lough Corrib cSAC are present within the zone of influence of the proposed road development:

- [3140] Hard oligo - mesotrophic waters with benthic vegetation of *Chara spp*
- [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*)
- [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* *
- [7230] Alkaline fens
- [8240] Limestone pavements *
- [1029] Freshwater Pearl Mussel - *Margaritifera margaritifera*
- [1095] Sea Lamprey - *Petromyzon marinus*
- [1096] Brook Lamprey - *Lampetra planeri*
- [1106] Atlantic Salmon - *Salmo salar* (only in fresh water)
- [1355] Otter - *Lutra lutra*

4.5.7 Thus, for the avoidance of doubt, all habitat areas within Lough Corrib cSAC that lie within the potential zone of influence of the proposed road development were surveyed, classified and mapped. Therefore, it is certain that the following qualifying interest habitats of Lough Corrib cSAC are not present within the zone of influence of the proposed road development within this cSAC:

- [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
- [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho - Batrachion* vegetation
- [7110*] Active raised bogs
- [7120] Degraded raised bogs still capable of natural regeneration

- [7150] Depressions on peat substrates of the Rhynchosporion
- [7220*] Petrifying springs with tufa formation (*Cratoneurion*)

- 4.5.8 Similarly, due to the extensive level of field survey work undertaken, it is also certain that the following qualifying interest species are not present within the zone of influence of the proposed road development: White-clawed crayfish, Slender green feather-moss and the Slender naiad (refer to Section 9.1.2.3 and Section 9.1.2.7 of the NIS). Although there is a local Lesser horseshoe bat population, this does not form part of the qualifying interest population for Lough Corrib cSAC at Eborhall House (this is explained in detail in Section 9.1.2.5 of the NIS) and does not support the conservation objectives or conservation condition of this roost at Eborhall House.
- 4.5.9 Any qualifying interests which are not present within the zone of influence of the proposed road development cannot be impacted by it, either directly, indirectly or in-combination with other plans or projects. Therefore, it may be concluded with certainty that the conservation objectives of those particular qualifying interests cannot be undermined in any way by the proposed road development. On that basis, it is not necessary to consider these qualifying interests in any more detail in the NIS in order to definitively conclude that the proposed road development will not adversely affect the integrity of Lough Corrib cSAC by affecting those particular habitats and species.
- 4.5.10 The remaining qualifying interests of Lough Corrib cSAC which are present within the zone of influence of the proposed road development and are potentially at risk of effects are set out in detail in Table 9.1 and Table 9.15 of the NIS. The potential for the proposed road development to affect the conservation objectives of each of these qualifying interest habitats and species are examined, analysed and evaluated in Section 9.1.4 and Table 9.16 of the NIS.

4.6 Potential for In Combination Disturbance/Displacement Effects on Otter in Lough Corrib cSAC

Issues

- 4.6.1 The following issues were raised:
- It is requested that the longer term potential in combination effects, resulting from disturbance and displacement, which may arise due to the commitments to having a greenway along the western bank of the River Corrib and the current application for the proposed Galway Harbour Extension (PA0033) should be noted
- 4.6.2 The following submission/objection raised these points:
- Development Applications Unit, Department of Culture, Heritage and the Gaeltacht [S_018.1] (dated 21 December 2018).

Response

- 4.6.3 The potential for the proposed road development to affect local Otter populations during both construction and operation is considered and assessed in Section 6.8 of the NIS (pg. 95-96). The assessment concluded that neither the construction nor operation of the proposed road development will pose a risk of long-term disturbance or displacement of Otter from the River Corrib, the Bearna Stream or Galway Bay and will not affect local Otter populations in that regard. Therefore, there is no potential for any other future projects to interact in combination with the proposed road development to affect Otter populations in either Lough Corrib cSAC or Galway Bay Complex cSAC as a result of disturbance or displacement effects.
- 4.6.4 The potential for in combination effects from both the Proposed Galway Harbour Port Extension project and the Connemara Greenway projects to affect the receiving environment in Lough Corrib cSAC or Galway Bay Complex cSAC, as a result of other potential impacts, are assessed in Table 12.2 of the NIS. The Connemara Greenway is assessed both as a strategic objective of the Galway Transport Strategy (pg. 367-368) and as a future project in its own right (pg. 375-377). The proposed Galway Harbour Port Extension project is assessed on pg. 380-381 of the NIS. The assessment concluded that there is no potential for either project to act in combination with the proposed road development to adversely affect the integrity of Lough Corrib cSAC as a result of disturbance or displacement of Otter.

4.7 Potential Collision Risk to Birds from the Proposed River Corrib Bridge

Issues

- 4.7.1 The following issues were raised in S_018.1 (dated 21 December 2018):
- *The NIS determines that the River Corrib bridge is the only structure that is "of a scale to pose a collision risk to birds". The NIS subsequently concludes, having considered the design of the proposed structure and the low number of special conservation interest (SCI) species, and individuals, that pass along the river corridor, that the proposed structure is "not predicted to pose a collision risk of a magnitude that would have any long-term effects on the numbers, distribution, or the existing population trend for any SPA". The SPAs specifically mentioned in the NIS in this regard are Lough Corrib SPA and Inner Galway Bay SPA, and these SPAs are considered with the following references to SCIs. The risk of bird collisions with the bridge is given no further consideration beyond identifying potential impacts*
 - *The data considered on the number of SCI species and individuals using the river corridor are from a previous proposal and different structure in a different location on the river (RPS report, 2006). The specifications for that structure stated the bridge height would be 6m above the river, while the current proposed bridge is a minimum of 8m above the river. Consideration*

of the range of flight heights for the SCI species known to use the corridor, or the potential interaction of these flight heights and the proposed bridge would be appropriate

- *The previous survey report did not assess the nocturnal movements of bird species, e.g. typically nocturnal species and species that are known to migrate at night, and this also needs to be considered*
- *Therefore, the Board could consider if it is satisfied that the collision risk of birds with the proposed River Corrib bridge is adequate and complete if its Appropriate Assessment would be facilitated by further consideration and assessment*
- *The NIS concludes that the effects of habitat loss and fragmentation arising from the proposed development will not significantly negatively affect the SCIs for surrounding SPAs, and no mitigation measures for SCIs (breeding or wintering species) are provided. For breeding species, this is based on i) the absence of a spatial overlap between known SCI breeding sites and the proposed development area, and ii) aspects the SCI species' foraging ecology. The rationale and evidence to support the latter claim is not made clear (i.e. with respect to foraging ecology)*
- *It is considered the above points should be addressed by presenting further information from, and rationale based upon, completed survey work, additional available data sources and published literature*

4.7.2 The following issues were raised by the DAU in S_018.2 (dated 24 January 2020):

- It is noted that while no nocturnal surveys were undertaken, the Department considers that taking into account the fact that the bridge will not be lit, the available data from the previous and recent surveys, and the available published literature, sufficient information has been provided to assess potential impacts to SCI bird species of the adjacent SPAs
- It is stated that the Department is of the view that the proposed bridge is unlikely to present a threat to the SCI bird species of the adjacent SPAs
- In relation to the potential for habitat loss and fragmentation to impact on SCI species from surrounding SPAs, the Department notes the additional information provided and considers that this matter has been addressed

4.7.3 The following submission/objection raised these points:

Development Applications Unit, Department of Culture, Heritage and the Gaeltacht [S_018 and S_018.2]

Response

- 4.7.4 Notwithstanding the submission from the Department (S_018.2), received further to the response to the RFI, that it is of the view of that sufficient information has been provided to assess potential impacts to SCI bird species of the adjacent SPAs and that the proposed bridge is unlikely to present a threat to the SCI bird species of the adjacent SPAs, a detailed response to the issues raised in S_018 is provided below (and was also provided in Section 5.2 of the RFI response).

Bird Collision Risk

- 4.7.5 The main factor influencing the conclusion of the assessment of bird collision risk presented in Section 6.11 of the NIS is based on existing published scientific literature, which concludes that bridges, regardless of their design and the behaviour of birds in the vicinity (flight height and level of nocturnal flight activity), do not pose a collision risk that would have any long-term effects on the SCI bird populations of any SPA site, including Lough Corrib SPA or Inner Galway Bay SPA.
- 4.7.6 From the literature review carried out, bird collisions with man-made structures are common and well documented (Banks, 1979; Klem, 1990; Kelm, 2008; Jenkins *et al.*, 2010; Lucas *et al.*, 2008; Longcore *et al.*, 2012; Erickson *et al.*, 2001 – see Section 6.11 of the NIS). Migratory passerine species are the most prevalent collision victim (Bing *et al.*, 2012;⁴ Longcore *et al.*, 2013), a trend that has also been recorded at bridges over large wetland areas e.g. the Oresund Bridge connecting Denmark and Sweden over the Baltic Sea (FEBI, 2013) and the Sabo Bridge over Sabo Estuary in Portugal (Godinho *et al.*, 2017)⁵. To put the latter studies into context, c. 10 million migrant birds pass the Oresund Bridge during autumn migration (Nilsson *et al.* 2009 as report in FEBI 2013) and 27,000 bird movements (c. 83% aquatic birds) were recorded crossing the Sabo Bridge during 400 hours of observation (Godinho *et al.*, 2017), suggesting that bridges over wetlands present a relatively low collision risk to waterbirds and that in these studies mortality occurred at such low numbers that it did not represent more than a minor effect. In addition, both of the Oresund Bridge and Sabo Bridge are cable-stay and bowstring structures and pose a greater collision risk than the proposed clear span bridge over the River Corrib.
- 4.7.7 Assessment of diurnal flight behaviour of migratory birds over three selected bridges as part of the Hong Kong-Shenzhen Western Corridor EIA (Ove Arup & Partners Hong Kong Ltd., 2002), and at the cable-stay Golden Gate Bridge (Golden Gate Bridge EIA, 2009), found that birds actively avoided the bridge structures by either changing their altitude on approach or flying around the cable-stay structures; no collisions were observed during these studies.
- 4.7.8 Waterbirds frequenting the River Corrib, commuting between Galway Bay and Lough Corrib, successfully navigate four existing road bridges during each one-way flight. The proposed bridge over the River Corrib is elevated over the entire

⁴ Bing G.-C., Choi C.-Y., Nam H.-Y., Park J.-G., Hong G.-P., Sung J.-K., Chae H.-Y & Choi Y.-B. (2012) Causes of mortality in birds at stopover islands. *Korean J. Ornithol.* 19: 23–31.

⁵ Godinho C., Marques, J.T., Salgueiro, P., Catarino, L., Osório deCastro, C., Mira, A., and Beja, P. (2017) Bird Collisions in a Railway Crossing a Wetland of International Importance (Sado Estuary, Portugal). In: Borda-de-Água L., Barrientos R., Beja P., Pereira H. (eds) *Railway Ecology*. Springer, Cham

floodplain (c. 620m wide) and depth of the main span ranges from 3-7m, which is generally thicker (and therefore likely to be more visible to birds) than the existing Quincentenary Bridge c. 1.7km downstream. The scale of the proposed clear span bridge is insignificant in comparison to the examples in Denmark, Sweden, Portugal, Hong-Kong and San Francisco discussed above and poses minimal risk to birds due to the absence of a network of supporting cable structures.

- 4.7.9 It is worth noting in terms of collision risk and population level effects locally, that the Quincentenary Bridge (an elevated structure above the River Corrib with supporting piers in the river channel) has been in operation since 1984 and population trends for the SCI bird species of Inner Galway Bay SPA recorded along the River Corrib corridor are currently assessed as stable or increasing (NPWS 2013d).
- 4.7.10 However, the fact has been considered that visibility and detectability of structures influence a bird's relative susceptibility to colliding with the structure (Janss, 2000). Strikes are more likely to occur during poor weather conditions or at night (Nilsson *et al.* 2009 as report in FEBI 2013). However, increasing the detectability of a bridge at night by artificial lighting can magnify the collision risk by causing disorientation (Molenaar *et al.*, 2006; Nilsson *et al.* 2009 as report in FEBI 2013). To minimise the risk of collision even further, and protect other sensitive ecological features from impacts (i.e. bats), the proposed bridge will not be lit. The depth of the main span (3-7m) of the proposed bridge, which will be a concrete finish, is considered to be sufficiently visible in varied weather conditions and low light levels that it will be detectable to birds.
- 4.7.11 In relation to nocturnal movements of birds, no nocturnal SCI species are listed for either the Lough Corrib SPA or Inner Galway Bay SPA, however barn owl are known to occur in the area and have been fully assessed in the EIAR. In general night-time migrating birds fly large distances during the night and at high altitudes – i.e. at altitudes greater than 1km (Gauthreaux, 1991;⁶ Dokter *et al.* 2010)⁷. The proposed bridge at 8m above the River Corrib will not pose a collision risk to migrating birds flying at night at high altitudes. Daily commuting birds moving between Lough Corrib and Galway Bay are expected to fly during daylight hours and often shortly after dawn and shortly before dusk. Night-time flying birds, either nocturnal species or night-time migrating birds, are not considered at risk to collision with the proposed bridge due to the reasons above.

Bird Usage of the River Corrib Corridor

- 4.7.12 The submission also notes that data on bird usage of the River Corrib corridor considered in the NIS is from surveys carried out in 2005/2006 as part of the 2006 Galway City Outer Bypass Scheme (RPS, 2006).
- 4.7.13 It is important to note that the 2005/2006 survey data is not the sole basis of the assessment presented in Section 6.11 of the NIS; rather it is one element of the existing and extensive background information available in relation to the use of

⁶ Gauthreaux, S.A. (1991) The Flight Behaviour of Migrating Birds in Changing Wind Fields: Radar and Visual Analyses. AMER. ZOOL. 31:187-204

⁷ Dokter, A.M., Liechti, F., Stark, H., Delobbe, L., Tabary, P. and Holleman, I. (2011) Bird migration flight altitudes studied by a network of operational weather radars. Journal of The Royal Society Interface 8: 30-43

the River Corrib corridor by bird species listed as SCIs of the nearby SPA sites. The results of these surveys, in conjunction with the results of the wintering and breeding bird surveys carried out for the proposed N6 Galway City Ring Road⁸, provide a baseline of the suite and abundance of bird species that would be expected to forage/commute along the River Corrib in the vicinity of the proposed road development. The data relied upon was sufficient to inform and carry out the assessment. A related response, on the issue of displacement of wintering birds due to the presence of the proposed River Corrib Bridge, was provided in Section 5.2 of the RFI response.

4.7.14 In terms of SCI bird species known to use the River Corrib corridor for commuting or foraging, the results of the 2005/2006 surveys recorded the following SCI species (52 surveys encompassing 104 hours of observations):

- Black-headed gull
- Common gull
- Common tern
- Cormorant
- Coot
- Curlew
- Grey heron
- Hen harrier
- Lapwing
- Merlin

The most frequently recorded of these were Black-headed gull, Common gull and Cormorant. Although the 2005/06 surveys did not cover the current proposed bridge location⁹, the results of those surveys (undertaken just a few hundred metres from the current proposed bridge location) provide useful baseline data on birds and their flight behaviour that use the river corridor, and therefore this data is considered applicable to the assessment of the current bridge proposal. Many of these species, Black-headed gull, Common gull, Cormorant, Coot, Curlew, Grey heron along with Redshank, were also recorded along the River Corrib over the course of the surveys carried out in the preparation of the NIS for the proposed N6 GCRR.

4.7.15 Considering the information presented above, the low risk posed by bridges to bird populations, and the clear span design and scale of the proposed bridge, the level of data and the scope of the assessment presented in the NIS is sufficient to support the conclusion that the proposed River Corrib Bridge will not affect local bird populations as a result of bird collisions with the bridge structure and it is certain

⁸ The wintering bird surveys were carried out over the winter of 2014/15 and the breeding bird surveys in May/June 2015 and in June 2016.

⁹ To confirm, the 2014/215 wintering bird surveys did cover the location of the proposed River Corrib Bridge.

that the proposed development will not adversely affect the integrity of Lough Corrib SPA or Inner Galway Bay SPA.

Habitat Loss and Fragmentation Impacts on SCI Bird Species

- 4.7.16 Notwithstanding the submission from the Department (S_018.2) that it is of the view that the issues raised in S_018.1 were addressed in Section 5.1 of the RFI Response, for ease of reference, the responses to the issues raised in S_018.1 are summarised below.
- 4.7.17 Submission S_018.1 requests clarification on the habitat loss and fragmentation impacts on the foraging ecology of breeding SCI species of Lough Corrib SPA and Inner Galway Bay SPA.
- 4.7.18 Lough Corrib SPA is designated for breeding populations of Common scoter, Black-headed gull, Common gull, Common tern and Arctic tern (Table 9.24 of the NIS). Inner Galway Bay SPA is designated for breeding populations of Cormorant, Common tern and Sandwich tern (Table 9.31 of the NIS).
- 4.7.19 Common scoter were not found to be present at any of the winter bird sites across the study area. They breed on lakes and the SCI population breeds in Lough Corrib. They forage on sandy seabeds and offshore shallows. Cormorant, Common tern, Arctic tern and Sandwich tern forage over lakes, rivers and estuarine/marine waters and feed predominantly on fish. This is consistent with the habitat types where these species were recorded in the local area from the survey results and available desktop records. The proposed road development will not result in any loss of river, lake or marine habitat and the design and mitigation measures will ensure that the proposed road development will not have any effect on water quality in the aquatic and marine environments. The proposed road development will also not result in any fragmentation of aquatic habitat along the River Corrib, over which it crosses on an elevated bridge structure. Therefore, there is no potential for habitat loss or habitat fragmentation associated with the proposed road development to affect the foraging ecology or success of these SCI species.
- 4.7.20 Black-headed gull and Common gull are commonly found across a wide range of habitats from aquatic to agricultural to the urban environment, as evidenced from the results of the winter bird surveys in 2014/15: Black-headed gull were recorded from 39 of the 60 survey sites across Galway City and environs and Common gull from 27 of the same survey sites (Section 9.3.4.3 of the NIS, pgs. 233-236). Black-headed and Common gulls are opportunistic omnivorous feeders eating seeds and fruits, insects, earthworms, fish and carrion, and scavenging rubbish and scraps. On the basis of their broad habitat usage and the generality of their food preferences, and given the abundance of suitable alternative foraging habitat that will remain available to both species during operation, habitat loss or habitat fragmentation associated with the proposed road development to affect the foraging ecology or success of these SCI species.

4.8 Mitigation Measures - Birds

Issues

4.8.1 The following issues were raised.

Timing of construction activities at Lackagh Quarry

4.8.2 In submission S_018.1 (dated 21 December 2018), the Department commented:

“The NIS states that, in order to minimise disturbance to wintering birds at Ballindooley Lough, blasting at Lackagh Quarry (and Castlegar) will only be undertaken between the months of April to September (inclusive). The EIAR determines that construction activities at Lackagh Quarry, including rock breaking and rock blasting, have the potential to have long-term effects on the Peregrine population nesting in the quarry. Thus, the EIAR proposes mitigation measures specifying that works from the proposed Lackagh tunnel to the N84 Headford Road Junction commence prior to mid-February (i.e. wintering period). The EIAR does not specify whether the works proposed to begin in mid-February include blasting; if blasting was to be included in these works, this would contradict the mitigation approach outlined in the NIS for wintering birds.”

4.8.3 However, in a subsequent submission S_018.2 (dated 24 January 2020) the Department commented that it is clear that there is no risk of disturbance to waterbirds at Ballindooley Lough because blasting will not take place during the wintering period.

4.8.4 The following submissions/objections raised these points:

Development Applications Unit, Department of Culture, Heritage and the Gaeltacht [S_018.1 and S_018.2].

Response

4.8.5 Notwithstanding the submission from the Department (S_018.2) stating that it is clear that there is no risk of disturbance to waterbirds at Ballindooley Lough because blasting will not take place during the wintering period, for the avoidance of doubt, a response to the issues raised in S_018.1 is provided below.

Timing of construction activities at Lackagh Quarry

4.8.6 To confirm, there is no requirement to restrict the timing of blasting to avoid disturbance to nesting Peregrine falcon. The mitigation measures relating to Peregrine falcon at Lackagh Quarry (in Section 8.6.9.1.1 of the EIAR) already require that construction works between the proposed Lackagh Tunnel to the N84 Headford Road Junction commence prior to mid-February, so as to ensure that the level of construction related disturbance influences the nest site selection by Peregrine falcon in the first instance.

4.8.7 The timing of blasting is included only in relation to wintering birds at Ballindooley Lough (as set out in Section 8.6.9.2.1 of the EIAR). The blasting works associated with the construction of the proposed road development between the eastern

approach to Lackagh Quarry (Ch. 11+800 to Ch. 12+100) will be carried out between the months of April to September (inclusive) to minimise disturbance effects on wintering birds at Ballindooley Lough. Blasting relating to the Lackagh Tunnel construction is outside the zone of influence for the wintering birds at Ballindooley Lough. Therefore, the construction works at Lackagh Tunnel can commence prior to mid-February.

4.9 Mitigation Measures and Monitoring

Issues

4.9.1 The following issues were raised:

- It should be clear that all relevant mitigation measures and commitments must apply, from the outset, to all parts of the development as permitted, including enabling works, site preparation and advance contracts, as well as at construction stage
- Competent ecologists will need to be involved directly at all project stages. There is a commitment to having a Project Ecologist as part of the Employer's team; references to an Ecological Clerk of Works are also noted in appendices. The main contractor will also require ecologists, and ecological supervision of other contractors will be necessary
- Potential for conflict in relation to the timings of some of the ecological mitigation measures
- Provision of a clearer schedule of monitoring commitments and responsibilities
- Resurveys in advance of works being carried out may introduce additional and new considerations, and it should be clear how these will be addressed and managed
- The importance of monitoring and the taking of timely and effective corrective action if problems arise is acknowledged in the successful delivery of the mitigation measures
- Interactive or real-time/live mapping systems should be developed, possibly in conjunction with 'permits to work' and sign off by the Project Ecologist of the correct completion and functioning of the measures
- Consideration should be given to making reports on implementation and monitoring of measures available, including to NPWS, via a dedicated website
- Locations of key ecological mitigation measures should be mapped with records kept that are able to interface with, for example, the Councils' GIS and planning systems, so they can be taken into account and safeguarded in future projects and plans

- Any non-performance, non-compliances or other issues that arise should be addressed in a timely manner

4.9.2 The following submission/objection raised these points:

Development Applications Unit, Department of Culture, Heritage and the Gaeltacht [S_018] (dated 21 December 2018).

Response

Design and Mitigation measures

4.9.3 To assist in addressing the issues raised with respect to mitigation measures, and for ease of reference, the design and mitigation measures for the purposes of the Appropriate Assessment are summarised below. These include design and mitigation measures to ensure that the proposed road development will not affect the conservation objectives of the four European sites within the ZoI of the proposed road development. Once again, it should be stated that mitigation measures were not considered as part of the Stage One AA Screening appraisal conducted on behalf of the applicant for approval.

4.9.4 Design measures detailed in Section 2.6 and summarised in Section 10 of the NIS are:

- protection and retention of QI Limestone pavement and Calcareous grassland habitat which is within both the proposed development boundary and Lough Corrib cSAC, including no provision of permanent fencing in this area
- the clear-span design of the proposed River Corrib Bridge
- the drainage design includes attenuation, flow control and pollution treatment to minimise the risk of affecting either groundwater or surface water quality
- careful design of the proposed road development to ensure protection of the existing hydrological and hydrogeological regimes
- inclusion of a detailed construction methodology for the proposed Lackagh Tunnel which ensures that it will not affect the structural integrity of the overlying limestone rock, the existing hydrogeological regime, or have any impacts on Annex I habitats near the western approach to the tunnel as a consequence of the retaining wall specified there
- No lighting along the length of the proposed River Corrib Bridge
- The design of lighting proposed for the proposed NUIG pitches to minimise disturbance to aquatic QI species along the River Corrib corridor in Lough Corrib cSAC

4.9.5 Mitigation measures detailed in Section 10 of the NIS are:

- measures to ensure that for the proposed Lackagh Tunnel works to do not affect the structural integrity of the limestone bedrock supporting Limestone pavement and Calcareous grassland habitats in Lough Corrib cSAC
- measures to ensure that existing groundwater conditions are not affected, during construction or operation, in groundwater bodies traversed by the proposed road development
- measures to ensure that water quality in receiving watercourses is protected during construction of the proposed road development
- measures to ensure that dust generated during construction will be controlled and contained
- a non-native invasive species management plan developed in the Construction Environmental Management Plan to ensure that non-native invasive plant species will be controlled
- measures to ensure that construction materials are not accidentally introduced into the River Corrib during construction
- measures to prevent Otter mortality due to road traffic collisions and barrier to movement (i.e. safe passage and mammal fencing)
- seasonal restrictions on blasting in the vicinity of Ballindooley Lough to minimise disturbance/displacement effects on wintering birds during construction

Clarification on drainage design measures

4.9.6 From the outset the proposed road development has been designed to minimise impacts, in the first instance, by integrating design measures into the design of the road wherever possible.

4.9.7 Section 2 of the NIS describes the proposed road development including design measures which serve a protective environmental function. One such suite of measures is the inclusion of attenuation, flow control and pollution treatment measures in the drainage design which will protect water quality once the proposed road development is in operation. These are described in detail in Section 2.4 and 2.6.1 of the NIS.

4.9.8 Section 6 of the NIS assesses the potential impacts of the proposed road development and Section 6.4.1 explains in detail why, with the inclusion of the drainage design, there will be no significant effects on either water quality or hydrological regime. This assessment is supported by detailed analysis included in Appendix B of the NIS.

4.9.9 On this basis, as there will be no significant effects arising from operational water quality, due to the inclusion of design measures within the proposed road

development, the assessment of this potential impact is not carried forward in the remainder of the discussion in the NIS.

- 4.9.10 For the avoidance of any doubt, it can be confirmed that there will be no significant effects on water quality arising from the operation of the proposed road development due to the inclusion of appropriate design measures, and the efficacy of those measures is well established and justified in the NIS and its supporting Appendix B. The drainage design measures are standard measures set out in Transport Infrastructure Ireland's Publications DN-DNG-03066 and DN-DNG-03022 for drainage and are considered standard practice in road design.

Clarification Regarding Mitigation and Monitoring Commitments

- 4.9.11 To confirm, in the event that approval is granted, all relevant mitigation measures and commitments will apply, from the outset, to all parts of the proposed road development as permitted, including enabling works, site preparation and advance contracts, as well as at construction stage.

Project Ecologist

- 4.9.12 The requirement for the contractor to also engage the services of ecologist(s) is set out in Section 5 of the Construction Environmental Management Plan (CEMP), included as appendix A.7.5 of the EIAR. It will be the responsibility of the Site Environmental Manager (SEM), appointed by the contractor, to procure the advice and services of suitably qualified ecological experts to oversee ecologically sensitive elements of the construction works, ecological derogation licensing requirements and ecological monitoring. Any non-performance, non-compliances or other issues that arise shall be promptly addressed to ensure compliance with the mitigation strategy and all derogation licence requirements.
- 4.9.13 Galway County Council/TII will have a Site Monitoring Team which will include a Project Ecologist (refer to Section 1.1 and Section 5 of the CEMP). The Project Ecologist will be available for the duration of the construction phase for the proposed N6 Galway City Ring Road, including any advanced works such as service diversions or archaeological test trenching.

Timing of ecological mitigation measures and Monitoring commitments & responsibilities

- 4.9.14 In relation to monitoring commitments and responsibilities, pursuant to section 51C of the Roads Act 1993 (as amended) ("the 1993 Act"), in the event that a scheme is approved by the Board under section 51 of the 1993 Act an applicant (in this case Galway County Council) has an obligation to:
- (i) comply with any modifications/conditions specified by the Board in any order(s) for approval (which would include any conditions which would involve monitoring)
 - (ii) notify Transport Infrastructure Ireland (TII) of any modifications/conditions so specified

Section 51D of the 1993 Act states that TII shall “take all reasonable steps to ensure that the developer [Galway County Council] complies with the modifications and conditions” specified in the notification received from Galway County Council (i.e. the modifications/conditions specified by the Board). Therefore, in the event that the N6 GCRR is approved, following Galway County Council’s formal notification to TII, TII will be required to take “all reasonable steps” to ensure that Galway County Council complies with any modifications/conditions specified in the Board’s order(s) in respect of the N6 GCRR.

- 4.9.15 To provide additional clarity on the seasonal restrictions and timings relating to the various ecological mitigation measures, an outline schedule of the mitigation measures and monitoring commitments is included as Appendix A of this statement of evidence.

Implications of confirmatory surveys

- 4.9.16 Given the time-lag between the completion of surveys and, in the event that the Board grants approval, the commencement of construction, it will be necessary to conduct certain pre-construction surveys to confirm the environmental baseline as detailed in the application documentation. In the event that any new considerations may arise as a result of pre-construction surveys, these will be addressed and managed in accordance with the mitigation measures outlined in Section 10 of the NIS. For example, the implementation of the non-native invasive species management plan will involve confirmatory pre-construction surveys by suitable experts with competence in identifying invasive species to update the existing surveys by identifying any change in distribution in invasive species between the habitat surveys carried out to inform the Appropriate Assessment and the commencement of works.

Importance of monitoring and corrective action

- 4.9.17 The efficacy of monitoring is acknowledged in the successful delivery of the mitigation measures detailed in the Schedule of Environmental Commitments (SoCs). Monitoring and maintenance form a key part of many of the mitigation strategies detailed in NIS. For example, the NIS provides for monitoring in relation to the construction methodology for the proposed Lackagh Tunnel (Section 10.2.1 and Appendix F of the NIS), the pollution control facilities during construction (10.3.1.1 of the NIS) and a karst monitoring protocol (Sections 10.3.1.2 and 10.3.1.3 and Appendix C of the NIS). The purpose of such monitoring is to confirm the effective implementation of the mitigation measures proposed in the NIS, the efficacy of which has already been clearly established in the application documentation.

Information request

- 4.9.18 In response to the requests for real-time/live mapping systems, making reports on the implementation and monitoring of measures available, mapping locations of key ecological mitigation measures and interfacing with the planning authority’s GIS and planning systems, and monitoring of the wildlife overpass and hedgerow planting to continue for 5 years, Galway County Council propose the following:

- A GIS mapping system will be developed, to allow the Project Ecologist to track the progress, completion and monitoring of the ecological mitigation measures
- At the end of each month, any mapping relating to ecological mitigation measures, including results of pre-construction surveys (e.g. locations of badger setts) or design changes for mitigation measures (e.g. change in location of artificial Badger sett), will be uploaded to the dedicated project website. In addition, at the end of each month any ecological monitoring reports will be uploaded to a dedicated project website
- Notwithstanding the point above ecological monitoring reports will be submitted to the Planning Authority and copied to the NPWS
- The Project Ecologist in conjunction with 'permits to work' will sign off the correct completion and functioning of the measures, where works are in ecologically sensitive locations and/or are ecologically sensitive activities, which are likely to include, but may not be limited to, the following:
 - works involving vegetation removal/site clearance
 - works involving installation of site fencing
 - works in or adjacent to the Lough Corrib cSAC
 - works in or adjacent to any watercourses
 - works in or adjacent to any known breeding, resting or hibernating locations of any species protected under either the Birds and Habitats Regulations 2011 or Wildlife Act, in particular bats and otter
 - works in areas where enhancement measures (including either habitat creation/enhancement or provision of nest and bat boxes) are proposed
 - works in or adjacent to donor and receptor sites identified for the creation of compensatory habitat, until such time as any donor material required for the receptor sites has been transported
- Once ecological mitigation measures have been implemented and installed, GIS mapping files of their final as-built locations will be sent to the Project Ecologist to be uploaded into the Local Authority's GIS and planning systems.
- Interactive or real-time/live mapping systems would be onerous to provide and manage. It is not deemed either necessary or appropriate to provide such systems given the above proposals which together will achieve the same function, purpose and results as a real-time/live mapping system.

Performance and compliance and timescale of monitoring and maintenance of mitigation measures

- 4.9.19 Similar to what is set out at paragraph 4.9.14 above, in the event that the proposed road development is approved by the Board, Galway County Council has an obligation to comply with any modifications/conditions specified by the Board in

any order(s) for approval (which would include any conditions which would involve monitoring) and to notify TII of any modifications/conditions.

A failure to comply with these provisions is an offence.

Also as set out at paragraph 4.9.14 above, pursuant to section 51D of 1993 Act, TII shall “take all reasonable steps to ensure that the developer [Galway County Council] complies with the modifications and conditions”.

- 4.9.20 Any non-performance, non-compliances or other issues that arise will be addressed in a timely manner.

4.10 Compliance with Habitats Directive and CJEU Judgments

Issues

- 4.10.1 The following issue were raised:
- Compliance with the requirements of the Habitats Directive and CJEU judgements in relation to Appropriate Assessment
- 4.10.2 The following submissions/objections raised these points: S_058; Ob_451_489; S_006 and S_010.

Response

- 4.10.3 Whilst this issue is primarily one for the legal submission, the appraisal presented to An Bord Pleanála in the AA Screening Report and in the NIS has been prepared in accordance with current best practice guidance and the legal requirements set out in case law relating to assessing the effects of projects on European sites under Article 6(3) of the Habitats Directive. These documents, in conjunction with the information submitted to An Bord Pleanála on the 30 August 2019 by way of a response to their request for further information, present all of the information required by An Bord Pleanála to carry out both the Stage One Screening Assessment and Stage Two Appropriate Assessment of the proposed development in accordance with law.

4.11 Construction Impacts on Lough Corrib cSAC

Issues

- 4.11.1 The following issues were raised:
- Risk from tunnelling at Lackagh Quarry on Lough Corrib cSAC
 - Construction of a road within a Special Area of Conservation
- 4.11.2 The following submissions/objections raised these points: Ob-584; S_074 and S_048

Response

Risk from tunneling at Lackagh Quarry on Lough Corrib cSAC

- 4.11.3 The design, construction methodology and mitigation strategy for Lackagh Tunnel (detailed in Appendix F of the NIS) will ensure that the construction of the proposed Lackagh Tunnel will not have any effects on the overlying rock structure, the underlying groundwater aquifer, the receiving surface water features and local water supply, or on any habitats or species they support that would undermine the conservation objectives of Lough Corrib cSAC. Therefore, there will be no adverse effect from the construction or operation of Lackagh Tunnel on the integrity of the Lough Corrib cSAC.

Construction of a road within a cSAC

- 4.11.4 All aspects of the proposed road development that could potentially affect the receiving environment and impact upon any European sites, either individually or in combination with other plans or projects, including Lough Corrib cSAC, have been identified in the EIAR and NIS. The proposed road development and the mitigation strategy have been designed to ensure that there are no effects on the qualifying interests of any European sites that would undermine their conservation objectives and, therefore, ensure that the proposed road development will not adversely affect the integrity of any European sites, including Lough Corrib cSAC.

4.12 Impacts on Annex I habitats

Issues

- 4.12.1 The following issues were raised:
- Loss of Annex I habitats generally
 - Impact on Ballindooley Lough
- 4.12.2 The following submission/objection raised these points: S_074.

Response

Loss of Annex I habitats generally

- 4.12.3 Given the conservation importance of Annex I habitats, they were key constraints during the option selection process with regard to ecology and minimising effects on these sensitive habitat types, in so far as was appropriate in consideration of the other important constraints across the other disciplines (as explained in Section 5.3.3 of the Route Selection Report).
- 4.12.4 The impacts of the proposed road development on Annex I habitats has been fully considered in the NIS (as relevant to the assessment of effects in the context of European sites). There will not be any losses of Annex I habitat from within any European sites. Sections 3 and 4.23 of the EIA Biodiversity statement of evidence address the impacts associated with the loss of Annex I habitat outside European sites.

Impact on Ballindooley Lough

- 4.12.5 The importance of the Ballindooley Lough complex for biodiversity, including birds and bats, is acknowledged. The ecological importance of the site for wintering birds, in particular, has informed the mitigation strategy to ensure that birds using the habitat complex at Ballindooley Lough are not disturbed or displaced as a result of the proposed road development (see Section 10.8 of the NIS in particular with regard to noise and disturbance mitigation). The full suite of mitigation measures across all sensitive ecological receptors will ensure that the effects of the proposed road development on Ballindooley Lough are minimised as far as is possible and will not result in an adverse effect on the integrity of any European sites.

4.13 Adverse Effects on the Integrity of Lough Corrib cSAC as a result of blasting and tunnelling

Issue

- 4.13.1 The following issues were raised:
- It is stated that blasting and tunnelling rock would disturb the surface ground overhead and therefore as a result there would be adverse effects on the integrity of Lough Corrib cSAC.
- 4.13.2 The following submission/objection raised these points: Ob_584.2.

Response

- 4.13.3 The NIS (Section 6.2) recognises that, in the absence of mitigation measures, tunnelling under Lough Corrib cSAC and excavating deep cuttings within and immediately adjacent to the Lough Corrib cSAC boundary, would have the potential to adversely affect the integrity of this European site. This potential impact is described and assessed in detail in Section 9.1.4.2 of the NIS.

- 4.13.4 The NIS confirms (Section 9.1.4.2) that while the Lackagh Tunnel has been designed (Section 2.6.8) to avoid any impacts to the structural integrity of the rock mass supporting Limestone pavement and Calcareous grasslands habitat above it in Lough Corrib cSAC, mitigation (Section 10.2 and Appendix F) and monitoring (Section 10.2.1) are additionally proposed to provide an added factor of safety to ensure there will be no such impacts.
- 4.13.5 The NIS concludes (Section 11.1.2) that considering the design of the construction methodology and the mitigation measures, the construction of the Lackagh Tunnel, works in Lackagh Quarry, or any associated excavations along the Western Approach to the tunnel, will not affect the structural integrity of the rock mass supporting the overlying or adjoining QI habitats within Lough Corrib cSAC (i.e. namely Limestone pavement and Calcareous grassland) during either the construction or operational phases of the proposed road development.
- 4.13.6 The NIS has fully assessed, in considerable detail, the potential for blasting and tunnelling rock on Lough Corrib cSAC and found that there will be no such adverse effects on the integrity of Lough Corrib cSAC.

4.14 Clarification on link between Lesser Horseshoe bat populations

Issue

- 4.14.1 The following issues were raised:
- That bats may travel from the roost site at Menlo Castle to those at Ross lake and Eborhall House.
- 4.14.2 The following submission/objection raised these points: Ob_584.2.

Response

- 4.14.3 To clarify, the Menlo Castle Lesser horseshoe bat population is not linked to the qualifying interest populations of Ross lake and Woods cSAC or Lough Corrib cSAC, as explained in Section 6.1.2 of the RFI Response.

5 Conclusion

- 5.1 In the AA Screening Report submitted with the application for approval, it was concluded that there are four European sites within the ZoI of the proposed road development for which potential impacts have been identified.
- 5.2 Significantly, as set out in considerable detail in the NIS and supporting documentation, with the implementation of design and mitigation measures there will be no adverse effects (directly or indirectly) on the integrity of any European sites, either alone or in combination with other plans or projects.
- 5.3 In response to the Request for Further Information (RFI) received from An Bord Pleanála, additional relevés were provided for each location where the development boundary overlaps with the Lough Corrib cSAC. The identification of one additional area of Limestone pavement [*8240] habitat in Menlough (between Ch. 10+050 and Ch. 10+100), within the overlap between the proposed development boundary and Lough Corrib cSAC (approximately 205m²), was the only change to the habitat mapping of relevance to the assessment presented in the NIS.
- 5.4 Notwithstanding the amendments to the list of SCIs for Inner Galway Bay SPA in 2019¹⁰, changes in the habitat baseline¹¹ and revisions to the design of the proposed road development and the mitigation strategy proposed, the conclusions of the NIS remains valid, namely, that the proposed road development will not adversely affect the integrity of any European site, either alone or in combination with other plans or projects and there is no reasonable scientific doubt in relation to this conclusion.
- 5.5 A number of submissions and objections made relate to the Habitats Directive assessments to be carried out by the Board. The majority of issues raised arise from the first submission from the Development Applications Unit, Department of Culture, Heritage and the Gaeltacht [S_018] (21 December 2018), which raised issues in relation to potential impacts on habitats in Lough Corrib cSAC, hydrogeological impacts on Lough Corrib cSAC, the approach to assessing the conservation objectives, in combination effects on Otter, potential collision risk to birds from the proposed River Corrib bridge, mitigation for birds and the processes for ensuring mitigation is effectively implemented. Additional issues were raised in range of other submissions, in relation to aspects of the route selection process and prioritisation of impacts on people versus biodiversity, compliance with legislation and case law, construction impacts on Lough Corrib cSAC and impacts on Annex I habitats.
- 5.6 This statement of evidence has fully considered each of the issues raised in these submissions and objections and provides responses to each item. Having considered the issues raised and the responses provided, the conclusion of the NIS

¹⁰ S.I. No. 515/2019

¹¹ Arising due to survey work in summer 2019, as outlined in the RFI Response, Appendix A.3.1 Habitat Survey Results 2019 for N6 Galway City Ring Road, RFI Volume 2.

remains that the proposed road development does not pose a risk of adversely affecting (either directly or indirectly) the integrity of Lough Corrib cSAC.

5.7 Accordingly, in all the circumstances, the Board is enabled:

- to conduct a Stage One Screening Assessment and make a determination –
 - (i) not to rule out the possibility of significant effects on four European sites within the Zone of Influence (ZoI) of the proposed road development; Lough Corrib cSAC, Lough Corrib SPA, Galway Bay Complex cSAC and Inner Galway Bay SPA
 - (ii) the proposed road development requires a Stage Two Appropriate Assessment (AA) in respect of those four European sites – because 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 those four European sites
- to conduct a Stage Two Appropriate Assessment and make a determination –
 - (iii) the proposed road development will not adversely affect (either directly or indirectly) the integrity of any European site and there is no reasonable scientific doubt as to that conclusion

5.8 Indeed, the conclusion that there will be no adverse effect on the integrity of any European site has been reached following an examination, analysis and evaluation in light of best scientific knowledge of all relevant information in respect of the Qualifying Interests [QI], habitats and species of the four European sites within the ZoI of the proposed road development, the potential impacts and mitigation measures, and whether or not the predicted impacts would affect the conservation objectives that support the conservation condition for the QIs concerned.

Appendix A

N6 GCRR Mitigation Strategy Timeline

N6 GCRR Mitigation Strategy Timeline

