



APPROPRIATE ASSESSMENT

Project

Natura Impact Statement undertaken for proposed bridge repairs on Park Road, Limerick City.

Ecology Research and Solutions Ltd.

Table of Contents

Statement of Competence	2
1. Introduction.....	3
1.1 Appropriate Assessment Process	3
1.2 Methodology	4
2. Description of the Site and Proposed works	6
2.1 Description and Location of the Site	6
2.2 Proposed Works	7
3. Natura 2000 Sites and Proposal	10
3.1 Natura 2000 Sites considered in this Appropriate Assessment	11
Clare Glen SAC (000930)	11
Glenomra Wood SAC (001013).....	11
Tory Hill SAC (000439).....	11
Glenstall Wood SAC (001432).....	11
River Shannon and River Fergus Estuaries SPA (004077)	11
Slievefelim to Silvermines Mountains SPA (004165).....	11
4. Natura 2000 Sites and Potential Impacts	11
4.1 Lower River Shannon SAC.....	11
4.2 River Shannon and Fergus Estuaries SPA	13
4.4 Cumulative Impacts	15
5. Conclusion of Screening	15
6. Natura Impact Statement.....	15
6.1 Assessment of Effects.....	15
6.2 Mitigations.....	18
6.2.1 Control of sediments	18
6.2.2 Cement Control and Wheel Washing	18
6.2.3 Mains water diverted	19
6.2.4 Waste management	19
6.2.5 Disruption to breeding	19
6.2.6 Spread of invasive plants.....	19

6.2.7 Ecological clerk of works	19
7. Conclusion	20
8. Bibliography.....	20

Statement of Competence

The Managing Director of Ecology Research and Solutions Limited is Rory Dalton. Rory is an independent ecological consultant with a decade of experience across a range of disciplines including aquatic ecology, habitats, mammals, and birds. He also carries out a range of species-specific and research-based studies. He graduated from University College Cork with a BSc. Hons in Environmental and Earth Science, after which he spent three years working with a leading ecological consultancy in Limerick. He then set up his own company and has been running it since. Sectors he works in include, conservation, solar farms, wind farms, roads and bridges, grid connections, housing, greenways, instream civil works, drinking water etc. The projects he is involved with range in size from small bridge surveys to the largest wind energy project in the country and the largest water quality project in Europe. He carries out work for a number of State Bodies, Semi-State Bodies, Engineering Consultants, Ecology Consultants, Environmental Consultants and Laboratories

Introduction

Ecology Research and Solutions was commissioned by Limerick City and County Council to prepare a document for the Appropriate Assessment process for maintenance works on the Borough of Limerick, Bridge, that crosses the City Canal on Park Road, in Limerick City.

1.1 Appropriate Assessment Process

An Appropriate Assessment is undertaken to establish if any proposed plan or project is likely to have a significant effect or impact on any site that has been designated under: the E.U. Habitats Directive (92/43/EEC) i.e. SAC; or the E.U. Birds Directive (79/409/EEC as amended 2009/147/EC) i.e. SPA. Collectively, SAC's and SPA's are known as Natura 2000 sites. The need to undertake one or more stages of this process has arisen from Articles 6(3) and 6(4) of the aforementioned Habitats Directive; where the former Article is primarily concerned with the protection of sites from likely significant effects and the latter allows derogation from such protection in very specific circumstances involving imperative reasons of overriding public interest.

Article 6(3) of the Habitats 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. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”

And Article 6(4) of the Habitats Directive requires that:

“If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.”

In Stage 1, a screening process is undertaken to identify whether significant impacts on a Natura 2000 site are likely to arise from the project or plan in question. If significant impacts are likely to occur or if it is unclear whether significant impacts are likely to occur, then the process moves on to Stage 2 where an AA considers potential mitigation measures for adverse impacts. If it is considered that mitigation measures will not be able to satisfactorily reduce potential adverse impact on a Natura 2000 site then an assessment of alternative solutions is considered in Stage 3. This is then followed by Stage 4 in the event that adverse impacts remain and the proposed activity or development is deemed to be of Imperative Reasons of Overriding Public Interest (IROPI), allowing an assessment of compensatory measures to be considered. The outcome of a Stage 2 and higher assessment is presented in a report known as a Natura Impact Statement (NIS). While an AA NIS is provided by the advocate of the plan or project in question, the AA NIS itself is undertaken by the competent authority.

1.2 Methodology

Documents associated with the proposed project and relevant ecology databases were consulted as part of this assessment, with a site survey also undertaken. Furthermore, the following guidelines were used in the completion of this assessment;

- DEHLG (2009, as amended 2010). Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, Dublin.
- EC (2002). Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Environment Directorate-General of the European Commission.
- EC (2018). Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC. Environment Directorate-General of the European Commission.
- OPR (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. Office of the Planning Regulator, March 2021.

Screening for Appropriate Assessment (Stage 1)

The Screening Stage of Appropriate Assessment is used to identify whether the Plan, either alone or in combination with other plans or projects, is likely to have a significant effect on a Natura 2000 site. Plans or projects that are directly connected with or necessary to the management of a European Site do not require AA (DEHLG, 2009). This report follows European Commission (2002) guidance which recommends that screening should follow a four-step process as outlined below:

1. Determine whether the plan is directly connected with or necessary to the management of the site.
2. Describe the plan and other plans and projects that, 'in combination', have the potential to have significant effects on a European site.
3. Identify the potential effects on the European site.
4. Assess the significance of any effects on the European site.

Screening can result in the following possible outcomes:

- AA is not required,
- No potential for significant effects and thus AA is not required,
- Significant effects are certain, likely, or uncertain and thus the project must proceed to Stage 2 (NIS) or be rejected.

Appropriate Assessment (AA) (Stage 2)

In this stage, the impact of the project or plan (either alone or in combination with other projects or plans) on the integrity of the Natura 2000 site is considered with respect to the conservation objectives of the site and to its structure and function. The Commission guidance on Natura 2000 (EC, 2018) states that: The integrity of the site involves its constitutive characteristics and ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the habitats and species for which the site

has been designated and the site's conservation objectives. Stage 2 includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project is required to submit a Natura Impact Statement, i.e. the report of a targeted professional scientific examination of the plan or project and the relevant Natura 2000 sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in-combination or cumulative effects. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then a wider search for alternative solutions may need to be considered – Stage 3 - or the plan or project abandoned. The AA is carried out by the competent authority and is supported by the NIS. Stage 2 involves the following:

1. Information on the plan or project and the Natura 2000 site(s)

Adequate information on the plan/project and the Natura 2000 site(s), including identification of the conservation objectives of the Natura 2000 site(s) and the aspects of the plan or project (alone and in combination with other plans and projects) that will affect those objectives, must be collated to complete the AA.

2. Impact Prediction

The types of impacts should be identified (direct, indirect, short-term, long-term, construction, operational, decommissioning effects, cumulative effects etc).

3. Assessment of Significance

Following impact prediction, it is necessary to assess whether there will be adverse effects on the integrity of the site, as defined by the conservation objectives and status of the site. The precautionary principle should be applied. The focus of the NIS should be on demonstrating objectively that there will be no adverse effects on the integrity of the Natura 2000 site resulting from the construction, operation, or decommissioning stages of the project or the implementation of the plan. Where this cannot be demonstrated, adverse effects must be assumed.

4. Mitigation Measures

Mitigation measures may be proposed so that significant effects on the integrity of the Natura 2000 site are avoided. If no residual adverse effects remain, then the plan or project may proceed.

5. AA Conclusion

The competent authority must produce an AA Conclusion Statement. If the competent authority considers that residual adverse effects remain, then the plan or project may not proceed without continuing to Stage 3 of the AA process.

1. Description of the Site and Proposed works

2.1 Description and Location of the Site

The proposed project is due to take place on the Borough of Limerick, Bridge, that crosses the City Canal on Park Road, in Limerick City. There is a public amenity area to the west of the bridge, that allows the public views of the canal. It is in the bounds of Limerick City to the east of the city centre.

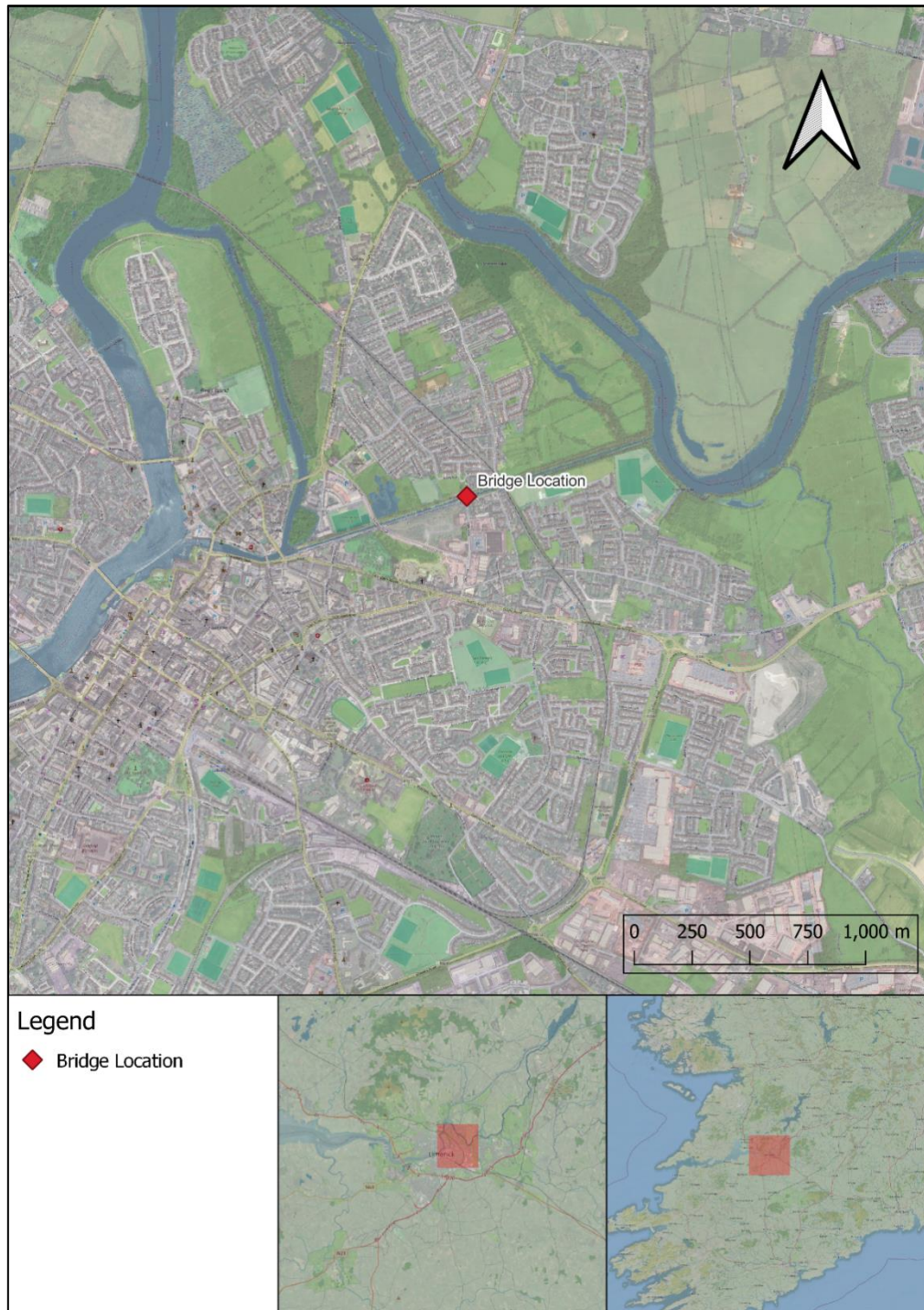


Figure 1. Map of site location.

1.2 Proposed Works

Problems with structure

The steel that forms the deck of the bridge is heavily corroded. Both in the span and cross sections (see figure 2 below). The stone structures (arch, spandrel walls, parapet, wing walls and abutments) of the bridge are intact and will not need repairs. There are 2 no. watermains crossing the bridge. 1 No. 3" cast iron pipe and 1 No. 9" asbestos pipe.



Figure 2. Heavily corroded steel structures in the bridge deck.

Client: Limerick City and County Council

Project: Proposed bridge repairs on Park Road, Limerick City.

Document: Appropriate Assessment

and the corroded steel itself. Once the damaged sections are removed, a new deck will be put in place and a new road surface will be laid.

The process will be as follows:

- A site compound will be set up and the works area fenced off. See location in Figure 4.
- The old road surface will be removed by digger and loaded into trucks for removal from the area.
- Once the road surface is removed the old steel that makes up the bridge deck will be removed.
- Once all the old damaged structures are removed the new deck can be put into place.
- The precast MY beams will be lowered and concrete pour will fix them in place and create the surface for the road
- A tarmacadam road surface 100mm thick will be laid
- The water mains pipes will be re-attached to the underside of the bridge.

2. Natura 2000 Sites and Proposal

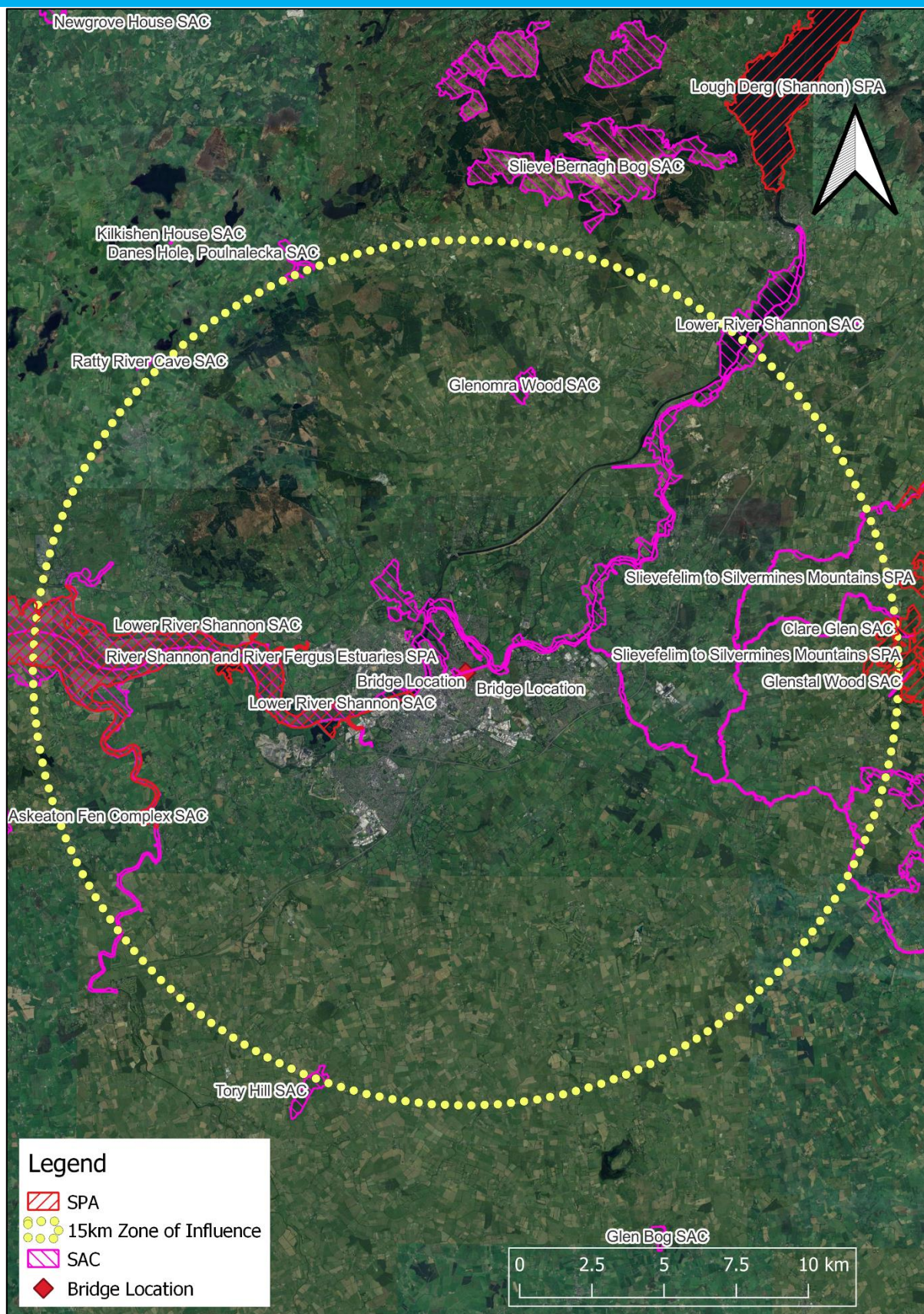


Figure 5. Map of 15km zone of influence, showing Natura 2000 sites that fall within it.

3.1 Natura 2000 Sites considered in this Appropriate Assessment

Natura Site	Distance between study site and Natura 2000 site	Included for further Assessment	Rationale for exclusion/inclusion from/for further assessment
Lower River Shannon SAC (002165)	Within this SAC	Yes	The site lies within this SAC; therefore, it is included for further assessment based on any potential negative impacts that might occur.
Clare Glen SAC (000930)	~14.3km	No	There is no hydrological connection between the SAC and the proposed works. It is located ~14.3km away over land. As such there is no room for the proposed works to cause the SAC any significant negative impacts.
Glenomra Wood SAC (001013)	~9.5km	No	There is no hydrological connection between the SAC and the proposed works. It is located ~9.5km away over land. As such there is no room for the proposed works to cause the SAC any significant negative impacts.
Tory Hill SAC (000439)	~14.45km	No	There is no hydrological connection between the SAC and the proposed works. It is located ~14.5km away over land. As such there is no room for the proposed works to cause the SAC any significant negative impacts.
Glenstall Wood SAC (001432)	~14.7km	No	There is no hydrological connection between the SAC and the proposed works. It is located ~14.5km away over land. As such there is no room for the proposed works to cause the SAC any significant negative impacts.
River Shannon and River Fergus Estuaries SPA (004077)	~2km	Yes	There is a hydrological connection between the site and this SPA. It is just 2km downstream of the proposed works, therefore, it is included for further assessment based on any potential impacts that might occur.
Slievefelim to Silvermines Mountains SPA (004165)	~13.8km	No	There is no hydrological connection between the SAC and the proposed works. It is located ~13.8km away over land. As such there is no room for the proposed works to cause the SAC any significant negative impacts.

3. Natura 2000 Sites and Potential Impacts

4.1 Lower River Shannon SAC

This very large site stretches along the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120 km. The site thus 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 vast majority of the surface area is estuarine, however, the site also encompasses extensive river corridors, and so as a whole the site is varied in nature.

This site is of great ecological importance. It is designated for 11 marine/estuarine habitats, two terrestrial habitats, one freshwater habitat, 5 freshwater species, one marine mammal, and one semi-aquatic mammal. It includes the largest estuarine habitat in the country.

Qualifying Interests of Site	Assessment of Potential Impacts	Mitigation Required
Sandbanks which are slightly covered by sea water all the time [1110]	According to the Conservation Objectives Document by the NPWS CO0002165 these habitats exist far out in the estuary, approximately 80km away from the proposed works. Even without mitigations, any silts/sediments created during the proposed works do not have the potential to cause any negative impacts, given the distance away.	No
Estuaries [1130]	These habitats are dependent on sediment from the rivers that feed them. Even without mitigations, any silts/sediments created during the proposed works do not have the potential to cause any negative impacts, due to the nature of the habitats.	No
Mudflats and sandflats not covered by seawater at low tide [1140]	These habitats are dependent on sediment from the rivers that feed them. Even without mitigations, any silts/sediments created during the proposed works do not have the potential to cause any negative impacts, due to the nature of the habitats.	No
Coastal lagoons [1150]	According to the Conservation Objectives Document by the NPWS CO0002165 these habitats exist far out in the estuary, approximately 24km away from the proposed works. Even without mitigations, any silts/sediments created during the proposed works do not have the potential to cause any negative impacts, given the distance away.	No
Large shallow inlets and bays [1160]	According to the Conservation Objectives Document by the NPWS CO0002165 these habitats exist far out in the estuary, approximately 25km away from the proposed works. Even without mitigations, any silts/sediments created during the proposed works do not have the potential to cause any negative impacts, given the distance away.	No
Reefs [1170]	According to the Conservation Objectives Document by the NPWS CO0002165 these habitats exist far out in the estuary, approximately 32km away from the proposed works. Even without mitigations, any silts/sediments created during the proposed works do not have the potential to cause any negative impacts, given the distance away.	No
Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows [1330] Mediterranean salt meadows [1410]	All of these habitats are coastal features. Silt/ sediment input from the proposed works does have the potential interfere with them or their correct functioning. Any silts/sediments the works could potentially introduce would have settled out of the water in the estuary before having any chance of negatively effecting these habitats. The main threats to these habitats are erosion and/or interruptions to the sediment regime from freshwater bodies in closer association with each respective habitat (i.e. from smaller rivers that enter sea through these habitats). As such, there are no likely potential negative effects foreseen on these habitats.	No
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]	The NPWS Conservation Objective documents has mapped the species opposite-leaved pondweed <i>Groenlandia densa</i> as being present in this stretch of canal. During a site survey there were no specimens of the plant found to be growing anywhere near the bridge where works are to be carried out. This species is sensitive to pollution (pH, hydrocarbons) and but its main threat is competition from other plant species. It grows fully submerged in the water column. Due to the high nutrient contents of the water in the canal there is a proliferation of duckweed (<i>Lemna spp.</i>) growth. This growth is covering the surface preventing light from reaching beneath the surface, effectively starving any opposite-leaved	Yes

	pondweed that might have been there. The plant could still potentially be present upstream or downstream. The mitigation measures to protect the water quality will ensure that no potential impacts on this species occurs.	
Molinia meadows on calcareous, peaty or clayey-silt-laden soils [6410]	This habitat does not exist within the site, nor is it the type of habitat that could be damaged due to being hydrologically connected to a project of this size and nature.	No
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> [91E0]	This habitat does not exist within the site.	No
Freshwater Pearl Mussel [1029]	The proposed works are due to take place in a canal that is a short distance from the Shannon Estuary. There is no suitable freshwater pearl mussel habitat in the canal. Due to there being no suitable habitat no negative effects are foreseen due to the works	No
Brook Lamprey [1096]	All of these species have the potential to be negatively affected by water quality issues they may arise as a result of the project taking place, without relevant mitigation measures being put in place. In order to repair the bridge heavy ground works will have to take place, to remove the pre-existing road and bridge deck. New steel and concrete will then be fixed in place and a new road surface will be constructed. All of these actions have the potential to introduce cementitious materials, along with silts/sediments and hydrocarbons from the machinery into the canal. Whilst these actions are unlikely to affect any of the spawning gravels used by these organisms, given the nature of the water body being a canal 1km away from the estuary, they could introduce chemical pollutants (cement, tarmacadam, hydrocarbons) that could negatively affect water quality in the estuary, which could negatively affect any of these species which could be migrating up or downstream in the estuary	Yes
River Lamprey [1099]		
Salmon [1106]		
Sea Lamprey [1095]		
Common Bottlenose Dolphin [1349]	This species exists out in the estuary and such no negative effects are envisaged.	No
<i>Lutra lutra</i> (Otter) [1355]	There is no otter recorded in the vicinity of the proposed works.	No

4.2 River Shannon and Fergus Estuaries SPA

The site has vast expanses of intertidal flats which contain a diverse macro- invertebrate community, e.g. *Macoma-Scrobicularia-Nereis*, which provides a rich food resource for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. Elsewhere in the site the shoreline comprises stony or shingle beaches.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Whooper Swan, Light- bellied Brent Goose, Shelduck, Wigeon, Teal, Pintail, Shoveler, Scaup, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank and Black-headed Gull. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this

SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Qualifying Interests of the Site	Assessment of Potential Impacts	Mitigation Required
Cormorant (<i>Phalacrocorax carbo</i>) [A017]	There is no suitable forage, nesting or roosting habitats in the footprint of the proposed works. In the worse case scenario of sediment being released into the canal, it would not be enough to seriously undermine the main feeding habitats of these birds located further out in the estuary.	No
Whooper Swan (<i>Cygnus cygnus</i>) [A038]		
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]		
Shelduck (<i>Tadorna tadorna</i>) [A048]		
Wigeon (<i>Anas penelope</i>) [A050]		
Teal (<i>Anas crecca</i>) [A052]		
Pintail (<i>Anas acuta</i>) [A054]		
Shoveler (<i>Anas clypeata</i>) [A056]		
Scaup (<i>Aythya marila</i>) [A062]		
Ringed Plover (<i>Charadrius hiaticula</i>) [A137]		
Golden Plover (<i>Pluvialis apricaria</i>) [A140]		
Grey Plover (<i>Pluvialis squatarola</i>) [A141]		
Lapwing (<i>Vanellus vanellus</i>) [A142]		
Knot (<i>Calidris canutus</i>) [A143]		
Dunlin (<i>Calidris alpina</i>) [A149]		
Black-tailed Godwit (<i>Limosa limosa</i>) [A156]		
Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]		
Curlew (<i>Numenius arquata</i>) [A160]		
Redshank (<i>Tringa totanus</i>) [A162]		
Greenshank (<i>Tringa nebularia</i>) [A164]		
Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]		
Wetland and Waterbirds [A999]		

4.4 Cumulative Impacts

Due to the proposed works being located in Limerick City there are myriad other planning applications in progress. If this project was to commence without mitigations in place there would be scope for these projects to have cumulative negative impacts on the Lower River Shannon SAC in which the site is located.

5. Conclusion of Screening

The proposed works on the Borough of Limerick, Bridge must be screened in for appropriate assessment with regard to the Lower River Shannon SAC, because there is scientific uncertainty as to the absence of significant effects. Further assessment is required to determine whether the project is likely to adversely affect the integrity of the Natura 2000 site. This assessment will be presented in a Natura Impact Statement (NIS).

6. Natura Impact Statement

6.1 Assessment of Effects

Site-specific conservation objectives (CO's) are available for Lower River Shannon SAC. For the conservation interests identified as being potentially affected for each Natura 2000 site at Stage I, the potential for impacts to each individual conservation objective have been assessed in the following sections. These tables determine the need for mitigation through Stage 2 NIS.

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
Brook lamprey <i>Lampetra planeri</i>	Distribution	Access to all water courses down to first order streams	This project will not impede the movement of brook lamprey, therefore, their distribution and access to all water courses will not be interfered with.	No
	Population structure of juveniles	At least three age/size groups of brook/river lamprey present	Lamprey can be present as juveniles for several years after hatching from eggs, and as adults before spawning. Brook Lamprey tends to spawn at the downstream end of pools, but often in smaller rivers and in slightly shallower and slower flowing water building a nest in sandy or gravelly sediment. The construction phase of the project is unlikely to disrupt any spawning locations as they are located further upstream, however, there is the potential for the release of chemical pollutants (cement, tarmacadam, hydrocarbons) which could negatively affect the brook lamprey by altering the pH (interfering with biological process) and directly poison them (hydrocarbons).	Yes

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
	Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m ²	Juveniles live buried in silt beds. The construction phase of the project could potentially result in release of pollutants in the main channel and affect the quality of the water associated with the silt beds. Therefore, based on the precautionary principle, there is potential for this conservation objective to be negatively affected	Yes
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	There is no scope for this project to negatively impact spawning gravels due to the canal's close proximity to the bay, and the lack of spawning gravels between the site and the bay.	No
	Availability of juvenile habitat	More than 50% of sample sites positive	Juvenile habitat consists of silt beds in slower-flowing reaches of the river. The project will not affect the stability of the substrate. The construction phase of the project could potentially result in release of pollutants in the main channel and affect the quality of the water associated with the silt beds. Therefore, based on the precautionary principle, there is potential for this conservation objective to be negatively affected.	Yes
River Lamprey <i>Lampetra fluviatilis</i>	Distribution	Access to all water courses down to first order streams	Passage through the section of river under the bridge will be maintained at all times throughout the works, allowing lamprey to move freely upstream.	No
	Population structure of juveniles	At least three age/size groups of brook/river lamprey present	Lamprey can be present as juveniles for several years after hatching from eggs, and as adults before spawning. River Lamprey tend to spawn at the downstream end of pools, where there is a swift current and prefer building a nest in sandy or gravelly sediment. The construction phase of the project is unlikely to disrupt any spawning locations as they are located further upstream, however, there is the potential for the release of chemical pollutants (cement, tarmacadams, hydrocarbons) which could directly affect the river lamprey by altering the pH (interfering with biological process) of the water and directly poison them (hydrocarbons).	Yes

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
	Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m ²	Juveniles live buried in silt beds. The construction phase of the project could potentially result in release of pollutants in the main channel and affect the quality of the water associated with the silt beds. Therefore, based on the precautionary principle, there is potential for this conservation objective to be negatively affected.	Yes
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	There is no scope for this project to negatively impact spawning gravels due to the canal's close proximity to the bay, and the lack of spawning gravels between the site and the bay.	No
	Availability of juvenile habitat	More than 50% of sample sites positive	Juvenile habitat consists of silt beds in slower-flowing reaches of the river. The project will not affect the stability of the substrates. The construction phase of the project could potentially result in release of pollutants in the main channel and affect the quality of the water associated with the silt beds. Therefore, based on the precautionary principle, there is potential for this conservation objective to be negatively affected.	Yes
Atlantic Salmon <i>Salmo salar</i>	Distribution: extent of anadromy (% of river accessible)	100% of river channels down to second order accessible from estuary	There will be no barrier to fish pass created during the works.	No
	Number of adult spawning fish	Conservation Limit (CL) for each system consistently exceeded	Atlantic Salmon require clean gravels for spawning. There are no spawning gravels between the site and the bay, therefore the works don't have the potential to negatively impact on the quality of spawning habitats.	No
	Salmon fry abundance (Number of fry/5 minutes electrofishing)	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling	There is potential for water quality impacts and therefore a potential effect on juvenile salmon.	Yes
	Out-migrating smolt abundance (Number)	No significant decline	Any impacts on numbers of young salmon as outlined above will affect out-migrating smolt abundance.	Yes
	Number and distribution of redds	No decline in number and	This section of river has no suitable spawning gravels and	No

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
	(Number and occurrence)	distribution of spawning redds due to anthropogenic causes	there are none located between the site and the bay.	
	Water quality (EPA Q value)	At least Q4 at all sites sampled by EPA	The proposed works have the potential to introduce sediment and pollutants to the watercourse as a result of the proposed works, reducing water quality.	Yes

6.2 Mitigations

The bridge spans a heavily polluted canal and in order to avoid further degradation of the habitat a few simple mitigations will be required to protect the water quality of the canal and the rest of the SAC further downstream.

6.2.1 Control of sediments

In order to capture any debris created during both, the removal of the damaged bridge deck and the installation of the new bridge deck, we recommend the use of a scaffolding crash deck to be placed under the bridge throughout the duration of the works. As the canal is heavily degraded below, the placement of the scaffold legs is not an issue, the only stipulation we have regarding its placement is that it extends at least 1.5m either side of the bridge arch, and fully covers the entire underside of the bridge that is exposed to the canal. This is to ensure any debris which could possibly come over the parapet is also captured. This crash deck is then to be covered in a tarp (or similar), extending at least 30cm up the abutment walls under the arch, to capture any falling debris.

6.2.2 Cement Control and Wheel Washing

Wet cement/grout pollution is silty and very alkaline (high pH) and can have a serious effect on watercourses and aquatic life. Concrete should not enter water. The following measures will be implemented regarding concrete:

- Concrete pouring / mixing will only take place in dry weather conditions. It will be suspended if high-intensity local rainfall events are forecast (e.g. >10 mm/hr, >25 mm in a 24-hour period or high winds).
- In the unlikely event that concrete during the pour should escape the form work, the covered crash deck will prevent it from entering the canal.
- Concrete truck will not be allowed to wash out on site. It will return to the yard where they have the facilities in place to capture and treat the contaminated water.
- Cement bags will be stored in containers in the site compound. They will be covered with a thick plastic in order to prevent spread by wind.

A concrete operator trained and experienced with a proven track record in working in rivers will be used to undertake concrete works.

6.2.3 Mains water diverted

One of the pipes that crosses the bridge is made of asbestos. Asbestos cannot be cut due to the human health hazards associated with the dust. This will mean the whole section of pipe will have to be replaced, from collar to collar. Uisce Eireann will be responsible for diverting the water mains and replacing the asbestos pipe. The project foreman will be responsible for liaising with Uisce Eireann to accomplish this. Asbestos causes lung related issues when it is in the air because of its sharp crystalline structure, however it is not known to cause health issues when suspended in water

6.2.4 Waste management

Waste steel, concrete and tarmacadam from the old bridge deck will be sorted and removed from site by a licensed contractor and taken for recycling in the appropriate facility. The EPA is the competent authority on issues regarding the reuse and recycling of these materials. The council or whatever contractor is carrying out the works should contact the EPA, to ensure each of these materials is recycled in the correct manner.

Similarly, any waste lubricants and oils generated on site, must be collected and stored in adequately banded containers on site, before collection by a licensed contractor and removal to an appropriate recycling facility. The EPA is the competent authority on issues regarding the reuse and recycling of these materials. The council or whatever contractor is carrying out the works should contact the EPA, to ensure each of these materials is recycled in the correct manner.

There will be no discharge of effluent or waste-water on site.

6.2.5 Disruption to breeding

Although the site does not have optimal or even reasonable lamprey/salmonid spawning habitat within or adjacent to them, the potential for disruption is still there in the form of incidence of suspended solids into the river system. In order to mitigate against disruption to lamprey (brook and river) during the breeding season, works shall be carried out outside their breeding season. In order to mitigate against disruption to salmonids, works shall be completed before their breeding season commences.

Making the ideal time for works to be carried out in August/September

6.2.6 Spread of invasive plants

Prior to being deployed for the current works, all machinery to be used for the works shall be washed thoroughly in the designated washing area in the Contractors Yard. A power washer is to be used, with particular attention to be paid to the tracks and bucket of the excavator, trailer decks and the wheels of any vehicles to be used. The site ecologist will inspect all plant when it arrives onsite and any remaining dirt with the potential to contain seed/rhizomes will be removed.

6.2.7 Ecological clerk of works

In order to ensure the delivery of the mitigations set out within the current report, and hence that there are no impacts to the conservation interests of the Natura 2000 network, a suitably qualified and experienced ecologist shall monitor the works.

7. Conclusion

The proposed mitigation measures have been selected to avoid or minimise the risk that pollutants could reach the canal in sufficient quantities to cause significant impacts upon habitats or species in the Lower River Shannon SAC. The site foreman will be responsible and liable for the implementation and monitoring of the proposed mitigations in liaison with the ecological clerk of works.

The measures outlined will significantly reduce the likelihood and magnitude of pollution events occurring, thus preventing a significant negative impact upon the conservation status of the qualifying interests (aquatic fauna and habitats) of the SAC either alone or in combination with other nearby developments. As a result, we conclude that the proposed development will not cause any significant negative impacts upon the integrity of any sites that are part of the Natura 2000 network.

8. Bibliography

Department of Environment, Heritage & Local Government (DoEHLG). 2009. Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. DoEHLG, Dublin

Environment Agency's 'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003'

European Commission. 2001. Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – European Commission Methodical Guidance on the provisions of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC. European Commission DG Environment, Oxford UK.

European Commission (2018). Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC. Brussels, 21.11.2018 C(2018) 7621 final.

Environmental Protection Agency (EPA). 2013. Integrated Biodiversity Impact Assessment – Streamlining AA, SEA and EIA Processes: Practitioner's Manual. EPA STRIVE Programme 2007–2013; Report Series No. 106. EPA, Wexford.

EPA(2020) EPA map viewer. Last accessed on 05.07.2024 at <https://gis.epa.ie/EPAMaps>

NPWS (2018) Conservation Objectives: Clare Glen SAC 000930. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2018) Conservation Objectives: Glenomra Wood SAC 001013. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2018) Conservation Objectives: Glenstal Wood SAC 001432. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2012) Conservation Objectives: Lower River Shannon SAC 002165. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2022) Conservation Objectives: Slievefelim to Silvermines Mountains SPA 004165. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2018) Conservation Objectives: Tory Hill SAC 000439. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

Client: Limerick City and County Council

Project: Proposed bridge repairs on Park Road, Limerick City.

Document: Appropriate Assessment

NPWS (2021) River Shannon and River Fergus Estuaries SPA 004077. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2019) The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments