Inspector's Report
ABP 312559-22

Development	Ground investigation works to inform the option selection and design of the proposed Limerick City & Environs Flood Relief Scheme.
Location	Annacotty, Ballynanty, Castletroy, Corbally, Condell Road, Dock Road and Conigar Embankments County Limerick and Athlunkard, Knockballynameath and Quinspool, South Embankments. Co Clare.
Local Authority	Limerick City & County Council.
Type of Application	Application for approval made under Section 177(AE) of the Planning and Development Act, 2000 (local authority development requiring appropriate assessment)
Prescribed Bodies	Department of Housing, Local Government and Heritage
Observer(s)	None

Date of Site Inspection	June 4th, 2022.
Inspector	Breda Gannon

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1.0 Introduction

1.1. Limerick City & County Council is seeking approval from An Bord Pleanála to undertake ground investigation works to inform the option selection and design of the proposed Limerick City and Environs Flood Relief Scheme. The works are located within and adjacent to the Lower River Shannon SAC and the River Shannon & River Estuaries SPA. There are several other designated European sites (SPAs and SACs) in proximity to the proposed works (see further analysis below). A Natura Impact Statement (NIS) and application under Section 177AE was lodged by the Local Authority on the basis of the proposed development's likely significant effect on a European site.

1.2. Section 177AE of the Planning and Development act 2000 (as amended) requires that where an appropriate assessment is required in respect of development by a local authority, the authority shall prepare an NIS and the development shall not be carried out unless the Board has approved the development with, or, without modifications. Furthermore, Section 177V of the Planning and Development Act 2000 (as amended) requires that the appropriate assessment shall include a determination by the Board as to whether or not the proposed development would adversely affect the integrity of a European site and the appropriate assessment shall be carried out by the Board before consent is given for the proposed development.

2.0 Proposed Development

2.1. The proposed development consists of ground investigation (GI) works to inform the option selection and design of the proposed Limerick City & Environs Flood Relief Scheme. The proposed works would comprise of boreholes, cone penetration tests, window sampling and geophysical surveys as well as associated temporary access requirements and localised vegetation removal works. The works will predominantly be undertaken on and adjacent to existing embankments to establish their make-up and ability to withstand major future flood events. Works are also proposed in areas where there are no current defences, but flood modelling indicates that these areas are likely to flood in the future. The ground investigation works will provide information which will be used to assists in the design of new defences.

2.2. A detailed description of the ground investigation works, which involves a number of different testing methods is provided in Section 3.5 of the Planning Report and the pollution potential associated with each method is identified. These include potential release of silt/sediment, leakage and spills of hydraulic fluid/fuel/oil, cement etc to watercourses and noise pollution.

2.3. As required under Article 250 of the Planning and Development Regulations 2001 (as amended), the proposed ground investigation works have been screened by Limerick City & County Council to determine whether an appropriate assessment is required in respect of the proposed works. Based on this screening, it has been determined that the proposal may give rise to significant effects on European sites. Accordingly, a Natura Impact Statement has been prepared and approval is being sought under Section 177AE of the Planning and Development Act (as amended).

2.4. **Accompanying documents:**

- Planning Report, prepared by RPS
- Ecological Impact Assessment Report, prepared by RPS
- NIS, including AA Screening Report, prepared by RPS
- Archaeological & Cultural Heritage Assessment, prepared by Archaeological Management Solutions (AMS) Consultancy
- AA Screening Determination by Limerick City & County Council.
- Plans & particulars
- Copy of Newspaper Notice
- List of prescribed and other bodies to which the application was sent.

3.0 Site and Location

3.1. The proposed ground investigation works will take place at Annacotty, Ballynanthy, Castletroy, Corbally, Condell Road, Dock Road and Congar emnakments in Co. Limerick and Athlunkard, Knockballynameath and Quinspool South embankments in Co. Clare.

3.2. The ground investigation sites are primarily located within and adjacent to existing flood embankments in Counties Limerick and Clare on the edge of the Upper Shannon Estuary, Limerick Dock, tributaries of the River Shannon and in proximity to open fields or residential and industrial areas. In total, there are 11 no. embankments along the riversides that are included as part of the application site. These are located to the north, east and west of Limerick city. The easternmost of these is the Annacotty Embankment at the edge of the city and the westernmost is the Conigar Embankment to the north of Bunlickey lake. The works are proposed in 11 no. general locations which are described in detail in Section 2.2 of the Planning Report. The locations of the GI are identified on the Site Layout Plans submitted with the application.

3.3. There are a number of European sites within the immediate vicinity and overlapping in places with the application site (Fig 2-13), including the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. The area is prone to flooding and Figure 2.14 of the Planning Report shows the extent of medium probability for fluvial and coastal waters.

3.4. The majority of the lands are in public ownership of Limerick City & County Council, with some in private ownership. The 2 no. largest third-party landowners are Irish Cement Ltd and the Shannon Foynes Port Company. There are also 25 no. other individual private third-party landowners of smaller plots.

3.5. As the application extends into both Co Limerick and County Clare, an agreement has been entered into whereby the functions of Clare Co. Council will be performed by Limerick City and County Council. Limerick Co Council is therefore the applicant for the entire proposed ground investigation works within both counties.

4.0 Legislative and Policy Context

4.1. **The EU Habitats Directive (92/43/EEC):** This Directive deals with the Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union. Article 6(3) and 6(4) require an appropriate assessment of the likely significant effects of a proposed development on its own and in combination with other plans and projects which may have an effect on a European Site (SAC or SPA).

4.2. **European Communities (Birds and Natural Habitats) Regulations 2011:** These Regulations consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in CJEU judgements. The Regulations in particular require in Reg 42(21) that where an appropriate assessment has already been carried out by a 'first' public authority for the same project (under a separate code of legislation) then a 'second' public authority considering that project for appropriate assessment under its own code of legislation is required to take account of the appropriate assessment of the first authority.

4.3. **National nature conservation designations:** The Department of Housing, Local Government and Heritage and the National Parks and Wildlife Service are responsible for the designation of conservation sites throughout the country. The three main types of designation are Natural Heritage Areas (NHA), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) and the latter two form part of the European Natura 2000 Network.

There are a number of European 2000 sites within the immediate vicinity of the site including the following:

- The Lower River Shannon SAC
- The River Shannon and River Fergus Estuaries SPA.

4.4. **Planning and Development Acts 2000 (as amended):** Part XAB of the Planning and Development Acts 2000-2017 sets out the requirements for the appropriate assessment of developments which could have an effect on a European site or its conservation objectives.

- 177(AE) sets out the requirements for the appropriate assessment of developments carried out by or on behalf of local authorities.
- Section 177(AE) (1) requires a local authority to prepare, or cause to be prepared, a Natura impact statement in respect of the proposed development.
- Section 177(AE) (2) states that a proposed development in respect of which an appropriate assessment is required shall not be carried out unless the Board has approved it with or without modifications.

- Section 177(AE) (3) states that where a Natura impact assessment has been prepared pursuant to subsection (1), the local authority shall apply to the Board for approval and the provisions of Part XAB shall apply to the carrying out of the appropriate assessment.
- Section 177(V) (3) states that a competent authority shall give consent for a proposed development only after having determined that the proposed development shall not adversely affect the integrity of a European site.
- Section 177AE (6) (a) states that before making a decision in respect of a proposed development the Board shall consider the NIS, any submissions or observations received and any other information relating to:
    - The likely effects on the environment.
    - The likely consequences for the proper planning and sustainable development of the area.
    - The likely significant effects on a European site.

4.5. National Policy

The **National Planning Framework** (NPF) is a strategic plan to guide planning and investment out to 2040. The Plan sets out 10 goals, referred to as National Strategic Outcomes (NSO's). NSO 9 outlines the need for the sustainable management of water and other environmental resources. As part of this, there is a specific goal for flood risk management infrastructure to be progressively maintained to reduce the risk of flooding in the urban environment.

4.6. Regional Policy

The **Regional Spatial and Economic Strategy for the Southern Region** (RSES) is a 12-year strategic regional development formwork that will facilitate the delivery of the NPF at a regional level. Specific regional targets and goals are provided in the form of Regional Policy Objectives (RPO's).

RPO 9 – seeks to provide a holistic approach to delivering infrastructure. Specifically, it is noted that comprehensive infrastructure packages should be delivered, including flood risk management measures.

RPO 112 – examines water quality and notes the need to address flooding and increased flood risk arising from climate change impacts.

RPO 119 – considers flood relief schemes and supports investment in infrastructure that is future proofed to consider potential impacts of climate change.

4.7. **Local Policy**

Limerick County Development Plan 2010-2016 (as extended) is the statutory development plan for those parts of the application site comprising the Annacotty, Castletroy East, Castletroy West and Congar embankments.

Policy IN P11 - sets out the need to ensure flood risk is averted as far as possible, and its consequences are minimised.

Objective IN O36 - seeks to minimise the threat and consequences of flooding, with particular priority being given to the protection of vulnerable uses.

Limerick City Development Plan 2010-2016 (as extended) is the statutory development plan for those parts of the application site comprising Condell Road, Dock Road, Corbally and Ballynanty embankments.

Policy WS.6 – considers surface water drainage and includes a number of objectives, including the need to maintain and improve watercourses where necessary to control flooding.

Policy WS.8 – sets out the need for flood protection. It states that the Council will continue to work towards reducing flooding within the city.

Castletroy Local Area Plan 2019-2025 applies to the Castletroy area to the east of the city centre including the western banks of the River Mulkear. It therefore applies to Annacotty, Castletroy East and Castletroy West Embankments.

Objective IN 05 and Objective IN 07 – states the Council's commitment to manage flood risk and the need for flood relief works to be carried out along the Shannon in order to protect lands at the National Technology Park. These lands are zoned for Enterprise and Employment use, with large areas falling within the designated flood zones.

Southern Environs Local Area Plan2021-2027 applies to the area to the south and west of the city centre, including Mungret Quarry and nearby riverbanks. It therefore applies to the Conigar embankment.

The LAP includes a Strategic Policy in relation to flood management which specifically looks to manage flood risk in the area. The lands immediately adjacent to the river are designated as an Ecological Buffer Zone in the context of the SAC and SPA.

Objective FM 02 & 03 – states that the Council will support and co-operate with the OPW in the delivery of the Limerick City Flood Relief Scheme and support the delivery of projects which reduce flood risk.

Clare County Development Plan 2017 is the statutory plan for the parts of the site comprising Quinspool South, Knockballynameath and Athlunkard embankments. It is strategic aim of the plan to mange the risk associated with flooding.

5.0 The Natura Impact Statement

Limerick City & County Council's application for the proposed development is accompanied by a Natural Impact Statement (NIS) which scientifically examined the proposed development and the European sites. The NIS identified and characterised the possible implications of the proposed development on the European sites, in view of the site's conservation objectives, and provided information to enable the Board to carry out an appropriate assessment of the proposed works.

The NIS describes the elements of the project (alone or in combination with other plans and projects) that are likely to give rise to significant effects on the European sites. Potentially significant impacts are set out, as well as an assessment of their effect and the mitigation measures that are to be introduced to avoid, reduce or remedy the adverse effects on the integrity of the European sites.

The conclusion reached in the NIS is that subject to best practice and the full implementation of the recommended mitigation measures, that the proposed development either on its own, or in combination with other plans or projects would not result in significant adverse effects on the integrity of the designated sites and their qualifying interests.

6.0 **Consultations**

6.1. The application was circulated to the following bodies:

- Department of Housing, Local Government and Heritage
- The Heritage Council
- An Taisce
- Inland Fisheries Ireland
- Waterways Ireland

A response was received from the Department of Housing, Local Government and Heritage

6.2. **Department of Housing Local Government and Heritage:**

Archaeology

Refers to the desk-study assessment report *Limerick & Environs Flood Relief Scheme: Review of Proposed GI Locations and Infrastructure* (AMS, Jan 2022) which identifies 27 out of a total of 279 proposed GI tests that are within or proximal to archaeological/built heritage/cultural heritage features/areas.

The bulk of the GI tests will be undertaken into the existing flood embankments, many of which appear to be coterminous with the flood defences that are marked on the first edition OS maps and, although subsequently modified date back to 1840. Many of the embankments may therefore be considered to represent a significant feat of historic flood defence engineering and of archaeological, built heritage and cultural significance in their own right. The proposed GI tests and geophysical surveys will potentially add important new information regarding aspects of their physical composition and construction methods which may be utilised in the subsequent archaeological assessment. Similarly, the GI tests will extend into the pre-embankment deposits and, in places, reclamation and alluvial deposits, which may also provide significant geoarchaeological and archaeological information regarding prior land uses and the riverine stratigraphy.

It is recommended that the OPW relief scheme Project Archaeologist be appointed to oversee and advise on all aspects of the scheme, including ground investigations. It is also essential that the methodologies and processes outlined in the *Archaeological Guidelines for Flood Relief Schemes* (DHLGH and OPW 2021) are consulted and adhered to in the design and undertaking of all archaeological assessment and other works for the project.

It sets out various recommendations in respect of the proposed development.

Nature Conservation

The submission notes that parts of the proposed site investigation works are within the Lower River Shannon cSAC and the River Shannan and River Fergus SPA, which are designated for amongst other habitats and species, alluvial woodland and estuary habitat, and wetlands used by waterbirds. In addition, the floodplains of the river within the cSAC are important for the function and ecological integrity of the river ecosystem.

There are two conservation issues of concern relating to the works and these include (a) the potential for damage to alluvial woodland or estuary-associated habitat during drilling rig access to the works, and (b) the location of the embankment works near Corbally and Condell Roads.

Drilling rig access

It is understood from the NIS (pgs. 12-14) that all borehole cable percussion (BH) and borehole rotary core (RC) sites will need a drilling rig and that re-planting may be necessary where trees or bushes have to be removed to facilitate access. It is not clear from the works description whether a drilling rig (as opposed to a hand rig) will be necessary at some of the cone penetration sites (CPT) and therefore whether access through woody vegetation within the cSAC will be required.

The NIS states that alluvial woodland habitat only occurs within the study area at Castletroy. This is incorrect as the habitat occurs at locations throughout the riparian area. Further information is recommended on whether alluvial woodland occurs within an of the access routes where replanting will be necessary after drilling rig use.

The NIS (Pg 54) also states that access and egress areas are not in qualifying interest habitats. However, the definition of 'estuary' habitat is particularly wide and includes associated terrestrial habitats. The access route is indicated as entering those areas in maps 4, 5 and 7. Further information is recommended on whether estuary associated habitats of conservation importance occur within any of the access routes shown on these maps.

Embankments near Corbally and Condell Road

It is noted by the Department that the introduction to the NIS states that the *'works will contribute to the identification and development of a preferred scheme'*

It refers to the Department's own submission to the CFRAM process dated 24th October 2016, which made reference to the creation of new embankments adjacent to the Corbally wetlands and the Condell Road and where adverse impacts on qualifying habitats of the Lower Shannon SAC were predicted.

The Department states that the site investigation works proposed for the embankments may need to take account of alternative embankment locations and as such the issue raised is that these proposals may be incomplete.

7.0 Further Information

7.1. Further information was sought from the applicant on April 4th, 2022 on the matters raised in the submission from the Department of Housing, Local Government and Heritage, relating to Archaeology and Nature Conservation. The applicant was advised to submit a revised NIS integrating the matters raised relating to nature conservation.

7.2. The applicant's response was received on May 18th 2022, and is supported by the following:

- Cover letter prepared by RPS
- Limerick & Environs Flood Relief Scheme: Review of Proposed GI Locations and Infrastructure-Revised Report AMS, April 2022.
- Copy of Minutes of Meeting attended by representatives of NPWS, OPW and RPS on May 4th, 2022.

- Revised Natura Impact Statement RPS, May 2022
- Technical Note – Summary of Revised Natura Impact Statement RPS, May 2022
- Revised RPS Site Layout Plan MCW1078-RPS-00-GE-DR-Z-0102 (43 No. Sheets).
- RPS Memo 'MCW1078-Limerick FRS-Planning Drawing Updates' outlining summary of revisions to Site Layout Plan drawing and indicating what sheets are affected.

7.3. It reiterates that the GI works relate to an investigation of the structural functionality of the existing embankments only. Other GI works will be completed at a future date and subject to separate consent with respect to investigating options for specific flood relief works, which could potentially include investigating alternative embankment locations. The current works do not include locations of potential future embankments.

7.4. I would point out to the Board that the revisions indicated on the maps are minor in nature. They include marginal adjustments to a small minority of GI locations to accommodate technical, ecological and environmental constraints and the application of GI reference numbers to the indicative GI locations.

7.5. Having reviewed the entirety of the information submitted, I do not consider that it contains significant additional information on the effects of the proposed scheme on the environment. I do not therefore consider that the publication of new public notices or recirculation of documents is warranted.

8.0 Assessment

8.1. Introduction

In accordance with the requirements of section 177AE(6)(a) this assessment includes consideration of the following:

- The likely consequences for the proper planning and sustainable development of the area.

- The likely effects on the environment.
- The likely significant effects on a European site.

8.2. **The likely consequences for the proper planning and sustainable development of the area:**

Limerick city and environs have experienced significant flooding in recent years caused by both fluvial and coastal sources. A Flood Relief Scheme for Limerick City & Environs is currently being developed to alleviate the risk of flooding. The initial stages of the scheme involve site investigation works and the information gathered will provide information which will assist in the design of new defences and the development of a preferred scheme.

The ground investigation works proposed as part of this development will take place primarily on existing embankments to assess their make-up and condition and their ability to withstand major future flood events. Works are also proposed in areas where there are no current defences, but modelling indicates that these areas are likely to flood in the future. These works are necessary to inform the development of proposals for the future Limerick and Environs Flood Relief Scheme and are therefore acceptable in principle.

The proposed development accords with national, regional and local planning policy which recognises the challenges posed by climate change and supports the development of flood relief schemes to alleviate flood risk for local communities. I consider that the need for the development has been established and the proposed development is therefore in accordance with the proper planning and sustainable of the area.

The likely effects on the environment

The planning authority has concluded that the proposed GI works do not fall within any class of development set out in Part 1 or Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended, irrespective of thresholds and accordingly, neither mandatory or sub-threshold environmental impact assessment is required. It concluded that further screening or an EIA determination were not required.

Having regard to the location, nature, scale and characteristics of the proposed development, I consider that the main environmental effects to be assessed, other than those covered under Appropriate Assessment, are as follows:

- Noise
- Cultural heritage
- Impacts on ecology

Noise

Some of the testing methods will generate significant noise levels, in particular cable percussion, rotary core boring and window sampling. Combined these relate to 154 survey sites. The core penetration tests (95 No.) will generate noise at much lower levels. The tests that will generate the most noise will be completed in 1-2 days while window sampling across the overall application site will likely be completed within approximately 2 weeks.

The noise levels associated with cable percussion cabling can reach 160 dB, with levels of 120 dB associated with rotary core boring. Window sampling equipment is powered by a generator with idling noise levels of 86 dB. These noise levels have the potential to impact on the amenity of sensitive receptors.

The potential impacts on sensitive receptors at each of the embankment locations are examined in Table 5.1 of the Planning Report. The most sensitive receptors include housing, disability services, student and visitor accommodation and college buildings.

While I accept that the test activities have the potential to impact on the amenity of adjacent receptors, exposure to high noise levels will be temporary and of short duration. I note for example that the noisiest test will take 3-4 mins, which combined with the distribution across the site and controls on construction hours will limit the potential for significant effects. I accept that noise may cause annoyance and disturbance, albeit temporarily, but may be considered more tolerable in light of the positive impacts on the local area associated with the proposed flood relief scheme and the protection of properties from fluvial and coastal flooding.

Cultural Heritage

An assessment of the potential impacts on the archaeological and architectural resource of the area supports the application. The report, which is based on a desk top study notes that considerable care has been taken in the proposed locations of the ground investigation works to avoid impacts on known cultural heritage assets. However, it is recognised that there is potential for impacts to arise associated with both the proposed access tracks and the GI tests.

The access routes are largely confined to existing embankments along the river channel and therefore impacts on greenfield locations will be minimal. The report identifies 4 no. locations where proposed access tracks to GI locations could potentially impact on the Zones of Notification (ZON) for archaeological sites and monuments (Table 1). However, these access tracks extend along the existing elevated embankments.

It also identifies 3 no. additional areas where there could be potential for machinery using the access tracks to impact on recorded features (bridge, brickworks, beacon). through vibration, accidental damage etc. The tracks are also stated to traverse the historic gardens of Ballinacurra House.

I note that it is not intended to undertake any construction works for access tracks. Where necessary, depending on ground conditions, temporary mats will be laid down. No invasive works will therefore take place within the Zones of Notification for recorded archaeological sites and monuments.

I note that Ballinacurra House is included on the NIAH (21525001) and has been adapted for office use. It is described as. *'located within mature grounds much diminished by construction of modern low density housing'.* The house is also stated to be *'enclosed from the road by rubble limestone walls'*. The original setting of the house has been significantly altered and the access track would be located outside the existing curtilage. Having regard to the changes to the attendant grounds/curtilage of the original building no significant impacts on the building or its setting are likely to arise from the access track.

One temporary access ramp (which will provide temporary access to embankment crest) will be located in close proximity to a recorded archaeological monument (bridge) which is also listed on the National Inventory of Architectural Heritage (NIAH

21900501). To mitigate potential impacts, it is recommended that contracted personnel to be aware of the proximity of the bridge to avoid accidental damage.

The report identifies the GI locations where various test methods have the potential to impact on known cultural heritage assets (Tables 3 - Table 5). However, as the test locations are between 10-20m from the monuments no significant impacts are predicted. It is recommended that one bore hole location proposed less than 2m to the west of the ZoN of a Riverine revetment (SMR Ref LI013-227) be moved further to the west to avoid potential impacts. It is stated that this relocation can easily be accommodated.

In addition to recorded archaeological and architectural heritage assets, 14 no. undesignated assets (Table 6) were identified through analysis of historic mapping. The majority of these features are stated to relate to water management (sluice, old embankment) and not all will have survived. Other undesignated cultural heritage assets include an historic demesne (Trevor House) and historic grounds (Pass House). None of the features are included on the SMR, the RPS or NIAH and it is unclear what features, if any survive.

Following the Board's request for additional information, the project archaeologists (AMS) engaged with the National Monuments Service (NMS) and it came to the attention of AMS that the report *Limerick & Environs Flood Relief Scheme: Review of Proposed GI Locations and Infrastructure*, AMS, (January 2022) submitted with the application had inadvertently assessed a series of GI locations and infrastructure details which are not subject of the current application. In addition to GI works which are proposed under the application it had inadvertently reviewed a number of GI locations which are also necessary to inform the Limerick & Environs FRS but are being undertaken by the OPW as part of its obligations under the Arterial Drainage Act.

The current application before the Board relates only to works to be undertaken by Limerick City and County Council and fall under the provisions of the Planning and Development Act. It is also noted that the initial report also omitted a number of GI locations which are the subject of the current application and these are now included in the revised report '*Limerick & Environs Flood Relief Scheme: Review of Proposed GI Locations and Infrastructure – Revised Report',* AMS, April 2022.

The response to further information considers each of the 9 no. recommendations set out in the submission from the DHLGH and these are incorporated into the revised Limerick & Environs FRS. The measures which seek to avoid and reduce potential impacts on the archaeological resource include the following:

- Proposed or indicative Cable Penetration Testing (CPT) locations will not occur within 30m of a ZoN or site centroid for any SMR site.
- There are no instances where proposed or indicative Bore Hole Rotary Core (BHRD) locations occur within 30m of a ZoN or site centroid for an SMR site,
- The assessment did not identify any areas where proposed location of window samples would impact on recorded cultural heritage assets.
- There is one location where a Bore Hole (BH) in Castletroy townland occurs within the ZoN for SMR/RPS sites. It is recommended that this Bore Hole (BH 663) location be moved a minimum of 20m to the east and that the Main Contractor is made aware of the extents of the ZoN for these monuments.
- No Geophysical Survey will be undertaken within the ZoN for or immediately adjacent to any Recorded Monument or SMR sites. There are a number of areas where geophysical survey lines initially identified cross ZoN for an SMR site. It is now proposed to position the survey lines outside the ZoN's.
- There are a number of locations where access routes traverse a ZoN. Contractors will be made aware of the locations and extents so that no damage to ground surfaces occur.
- In accordance with the recommendations of the National Monuments Service (NMS), it is recommended that logs associated with all intrusive site investigations (CPT, BH/RC, WS, BH locations) are made available for assessment by a suitability qualified and experienced archaeologist with a view to the utilisation of results in further archaeological assessment.

Conclusion

The applicant has addressed the recommendations of the NMS and I consider that the measures to be implemented will avoid and reduce potential impacts on local archaeology. This will be achieved through the appointment of a suitably qualified archaeological who will monitor all groundworks and disturbances including works

relating to GI tests. As identified in the application a number of the GI sites are indicative and it is proposed that the final locations of all tests will be assessed in advance by the project archaeologist to ensure archaeological impacts are avoided and minimised. Should archaeological material be shown to be present, the applicant is prepared to be advised by the NMS with regard to any necessary mitigation including relocation and/or redesign of the GI test works to allow for preservation in situ, excavation and/or test-excavations or further monitoring.

Subject to the measures proposed and suitable conditions, I accept that impacts on the cultural heritage resource in the vicinity of the proposed works can be adequately mitigated.

Impacts on ecology

The Ecological Impact Assessment provides details of the habitats and species recorded in the embankment locations across the site. The habitats are mapped in Appendix 2 of the report and their ecological importance is summarised in Table 5.1. The majority of the habitats recorded from the field surveys are evaluated as of Local Importance-Higher Value as they provide habitat for local wildlife. Annex 1 habitats which are QI's of the SAC are evaluated as of International Importance and the potential impacts of the development on these habitats is assessed below under Appropriate Assessment.

No rare or protected flora were noted during the site surveys. A number of non-native invasive species were recorded including Japanese knotweed, Himalayan balsam and Giant hogweed. Detailed mapping and descriptions of infestations are found in the Invasive Species Management Plan (Appendix C NIS).

Regarding mammals, signs of Otter but no holts were recorded, but the habitats in close proximity to the works are considered to provide suitable foraging and commuting habitat for the species. It is anticipated that core activity would be focussed on the main watercourses. Badger was not recorded during the site visits, but it is considered likely that it may forage within the study area.

The desk top study indicates that the surrounding habitats across all embankments are of moderate suitability for bats. There are treeline and hedgerow habitats present which would provide foraging/commuting/roost potential. No bat foraging or roost assessment surveys were undertaken, and parts of the site were inaccessible due to

heavy growth. The woodland habitats adjacent to the Castletroy embankments are considered potentially the most suitable for bat foraging. Black Castle (ruins) in close proximity to the Castletroy Embankment and the Plassey Mill ruins to the western most part of the embankment provides potential roosting habitat. Several footbridge and road bridges across the Shannon may have low bat potential.

Regarding birds, the National Biodiversity Data Centre provides details of the Special Conservation Interests (SCI) species of the River Shannon and River Fergus Estuaries SPA recorded in the study area. These include Dunlin, Golden Plover and Whooper Swan. During the field surveys the following bird species were recorded Mallard, Herring Gull, Grey Heron, Mute Swan, Cormorant, Kingfisher, Moorhen, Blackbird, Robin and Little Egret. Of these species only Cormorant is an SCI species of the River Shannon and River Fergus Estuaries SPA and Lough Derg SPA.

All works will take place above water and there will be no interference with fish migratory paths and no direct impacts on aquatic habitats, Annex 1 habitats/species of the River Shannon or its tributaries during the works. There is potential for indirect impacts on habitats/species associated with emissions during construction, including the release of sediment laden run-off, hydrocarbons, cements, oils, into the surface water environment. There is potential for construction related activity to result in the spread of invasive species with potential impacts on habitats. There is potential for disturbance of mammals and birds arising from noise and vibration during the works. The removal of vegetation and trees if required has the potential to impact on mammals and bats. Some areas were inaccessible due to heavy vegetation which may contain holts/setts.

A suite of mitigation measures are proposed to protect habitat and species during the construction phase of the development.

The mitigation measures proposed include the following:

- An Ecological Clerk of works (ECoW) will be appointed to monitor the proposed works and ensure the implementation of the mitigation measures.
- Standard best practice measures will be implemented to protect water quality and to prevent the migration of sediment and other pollutants (hydrocarbons concrete and other hazardous material) from entering the surface water system.

- Implementation of a suite of measures to control the spread of invasive species.
- Works will take place during daylight hours to protect bird species, avoiding the need for artificial light which may cause disturbance.
- Borehole cable percussion works and Standard Penetration Testing (SPT) in rotary core holes shall be undertaken outside the wintering bird season (October to March inclusive) to protect species totally reliant on wetland habitats from noise and disturbance during construction.
- Pre-construction badger surveys by a suitable qualified ecologist in advance of the works on site. The ecologist shall advice on any additional mitigation measures and/or licensing requirements
- Pre-construction otter surveys will be undertaken by a suitably qualified ecologist a minimum of 8 weeks prior to the commencement of development to identify any otter activity, holt locations etc and to allow an appropriate period for a derogation licence to be obtained, if required.
- A preliminary ground level bat roost assessment will be carried out in advance of the works by a qualified ecologist to identify features with suitability for roosting bats in trees. The ecologist will advise on any additional surveys and/or licensing requirements.
- Should scrub removal occur within the breeding bird season (March-August) a breeding bird survey will be required, prepared by a qualified ecologist and if nests are present an application to remove the nest will be made to NPWS.
- Pre-construction invasive species surveys will be conducted, and an Alien Species Management Plan will be prepared.

Conclusion

Having regard to the limited scale and nature of the ground investigation works, the distribution across the site and the mitigation measures proposed, I consider that the significant effects on the ecology of the area is not likely to arise. I consider that subject to the implementation of the mitigation measures proposed which are standard best practice no significant effects on the ecology of the area is likely to arise.

8.3. **The likely significant effects on a European site:**

The areas addressed in this section are as follows:

- Compliance with Articles 6(3) of the EU Habitats Directive
- Screening the need for Appropriate Assessment
- The Natura Impact Statement
- Appropriate Assessment

Compliance with Articles 6(3) of the EU Habitats Directive:

The Habitats Directive deals with the Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union. Article 6(3) of this Directive requires that any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. The competent authority must be satisfied that the proposal will not adversely affect the integrity of the European site.

The proposed development is not directly connected to or necessary for the management of any European site and is therefore subject to the provisions of Article 6(3).

Screening the need for Appropriate Assessment

The first test of Article 6(3) is to establish if the proposed development could result in significant effects on a European site. This is considered Stage 1 of the appropriate assessment process i.e., *screening*. The screening stage is intended to be a preliminary examination. If the possibility of significant effects cannot be excluded on the basis of objective information, without extensive investigation or the application of mitigation, a plan or project should be considered to have a likely significant effect and Appropriate Assessment carried out.

The applicant carried out an appropriate assessment screening exercise, which is contained in the Appropriate Assessment Screening Report. The Source-Pathway-Receptor model was used to identify the Zone of Influence of the proposed

development and identify European sites. A total of 13 no. European sites within the zone of influence of the proposed development were identified. These include:

- Lower River Shannon SAC (Site code: 002165)
- River Shannon and River Fergus Estuaries SPA (Site code: 004077)
- Lough Derg (Shannon) SPA (Site code: 004058).
- Clare Glen SAC (Site code: 000930)
- Glenstal Wood SAC (Site code: 001432)
- Glenomra Wood SAC (Site code: 001013)
- Philipston Marsh SAC (Site code 001847)
- Silvermines Mountains West SAC (Site code: 002258)
- Bolingbrook Hill SAC (Site code: 002124)
- Silvermines Mountain SAC (Site code:000939)
- Slieve Bernagh Bog SAC (Site code 002312)
- Keepers Hill SAC (Site code: 001197), and
- Slievefelim Mountain to Silvermines Mountains SPA (Site code: 004165)

The study area extends into the Lower Shannon SAC and the River Shannon and River Fergus estuaries SPA. The Lough Derg (Shannon) SPA is located c 21km north east of the study area. The study area is within the mean foraging range of Cormorant, a Special Conservation Interest species of the SPA and therefore there is potential for ex-situ effects.

No viable source-pathway-receptor links were established with any other European sites. The SAC's are located upstream and at distances ranging from 10.9km and 33km with no potential for significant effects on qualifying habitats or species. The Slievefelim Mountains to Silvermines Mountains SPA is located c 8.5 km to the east and is considered to be outside the foraging range for hen harrier.

The Stage 1 Screening Assessment concluded that in the absence of mitigation the proposed development has the potential to result in significant effects on 3 no. European sites, the Lower River Shannon SAC (Site code: 002165), the River

Shannon and River Fergus Estuaries SPA (Site code: 004077) and the Lough Derg (Shannon) SPA (Site code 004058). No other source-pathway-receptor linkages have been established and the other European sites.

Conclusion on Stage 1 Screening for Appropriate Assessment

Based on my examination of the Screening for Appropriate Assessment Report and the NIS submitted by the applicant, the NPWS website, aerial and satellite imagery, the scale of the proposed development and likely effects, separation distances and functional relationships between the proposed works and the European sites, their conservation objectives, and taken in conjunction with my assessment of the subject site and surrounding area, I conclude that a Stage 2 Appropriate Assessment is required for the following European sites:

- Lower River Shannon SAC (Site code: 002165)
- River Shannon and River Fergus Estuaries SPA (Site code: 004077).
- Lough Derg (Shannon) SPA (Site code 004058)

The remaining sites can be screened out from further assessment because of the nature and scale of the proposed works, the nature of the Conservation Objectives, Qualifying and Special Conservation Interests, the separation distances and the lack of any substantive linkage between the proposed works and the European sites.

It is therefore reasonable to conclude that on the basis of the information on the file, which I consider adequate in order to issue a screening determination, that the proposed development, individually or in combination with other plans or projects would not be likely to have a significant effect on the following European sites in view of the sites' conservation objectives and Appropriate Assessment is not therefore required for these sites:

- Clare Glen SAC (Site code: 000930)
- Glenstal Wood SAC (Site code: 001432)
- Glenomra Wood SAC (Site code: 001013)
- Philipston Marsh SAC (Site code 001847)
- Silvermines Mountains West SAC (Site code: 002258)

- Bolingbrook Hill SAC (Site code: 002124)
- Silvermines Mountain SAC (Site code:000939)
- Slieve Bernagh Bog SAC (Site code 002312)
- Keepers Hill (Site code: 001197), and
- Slievefelim Mountain to Silvermines Mountains SPA (Site code: 004165)

No measures designed or intended to avoid or reduce any harmful effects on a European Site have been relied upon in this screening exercise.

Natura Impact Statement:

The Stage 1 Screening Assessment concluded that significant effects on 3 no. European sites could not be ruled out and that a Stage 2 Appropriate Assessment and Natura Impact statement (NIS) was required.

The application is accompanied by an NIS (revised in response to further information) which describes the project characteristics, the potential for in-combination effects with other plans/projects, the characteristics of the European sites, the potential for adverse effects on site integrity and measures to mitigate effects.

The NIS was informed by the following studies, surveys and consultations:

- A desk top study
- An examination of aerial imagery and GIS data sets (NPWS, EPA, IFI, GSI, BirdWatch Ireland, NBDC)
- Ecological site walkover surveys of the proposal site and surroundings.

The NIS concluded that, subject to the implementation of the mitigation measures proposed, the proposed development would not individually, or, in combination with other plans or projects adversely affect the integrity of any European site.

Having reviewed the NIS and the supporting documentation, I am satisfied that it provides adequate information in respect of the baseline conditions, does clearly identify the potential impacts, and uses best scientific information and knowledge. Details of mitigation measures are provided and they are summarised in Section 7 of

the NIS. I am satisfied that the information is sufficient to allow for appropriate assessment of the proposed development (see further analysis below).

Appropriate Assessment

The following is an assessment of the implications of the project on the relevant conservation objectives of the European sites using the best scientific knowledge in the field (NIS). All aspects of the project which would result in significant effects are assessed and mitigation measures designed to avoid or reduce any adverse effects are examined and assessed.

The Stage 1 screening exercise concluded that it is not possible to rule out the potential for significant effects on the Lower River Shannon SAC (Site code 002165) the River Shannon and River Fergus Estuaries SPA (Site code 004077) and Lough Derg (Shannon) SPA. These sites are therefore subject to appropriate assessment. Details of each site and details of their Conservation Objectives and Qualifying Interests are provided in Table 1 below. Information on the Conservation status of bird species is extracted from 'Birds of Conservation Concern in Ireland 2014-2019

Table 1

European site (SAC/SPA)	Qualifying Interests	Overall status and trend	Conservation Objective
Lower River Shannon SAC (Site code: 002165)	Sandbanks	Favourable	Maintain
	Estuaries	Inadequate	Maintain
	Tidal Mudflats and Sandflats	Inadequate	Maintain
	Coastal Lagoons*	Bad	Restore
	Large Shallow Inlets and Bays	Bad	Maintain
	Reefs	Inadequate	Maintain
	Perennial Vegetation of Stony Banks	Inadequate	Maintain
	Vegetated Sea Cliffs	Inadequate	Maintain
	Salicornia Mud	Favourable	Maintain
	Atlantic Salt Meadows	Inadequate	Restore
	Mediterranean Salt Meadows	Inadequate	Restore
	Floating River Vegetation	Inadequate	Maintain
	Molinia Meadows	Bad	Maintain
	Alluvial forests*	Bad	Restore

European site (SAC/SPA)	Qualifying Interests	Overall status and trend	Conservation Objective
	Freshwater Pearl Mussel	Bad	Restore
	Sea Lamprey	Bad	Restore
	Brook Lamprey	Favourable	Maintain
	River Lamprey	Unknown	Maintain
	Salmon	Inadequate	Restore
	Bottle-nosed Dolphin	Favourable	Maintain
	Otter.	Favourable	Restore
River Shannon and River Fergus Estuaries SPA (Site code: 004077)	Cormorant	Amber	Maintain
	Whooper Swan	Amber	Maintain
	Light-bellied Brent Goose	Amber	Maintain
	Shelduck	Amber	Maintain
	Wigeon	Red	Maintain
	Teal	–	Maintain
	Pintail	Red	Maintain
	Shoveler	Red	Maintain
	Scaup	–	Maintain
	Ringed Plover	Green	Maintain
	Golden Plover	–	Maintain
	Grey Plover	Amber	Maintain
	Lapwing	Red	Maintain
	Knot	Amber	Maintain
	Dunlin	Red	Maintain
	Black-tailed Godwit	Amber	Maintain
	Bar-tailed Godwit	Amber	Maintain
	Curlew	Red	Maintain
	Redshank	Red	Maintain
	Greenshank	Green	Maintain
	Black-headed Gull	Red	Maintain
	Wetlands and Waterbirds		
Lough Derg (Shannon) SPA (Site code 004058)	Cormorant	Amber	Maintain/Restore
	Tufted Duck	Amber	Maintain/restore
	Goldeneye	Red	Maintain/Restore
	Common Tern	Amber	Maintain/Restore
	Wetlands & Waterbird		

European site (SAC/SPA)	Qualifying Interests	Overall status and trend	Conservation Objective

* Priority habitat

The Lower River Shannon SAC (Site code 002165)

The site synopsis (NPWS) describes the site as follows:

'This very large site stretches along the Shannon valley from Killaloe in Co. Clare to Loop Head/Kerry Head, a distance of 120km. It encompasses the Shannon, Feale Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head.

The site is of great ecological interest as it contains a high number of habitats and species listed on Annexes 1 and 11 of the E.U Habitats Directive, including the priority habitats lagoon and alluvial woodland, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish Lamprey species. A good number of Red Data Book species are also present. A number of species listed in Annex 1 of the EU Birds Directive are also present, either wintering or breeding'.

Site specific conservation objectives have been published for the site which is to maintain/restore the favourable conservation condition of the habitats and species for which the site is selected.

The Lower River Shannon SAC is located within the boundaries of the study area. There is also hydrological connectivity between the proposed works and the SAC due to the presence of conduits in the form of drainage ditches along the embankments and minor watercourses flowing into the Shannon Estuary and Limerick Dock. There is also potential for visual and noise effects associated with the works, which has the potential to cause disturbance to qualifying species.

The SAC is designated for fourteen habitats, twelve of which are coastal habitats or influenced by water. Four no. Annex 1 habitats were recorded within the study area

and within close proximity to the proposed works including Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Floating River Vegetation [3260] and Alluvial forests [91E0].

Regarding qualifying species, sea, river brook lamprey and salmon have been observed spawning in the lower Shannon or its tributaries. Common Bottlenose dolphin habitat is located within the Shannon estuary and study area, but their commuting and foraging habitat does not extend to the study area. There are records for otter throughout the study area. Freshwater Pearl Musses occurs in the Cloon River c 35km westward of the study area and populations are confined to the main river channel of the river.

The River Shannon & River Fergus Estuaries SPA (Site code: 004077)

The site synopsis (NPWS) describes the site as follows:

'*The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick city westwards as far as Doonaha in Co. Clare and Doneeen Point in Co. Kerry. The site has vast expanses of intertidal flats which contain a diverse macro-invertebrate community which provides a rich food resource for wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for wintering birds. Elsewhere in the site the shoreline comprises stony or sandy beaches.*

The SPA is an international important site that supports an assemblage of over 20,000 wintering birds. It holds internationally important populations of four species i.e. Light-Bellied Brent Goose, Dunlin, Lapwing and Redshank. There are 17 species that have wintering populations of national importance. The site also supports a nationally important breeding population of Cormorant. Of particular note is that three of the species which occur regularly are listed on Annex 1 of the E.U. Birds Directive, i.e., Whooper Swan, Golden Plover and Bar-tailed Godwit.

Site specific conservation objectives have been published for the site which is *'To maintain the favourable conservation condition of each species for which the site is selected and to maintain the favourable conservation condition of the Wetlands as a resource for the regularly-occurring migratory waterbirds that use the site'.*

The works proposed as part of the application will take place adjacent to and within the SPA. There is also hydrological connectivity between the proposed works and the SPA due to the presence of conduits in the form of drainage ditches along the embankments and minor watercourses flowing into the Shannon Estuary and Limerick Dock. Table 5-11 of the NIS provides information of the winter distribution of the birds within the site. It indicates that there are some species which are totally reliant on wetland habitats due to unsuitable surrounding habitats and or/species limited habitat requirements. These species (Shelduck, Teal, Ringed Plover, Grey Plover, Knot, Dunlin, Greenshank and Shoveler) may be particularly susceptible to noise and visual impacts during high tide during the wintering season.

Lough Derg (Shannon) SPA (Site code: 004058)

The site synopsis (NPWS) describes the site as follows:

Lough Derg is within counties Tipperary, Galway and Clare and is the largest of the River Shannon lakes, being some 40km long. The site is a Special Protection Area (SPA) under the E.U Birds Directive, of special conservation interest for Cormorant, Tufted Duck, Goldeneye and Common Tern. The E.U Birds Directive pays particular attention to the wetlands, and as these form part of the SPA, the site and its associated waterbirds are of special conservation interest for Wetlands & Waterbirds.

Lough Derg (Shannon) SPA is of high ornithological importance as it supports nationally important breeding populations of Cormorant and Common Tern. In winter, it has nationally important populations of Tufted Duck and Goldeneye, as well as a range of other species including Whopper Swan. The presence of Whooper Swan, Greenland White-fronted Goose, Hen Harrier and Common Tern is of particular note as they are listed on Annex 1 of the E.U. Birds Directive. is of importance for both breeding and wintering birds.

The SPA lies c 21km to the north east of the proposed development and the potential for ex-situ foraging effects to Cormorant, a species of Special Conservation Interest of the SPA have been identified.

8.4. **Appropriate Assessment of the implications of the proposed development on European sites.**

There is potential for direct impacts on the conservation interests of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA as some of the GI works will be located within the boundary of these European sites, or for ex-situ impacts in the case of Lough Derg (Shannon) SPA.

The works have the potential to result in indirect effects on habitats/species, associated with water quality degradation from the release of silt, oil/diesel and hydraulic fluid into watercourses. This has the potential to result in impacts on species that are dependent on good water quality (salmon, sea, brook and river lamprey), all of which have conservation objective targets relating to water quality. It also has the potential to impact negatively on otter and SCI species of the River Shannon and River Fergus Estuaries SPA and Cormorant an SCI species of the Lough Derg (Shannon) SPA due to negative impacts on food resources associated with a deterioration in water quality.

There is potential for disturbance to QO/SCI species arising from heavy noise pollution, particularly during cable percussion borehole and to a less extent rotary core borehole testing. Vegetation clearance required at access locations and at the test sites has the potential to impact on habitats and species and result in the spread of invasive species. Other potential impacts related to dust/emissions during the works.

The NIS identifies the potential impacts likely to arise as follows:

- Loss/reduction of habitat area
- Disturbance of key species
- Habitat or species fragmentation
- Reduction in species density, and
- Changes in key indicators of conservation value such as decrease in water quality and quantity.

Loss/Reduction of habitat area

A number of the embankments border the Upper Shannon Estuary and Limerick dock estuary which are designated as Annex 1 habitat 'Estuaries'. The Annex 1 habitat 'mudflats and sandflats' is also found adjacent to the embankments in these areas. While the habitat 'Alluvial forests' was recorded in the study area, it was concluded in the NIS that this habitat would not be impacted by the proposed works as only non-intrusive geophysical surveys are proposed at the location.

The DAU raised issues regarding potential damage to alluvial woodland associated with vegetation removal/replanting to facilitate access for drilling rig use. It noted that this habitat is not confined to the Castletroy area and occurs more extensively than stated in the NIS. The DAU also questioned whether estuary-associated habitats of conservation importance occur within any of the access routes shown on maps 4, 5, and 7 of the NIS.

The applicant's response to further information provides details of a site meeting held with representatives of the NPWS and the OPW. The NIS was subsequently updated to provide additional clarifications and amendments to address the concerns raised by the DAU.

The revised NIS acknowledges (Section 4.1.1) that there are *numerous sections of Annex 1 residual alluvial forests (91E0) present adjacent to the embankments at Castletroy near the University of Limerick. Sections of alluvial woodland are present on the wet side of the embankments at Condell Road and Conigar. At Corbally, alluvial woodland is found mostly on the wet side of the embankment with small patches found on the dry side of the embankment'.*

In response to the concerns raised by the DAU, it has been confirmed that none of the proposed access routes or drilling rig locations are proposed within either alluvial woodland or estuary-associated habitats (Appendix A of the updated NIS). Specifically,

- Ground Investigation (GI) boreholes which require drilling rigs were removed from the Corbally Embankment (Sheet 9 Appendix A of the updated NIS) due in part to the presence of alluvial woodland on the 'wet' and (in part) the 'dry side of the embankment to avoid the drilling rig impacting on this sensitive

habitat. No estuarine-associated habitats of conservation importance were identified at the locations of the proposed GI works on this embankment.

- No drilling rig locations are located in the alluvial woodland or estuarine-associated habitats identified on the 'wet' side of the Condell Road Embankment (Sheets 6 & 7 Appendix A).
- Regarding the Conigar Embankment, it is stated that the NPWS were satisfied that the access routes and GI locations were located in areas that would avoid (or could be micro-sited to avoid) impacting on either alluvial woodland or estuarine-associated habitats on the 'wet' side of the embankment (Maps 1-5).

These habitats also have the potential to provide feeding, breeding or resting habitat for the QI species of the Lower River Shannon SAC, River Shannon and River Fergus SPA and Lough Derg (Shannon) SPA. There is potential for habitat loss/reduction of 'Estuaries' and 'mudflats and sandflats' as a result of overland flow and surface water run-off, resulting in habitat degradation. These habitats provide a supporting function to the QI species of European sites and their subsequent loss have potential to adversely affect the integrity of the European sites.

Due to the nature of the development, being ground investigation works, no operational impacts are envisaged.

Disturbance to key species

There is potential for populations of QI's species to be present within the study area such as Otter, SCI bird species associated with the River Shannon and River Fergus Estuaries SPA. There is also potential for cormorant to be present as both an SCI of the River Shannon and River Fergus SPA and Lough Derg (Shannon) SPA.

Otter – are a qualifying interest of the Lower River Shannon SAC and the habitats in close proximity to the works provide suitable foraging and commuting habitat. Scrub clearance will occur before commencement of the works and there is potential for suitable otter habitat to be removed. No otter holts were recorded in proximity to the work sites, but signs of otter including spraints, slides and couches have been identified within proximity to the works. Due to the location of the works within the

SAC boundary and adjacent to the coastal water, there is potential for direct impacts on the species from noise, vibration, lighting and human presence.

Otter is a crepuscular species and works will take place during daylight hours, avoiding darkness and dawn when otter tends to be most active. Noise during construction is not considered to result in significant disturbance as observations indicate that otters are flexible in their use of resting sites and do not necessarily avoid 'disturbance' in terms of noise or proximity to human activity.

There is also potential for disturbance of key SCI species of the River Shannon and River Fergus Estuaries SPA and cormorant of the Lough Derg (Shannon) SPA due to noise, vibration, lighting and human presence as a result of the proposed works taking place during the wintering bird season. Light pollution can cause birds to nest earlier than normal in open environments, such as grasslands and wetland, which can cause chicks to hatch at a sub-optimal time when sufficient food resources are not available. Noise pollution, in particular loud noise (>70dB) can result in behavioural changes/responses and cause birds to nest later than usual.

Due to the nature of the works, no operational impacts are envisaged.

Habitat or Species Fragmentation

There is potential for suitable habitat for otter to be removed during scrub clearance prior to commencement of the ground investigation works. There is therefore potential for fragmentation of its habitat.

No operational impacts are envisaged due to the nature of the works.

Reduction in species density

It has been determined that there is potential for adverse effects upon the integrity of the Lower River Shannon SAC, the River Shannon and River Fergus Estuaries SPA and the Lough Derg (Shannon) SPA as a result of a reduction in species density through water quality deterioration. There is also potential for the reduction in species density to occur in relation to noise and additional activity levels in particular as a result of the proposed works taking place during the wintering bird season.

Once the works are completed, displaced species are expected to return to the site, therefore no adverse effects upon the integrity of the European sites within the site boundary are expected.

Changes in Key Indicators of Conservation Value – Surface Water/Groundwater Quality

Due to the nature of the works and the requirement to use water during cable percussion and rotary core boring there is potential for surface water run-off to occur. Silt laden run-off could enter the surface water network and ultimately the Lower River Shannon SAC.

Reduction or changes to existing water quality has the potential to negatively affect the sub-community types within the estuarine habitats which support species who rely on clean water to feed. The Conservation Objectives of the Lower River Shannon has water quality targets for designated QI species (salmon) and spawning habitat (salmon, sea, brook and river lamprey). A degradation in water quality could impact upon key conservation values for aquatic QI's resulting in reduced species density.

There is potential for indirect impacts to otter, dolphin and SCI species via a change in food resources owing to water quality deterioration. There is a conservation objective target for otter that there should be no significant decline in fisheries resource and 'to 'restore favourable conservation condition'

No operational impacts are envisaged due to the nature of the works.

There will be no excavations within the European site boundaries and therefore interaction with groundwater will not occur.

Changes in Key Indicators of Conservation Value- Invasive Species

Invasive species have been identified within the study area and there is potential for the works to spread these species within the SAC and the SPA. A hydrological pathway has been established via the Lower River Shannon and drainage conduits and should invasive species be disturbed and/or imported on site there is a potential source-pathway-receptor to Annex 1 habitats of the Lower River Shannon SAC.

Summary of Potential Impacts on European Sites.

Table 6-1 of the NIS provides a summary of the potential impacts on each of the 3 no. European sites.

Lower River Shannon SAC – the revised NIS indicates that there is no potential for direct impacts on any of the qualifying habitats of the SAC. There is potential for

indirect effects associated with sedimentation or a deterioration in water quality. Similarly, with the exception of Otter, which may be directly impacted by noise/vibration impacts during the works, no direct impacts will arise for any other species of conservation interest for the SAC.

River Shannon and River Fergus Estuaries SPA – There is potential for direct impacts on the Qualifying Interests of the SPA as it is located within the study area. These impacts would arise from sedimentation and/or water quality deterioration altering food resources. Potential indirect impacts would arise from disturbance through noise, vibration, lighting and human presence.

Lough Derg (Shannon) SPA - There is no potential for direct impacts on the SPA as it not located within the study area. There is potential for ex-situ impacts to cormorant via sedimentation and/or water quality deterioration altering food resources and through disturbance associated with noise, vibration, lighting and human presence.

In combination effects

The NIS considers the potential for in-combination effect with other plans or projects.

The development plans for both Limerick and Clare counties which set the development frameworks for their administrative areas have been subject to SEA and AA and contain a significant number of protective measures/objectives for the protection of the environment and specifically European sites.

Numerous local planning applications were identified within and in close proximity to the study area and the majority are typical urban type development (Table 6-4 and Table 6-5 of the NIS). No potential for adverse in-combination effects are predicted on the basis that these proposed future projects will be required to comply with the provisions of the development plan, relevant EU Directives, National legislation and environmental consideration. It is concluded in the NIS that the proposed development will not significantly adversely affect the integrity of any European site and therefore there is no potential for it to act in combination with other development to result in significant effects.

It is noted that ground investigation works as part of the Shannon & Environs Flood Risk Scheme would be completed at the end of 2021 and are therefore unlikely to act in combination with the proposed works for the Limerick Flood Relief Scheme.

Mitigation

A number of mitigation measures are proposed to avoid the potential for any direct/indirect impacts on Annex 1 habitats and Annex 11 species designated with the 3 no. European sites. The mitigation measures are incorporated in the CEMP included with the application and include measures to control water pollution, measures to control the spread of invasive species, seasonal constraints on certain works and measures to minimise impacts associated with access and egress to/from the works areas.

An Ecological Clerk of Works will be appointed to monitor the works and ensure compliance with relevant legislation and the implementation of the mitigation measures.

Water pollution Control Measures

There is potential for sediment laden run-off and a number of pollutants to enter the Lower River Shannon during the works by overland flow, via drainage ditches or directly from the embankments. The potential pollutants include sediment hydrocarbons, fuels, lubricants and cement-based products.

The following measures are proposed to prevent these pollutants from enter watercourses:

Sediment - Silt fencing will be installed around the perimeter of each rotary core to ensure capture of any run-off materials. There will be no direct discharge of water from the works to surface water and vegetation will be established as soon as practical on all areas where soil has been exposed. There will be regular surface water monitoring during construction to ensure no deterioration in water quality.

Hydrocarbons - All standard best practice methods will be employed to prevent leakage of fuels, lubricants, hydraulic oils, solvents, hazardous materials into the water environment. This will include suitable storage in bunded containers, availability of drip trays, spill kits and hydrogen absorbent packs, regular maintenance of machinery and restrictions on refuelling to designated compounds at least 50m from any watercourse or storm water drainage network.

Concrete – Small amounts of cement and bentonite grout may be sued to backfill some of the boreholes and for the standpipes. Concrete is usually used to secure the

standpipe covers. To mitigate against potential release of cement to the environment, best practice protocols will be implemented. There will be no placement of concrete during periods of heavy rain and any raw/uncured waste concrete will be removed from the site and disposed of to a licenced facility. Concrete mixing will be confined within and/or on a specific surface and concrete mixing areas shall not be washed out on site.

Invasive species control

The ecological surveys indicate the presence of invasive species across the site and proximate to the works areas. Mitigation will in the first instance be achieved by avoidance of locations where invasive species has been recorded. Best practice biosecurity measures will be implemented to contain and/or prevent the introduction and subsequent spread into other areas of the site. The measures will include the establishment of 'Biosecure zones' by exclusion fencing and signage around each contaminated area or stockpiles of soil that are known to be contaminated, prior to commencement of works on the site. Other measures will include pressure-washing of vehicles used in control operations and use of specific marked haul routes for vehicles leaving contaminated areas.

Where stands of invasive species are present at and outside of the works area boundary, it may be necessary to remove/treat invasive species for a further 3m outside the works boundary to facilitate accommodation works, boundary treatment efforts etc. Where invasive species are removed along the works boundary, a root barrier membrane may be required to ensure invasive species do not migrate back into the development footprint. Due to the proximity of the invasive species infestations to the works, the EcOW will be present to supervise the works and monitor excavations.

Seasonal constraints

There are a number of roosting locations within the works areas which may be impacted by the percussion borehole works during the wintering bird season. Due to the limited adaptability of wintering SCI species (such as Shelduck, Teal, Ringed Plover, Grey Plover, Knot, Dunlin, Greenshank, Shoveler) to utilise other or alternative habitats and reliance on wetland habitats, these works will only be undertaken outside the wintering bird season (October-March inclusive). Borehole

rotary cores and cone penetration tests will not be seasonally restricted due to the nature of the works and the machinery used. However, standard penetration tests (SPT's) in rotary core holes will not be permitted from October to March inclusive at any positions.

Access and Egress

There will be no access required across the QI habitats of the nearby European sites and the GI routes have been refined following consultation with NPWS to avoid impacts on QI habitats 'Alluvial woodland' and 'estuarine – associated' habitats. All locations on the dry side of the embankments will be accessed via existing access tracks. Locations on the embankments will be accessed via existing ramps and where no ramps exist, temporary ramps will be constructed from clean stone. Bog mats may be required on areas of soft or boggy ground to minimise rutting and subsequent runoff of silts and sediments to sensitive watercourses and habitats.

Residual Impacts

Following the implementation of the mitigation measures proposed no significant residual effects are predicted on any European site.

NIS Conclusion

It is concluded that through the implementation of best practice and the recommended mitigation measures there will be no potential for direct, indirect, ex-situ or cumulative impacts arising from the proposed development either on its own or in combination with other plans or projects. It is therefore concluded that the proposed development will not adversely affect the integrity of the Lower Shannon SAC, the River Shannan and River Fergus Estuaries SPA, the Lough Derg (Shannon) SPA, or any other European site and that no reasonable doubt remains as to the absence of such effects.

Conclusion on Appropriate Assessment

The proposed development has been considered in light of the assessment requirements of sections 177U and 177V of the Planning and Development Act 2000 as amended.

Having regard to the nature of the works proposed which are relatively minor, limited in scale and of short duration, I accept that significant levels of pollutants and

siltation are unlikely to occur. I consider that the mitigation measures proposed, which involve standard best practice and environmental controls, are sufficient to address the potential effects of the development and to ensure that the proposed development would not adversely affect the integrity of the Lower River Shannon SAC (Site code 002165), the River and River Fergus Estuaries SPA (Site code: 004077), and the Lough Derg (Shannon) SPA (Site code:004058) in view of the sites' conservation objectives.

Taking into account the application of the full suite of mitigation measures, the proposal to carry out ground investigation works to inform the option selection and design of the proposed Limerick City and Environs Flood Relief Scheme will not cause delays or interrupt progress towards achieving the conservation objectives of the Lower River Shannon SAC (Site code 002165) or the River and River Fergus Estuaries SPA (Site code: 004077), and the Lough Derg (Shannon) SPA (Site code:004058).

I conclude that the proposed development will not adversely affect the integrity of the European sites' in view of their conservation objectives.

This conclusion is based on:

- The limited scale and short duration of the ground investigation works proposed.
- Avoidance of direct impacts on qualifying habitats and species of the European sites'.
- Prevention of potential indirect effects on qualifying habitats and species of the European sites by the implementation of standard best practice and proven effective mitigation measures.

This assessment is based on a complete assessment of all aspects of the proposed development and there is no reasonable doubt to the absence of such effects.

Note: I would point out to the Board that the proposed works do not appear to be located on the foreshore. The Board may consider it necessary, should it be minded to grant approval for the development, to ensure that applicant is aware of any licence obligations required under the Foreshore Acts.

9.0 Recommendation

On the basis of the above assessment, I recommend that the Board approve the proposed development subject to the reasons and considerations below and subject to conditions including requiring compliance with the submitted details and with the mitigation measures as set out in the NIS.

Reasons and Considerations (Draft Order)

In coming to its decision, the Board had regard to the following:

(a) the EU Habitats Directive (92/43/EEC),

(b) the European Union (Birds and Natural Habitats) Regulations 2011-2015,

(c) the likely consequences for the environment and the proper planning and sustainable development of the area in which it is proposed to carry out the proposed development and the likely significant effects of the proposed development on a European Site,

(d) the conservation objectives, qualifying interests and special conservation interests for the Lower River Shannon SAC (Site code:002165), the River Shannon and River Estuaries SPA (Site code: 004077) and the Lough Derg (Shannon) SPA (Site code: 004058),

(e) the policies and objectives of the Limerick City & County Development Plans 2010-2016 (as extended), the Clare County Development Plan, 2017-2023, Castletroy Local Area Plan 2019-2025 and Southern Environs Local Area Plan 2021-2027,

(f) the nature, scale and limited duration of the proposed works as set out in the application for approval,

(g) the information submitted in relation to the potential impacts on habitats, flora and fauna, including the Natura Impact Statement,

(h) the submissions and observations received in relation to the proposed development, and

(i) the report and recommendation of the Inspector

Appropriate Assessment:

The Board agreed with and adopted the screening assessment and conclusion carried out in the Inspector's report that the Lower River Shannon SAC (Site code:002165), the River Shannon and River Estuaries SPA (Site code: 004077) and the Lough Derg (Shannon) SPA (Site code: 004058) are the only European Sites in respect of which the proposed development has the potential to have a significant effect.

The Board considered the revised Natura Impact Statement and associated documentation submitted with the application for approval, the mitigation measures contained therein, the submissions and observations on file, and the Inspector's assessment. The Board completed an appropriate assessment of the implications of the proposed development for the affected European Sites, namely the Lower River Shannon SAC (Site code:002165), the River Shannon and River Estuaries SPA (Site code: 004077) and the Lough Derg (Shannon) SPA (Site code: 004058), in view of the site's conservation objectives. The Board considered that the information before it was adequate to allow the carrying out of an appropriate assessment. In completing the appropriate assessment, the Board considered, in particular, the following:

i. the likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects,

ii. the mitigation measures which are included as part of the current proposal, and

iii. the conservation objectives for the European Sites.

In completing the appropriate assessment, the Board accepted and adopted the appropriate assessment carried out in the Inspector's report in respect of the potential effects of the proposed development on the integrity of the aforementioned European Sites, having regard to the site's conservation objectives.

In overall conclusion, the Board was satisfied that the proposed development, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Sites, in view of the site's conservation objectives.

Proper Planning and Sustainable Development/Likely effects on the environment:

It is considered that, subject to compliance with the conditions set out below, the proposed development would not pose a risk to water quality, would not seriously injure the amenities of property in the vicinity and would not adversely impact on the cultural, archaeological and built heritage of the area. The proposed development would inform the option selection and design of a preferred flood relief scheme and assist in the delivery of the Limerick City and Environs Flood Relief Scheme and would therefore, be in accordance with the proper planning and sustainable development of the area.

Conditions

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application and the information contained in the Natura Impact Statement, as amended by the further information received by An Bord Pleanala on the 18th day of May 2022 except as may otherwise be required in order to comply with the following conditions. Where any mitigation measures or any conditions of approval require further details to be prepared by or on behalf of the local authority, these details shall be placed on the file and retained as part of the public record.

   Reason: In the interest of clarity and the proper planning and sustainable development of the area and to ensure the protection of the environment.

2. The mitigation and monitoring measures contained in the revised Natura Impact Statement received by An Bord Pleanala on the 18th day of May 2022 shall be implemented in full.

   Reason: In the interest of protecting of the European Sites.

3. Prior to the commencement of development, the local authority, or any agent acting on its behalf, shall prepare in consultation with the relevant statutory agencies, a Construction Environmental Management Plan (CEMP), incorporating all mitigation measures indicated in the revised

Natura Impact Statement and demonstration of proposals to adhere to best practice and protocols. The CEMP shall include:

a. detailed plan for the duration of the works incorporating inter alia,
b. works programme, access/egress measures, supervisory measures, noise management measures and construction hours,
c. invasive species management plan,
d. an emergency response plan, and
e. proposals in relation to public information and communication.

The CEMP shall be retained on the file as part of the public record.

Reason: In the interest of protecting the environment

4. The hours during which the ground investigation works takes place shall be confined to between 08.00 and 18.30 hours Monday to Friday inclusive and between 08.00 and 14.00 hours on Saturday and not all on Sundays and public holidays.

   Reason: To safeguard the amenities of properties in the vicinity.

5. The works shall be limited to daylight hours and no artificial lighting shall be used on the site. No Borehole cable percussion works or Standard Penetration Testing (SPT) in rotary core holes shall take place during the wintering bird season (October to March) in any year.

   Reason: In the interest of protecting bird species using the site and the adjacent areas.

6. The County Council and any agent acting on its behalf shall ensure that all plant and machinery used during the works should be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens.

   Reason: In the interest of the proper planning and sustainable development of the area and to ensure the protection of the European sites.

7. A suitably qualified ecologist shall be retained by the local authority to oversee the site set up and construction of the proposed development and implementation of mitigation measures relating to ecology set out in revised Natura Impact Statement. The ecologist shall be present during site construction works. Upon completion of works, an ecological report of the site works shall be prepared by the appointed ecologist to be kept on file as part of the public record.

   Reason: In the interest of nature conservation and the protection of terrestrial and aquatic biodiversity.

8. The local authority, or any agent acting on its behalf shall retain the services of a suitably qualified and experienced bat specialist to survey the bridge for the presence of bat roosts, prior to commencement of development. In the event that any roosts are identified, the National Parks and Wildlife Service shall be consulted regarding how best to deal with such roosts. The removal of any roosts identified shall be carried out only under licence from the National Parks and Wildlife Service.

   Reason: In the interests of protecting ecology and wildlife in the area.

9. The local authority, or any agent acting on its behalf shall retain the services of a suitably qualified and experienced ecologist to survey the site for the presence of badger, prior to commencement of development. In the event that any setts are identified, the National Parks and Wildlife Service shall be consulted regarding how best to deal with such setts. The removal of any setts identified shall be carried out only under licence from the National Parks and Wildlife Service.

   Reason: In the interests of protecting ecology and wildlife in the area.

10. The County Council and any agent acting on its behalf shall facilitate the preservation, recording, protection or removal of archaeological materials or features that may exist within the site.

    In this regard, the County Council shall:

    a) employ a suitably qualified archaeologist in accordance with the requirements of the Department of Housing Local Government

and Heritage prior to commencement of the development who shall assess the final locations of all tests and monitor all site investigations and other excavation works,

b) ensure that the methodologies and processes outlined in the *Archaeological Guidelines for Flood Relief Schemes* (DHLGH and OPW 2021) are consulted and adhered to in the design and undertaking of all archaeological assessment and other works for the project.

c) comply with the mitigation measures set out in the revised *'Limerick and Environs Flood Relief Scheme: Review of proposed GI Locations and Infrastructure -Revised Report* (AMS, May 2022) in advance of any works,

d) provide arrangements, acceptable to the Department of Housing, Local Government and Heritage for the recording and removal of any archaeological material which it is considered appropriate to remove.

Reason: In order to conserve the archaeological heritage of the site and to secure the preservation and protection of any remains that may exist within the site.

Breda Gannon
Senior Planning Inspector

10th June 2022