



APPROPRIATE ASSESMENT

Project

This document relates to the Appropriate Assessment process undertaken for proposed bridge repairs on Galbally Bridge, Mandeville Park, Moorabbey, Co. Tipperary

Ecology Research and Solutions Ltd.

Table of Contents

Statement of Competence	2
1. Introduction	2
1.1 Appropriate Assessment Process	2
1.2 Methodology	3
Field Survey	5
2. Description of the Site and Proposed works.....	6
2.1 Description and Location of the Site.....	6
2.2 Proposed Works.....	6
3. Natura 2000 Sites and Proposal.....	10
3.1 Natura 2000 Sites within the Zone of Influence	10
Moanour Mountain SAC (002257).....	10
River Barrow and River Nore SAC (002162)	10
3.2 Natura 2000 Sites and their designations	11
3.3 Natura 2000 Sites excluded from further assessment.....	13
3.4 Sites Included for Further Assessment	13
4. Natura 2000 Sites and Potential Impacts	14
4.1 Lower River Suir SAC	14
4.2 Cumulative Impacts.....	15
5. Conclusion.....	15
6. Natura Impact Statement.....	15
6.1 Assessment of Effects.....	15
6.2 Mitigation Measures	19
6.2.1 Working in the dry	19
6.2.2 Cement/Grout Control and Wheel Washing.....	20
6.2.3 Waste management.....	20
6.2.4 Timing	20
6.2.5 Disruption to breeding	20
6.2.6 Spread of invasive plants.....	21
6.2.7 Spread of crayfish plague	21
6.2.8 Potential for Ecological improvement to the River	21
6.2.9 Ecological clerk of works	21
7 Bibliography	22

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.

1. Introduction

Ecology Research and Solutions was commissioned by Limerick City and County Council to prepare a document for the Appropriate Assessment process for proposed repair works on the Galbally Bridge which crosses the Aherlow River at Mandeville Park, Moorabbey, Co. Tipperary.

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.

Field Survey

Date: 5/06/2024

Surveyors: Rory Dalton and James Ambrose

Weather: Calm and mild, Temperature 16°C.

An initial site investigation was completed to gain an understanding of the ecology of the site and triage for further surveying.

The investigation identified cracks and holes on the bridge some of which may be suitable for the presence of bats. As a result of this finding, a specific bat survey was completed on a later date. An active bird nest was identified within a hole on the structures east elevation (downstream). Small mammal footprints were present under the arch four however they appeared to be aged indicating mammal activity to be low and infrequent in the vicinity of the bridge. The flat concrete riverbed beneath the bridge does allow for a fish passage however it is not optimal due to the laminar flow distribution across the riverbed.

Date: 11/06/2024

Surveyors: Tadhg Healy and James Ambrose

Weather: Calm and mild, Temperature 14°C.

All arch barrels of the bridge were inspected using a Bosch GIC 120C inspection camera. The camera head is 8mm wide. Bats are known to use holes no smaller than 10mm in order to roost. Based on this, the camera head was used as a guide as to which cracks in the bridge to inspect for bat activity. All holes that were deemed suitable as a roost were inspected on the day.

No bats were observed to be using any of the cracks in the bridge for roosting.

A follow up emergence survey was conducted the same evening, in case any roosting bats were missed using the inspection camera.

No bats were observed emerging from the bridge. Both Natterer's Bat and Daubenton's Bat were found to be flying upstream of the bridge, but none were observed roosting or emerging from the bridge.

2. 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 Galbally Bridge, Mandeville Park, Moorabbey, Co. Tipperary. The bridge is located on the Aherlow River within the River Suir catchment area, approximately 1.2km east of Galbally village on the Limerick, Tipperary county border. The road is referred to locally as the Bansha to Garryspillane road. The Aherlow River is a tributary of the River Suir and the Galbally Bridge is approximately 6.5km upstream from the beginning of the Lower River Suir SAC. The national road R663 passes over the bridge.

The Galbally Bridge is a 21m span masonry bridge with four main arches and a 4.9m wide road on its topside. Three of the main arches have a river flow present in normal flow conditions. The fourth arch is expected to have a flow present during high and/or flooding water level conditions. The bridge has one additional overflow arch/channel on its north end, approximately 8m from the closest main arch. This arch is completely buried.

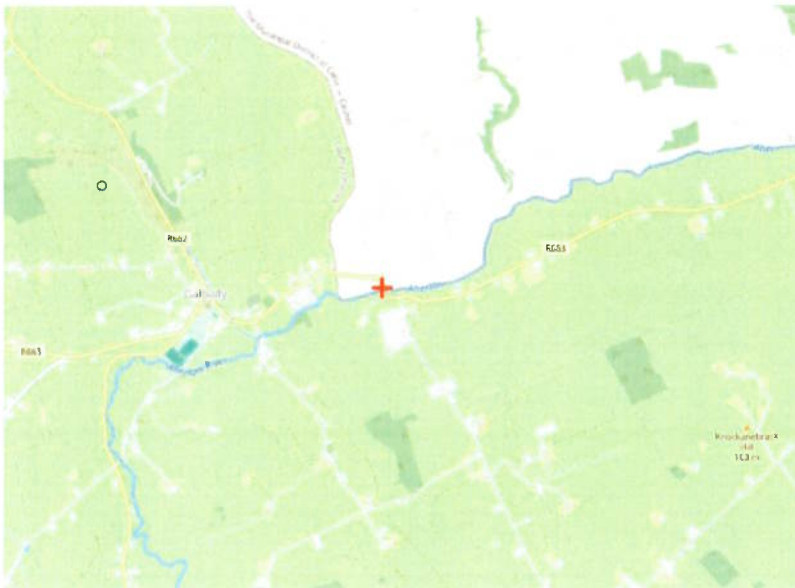


Figure 1. Map of site location – Galbally Bridge .

2.2 Proposed Works

Problems with the structure

The bridge piers, abutments and the undersides of all four arches, have radial and vertical cracks present. Some cracks have associated stone and/or mortar loss (See Figure 2, Figure 3 and Figure 4). The parapets have various location of small holes and dislodged mortar. Both upstream and downstream abutments have vegetation growing on them including one 2.5m tree growing on top of one cutwater (Figure 5). Further deterioration to the bridge structure, will eventually result in a structure failure where it will be both unusable and unsafe to the general public and users.



Figure 2. Cracks, holes and deteriorating stone and mortar on the underside of one of the arches.



Figure 3. A large crack present on the underside of one of the arches.

Client: Limerick City and County Council
Project: Proposed bridge repairs on Galbally Bridge, Mandeville Park, Moorabbey, Co. Tipperary
Document: Appropriate Assessment



Figure 4. Cracks, holes and dislodged mortar on the underside of one of the arches.

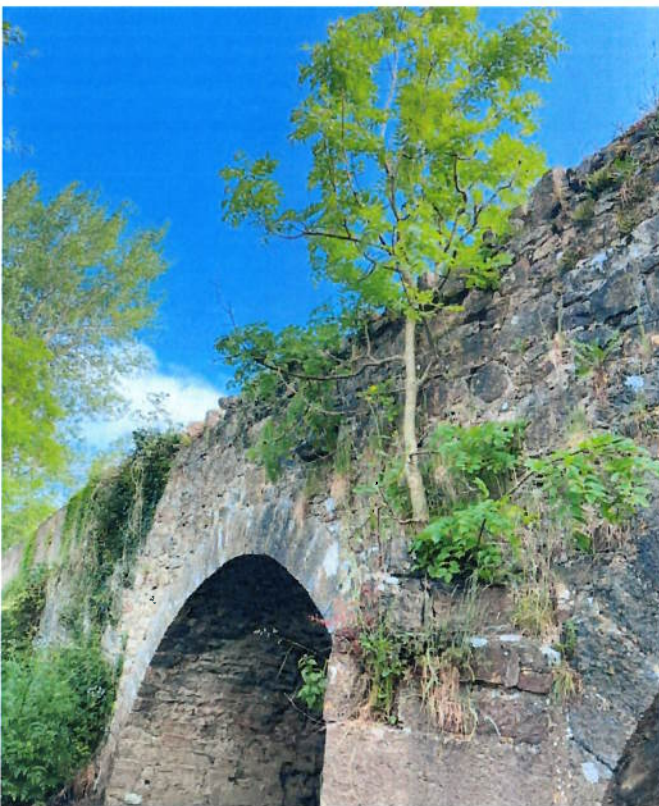


Figure 5. Vegetation present on the upstream bridge abutment and cutwater.

Client: Limerick City and County Council

Project: Proposed bridge repairs on Galbally Bridge, Mandeville Park, Moorabbey, Co. Tipperary

Document: Appropriate Assessment

Outline Construction Methodology

- In order to repair the bridge cracks, holes and dislodged mortar within the arch barrels stainless steel stitching will be inserted through the voussoirs in the arch and connected to the intrados, after a high strength cement/grout mix will be used. It will be sprayed under high pressure into the cracks. All other cracks will then be pointed.
- The piers foundations will be underpinned and grouted.
- All spandrel and parapet walls will be repointed.
- Tie bars will be inserted into each arch, there will be two in each arch, their positions can be seen above in figure 5.
- Vegetation removal on each elevation
- The riverbed will be strengthened with stonework and rock armour

3. Natura 2000 Sites and Proposal

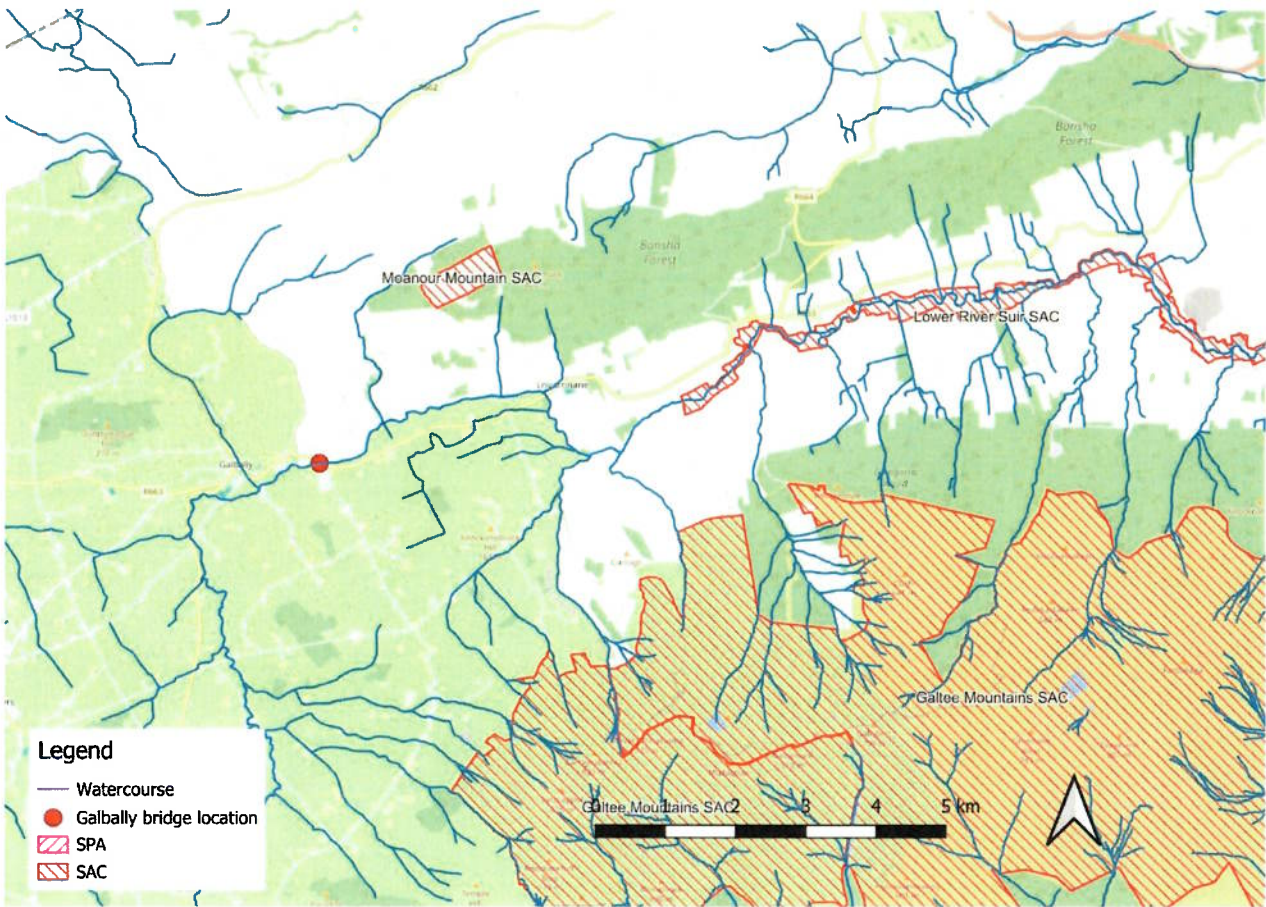


Figure 2. Map showing bridge location and Natura 2000 sites in the vicinity.

3.1 Natura 2000 Sites within the Zone of Influence

Natura Site	Distance between study site and Natura 2000 site	Hydrological/ecological connection?
Lower River Suir SAC (002137)	~5km	Yes, 6.8km channel length
Galtee Mountains SAC (000646)	~4km	No
Moanour Mountain SAC (002257)	~3km	No
River Barrow and River Nore SAC (002162)	~80km	Yes, 125km channel length through the Lower River Suir SAC at the combined estuary

In addition to the Natura 2000 sites listed above, the Seas off Wexford SPA (004237) and Hook Head SAC (000764) are both positioned at the outer estuary of the River Suir. While both are hydrologically connected

to the proposed site, the small scale of the proposed works combined with the distance of the hydrological connection (140km) eliminates the potential for the proposed works, to have a negative impact. Both Natura 2000 sites are therefore excluded from this Appropriate Assessment.

3.2 Natura 2000 Sites and their designations

Natura Site	Qualifying Interests	Distance	Connections (Source-Pathway-Receptor)
Lower River Suir SAC (002137)	[1330] Atlantic Salt Meadows [1410] Mediterranean Salt Meadows [3260] Floating River Vegetation [6430] Hydrophilous Tall Herb Communities [91A0] Old Oak Woodlands [91E0] Alluvial Forests* [91J0] Yew Woodlands* [1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) [1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>) [1095] Sea Lamprey (<i>Petromyzon marinus</i>) [1096] Brook Lamprey (<i>Lampetra planeri</i>) [1099] River Lamprey (<i>Lampetra fluviatilis</i>) [1103] Twaite Shad (<i>Alosa fallax</i>) [1106] Atlantic Salmon (<i>Salmo salar</i>) [1355] Otter (<i>Lutra lutra</i>)	5km over land, 6.8km channel length	Connected hydrologically
Galtee Mountains SAC (000646)	[4010] Wet Heath [4030] Dry Heath [4060] Alpine and Subalpine Heaths [6230] Species-rich <i>Nardus</i> Grassland* [7130] Blanket Bogs (Active)* [8110] Siliceous Scree [8210] Calcareous Rocky Slopes [8220] Siliceous Rocky Slopes	4km	No Hydrological Connection
Moanour Mountain SAC (002257)	[4010] Wet Heath [4030] Dry Heath	3km	No Hydrological Connection
River Barrow and River Nore SAC (002162)	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]	80km over land, 125km channel length	Connected hydrologically at the combined estuary

Client: Limerick City and County Council

Project: Proposed bridge repairs on Galbally Bridge, Mandeville Park, Moorabbey, Co. Tipperary

Document: Appropriate Assessment

Natura Site	Qualifying Interests	Distance	Connections (Source-Pathway-Receptor)
	<p>Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax fallax (Twaité Shad) [1103] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355] Trichomanes speciosum (Killarney Fern) [1421]</p>		

3.3 Natura 2000 Sites excluded from further assessment

Natura 2000 Site	Rationale for exclusion from further assessment
Galtee Mountains SAC (000646)	The site of the proposed works is 4km from the site of the SAC. The Qualifying Interests will not be affected by the works due to the small scale and nature of the development. There is no hydrological connection to the site and the nature of the works have no potential to cause negative impacts to the SAC.
Moanour Mountain SAC (002257)	The site of the proposed works is 3km from the site of the SAC. The Qualifying Interests will not be affected by the works due to the small scale and nature of the development. There is no hydrological connection to the site and the nature of the works have no potential to cause negative impacts to the SAC.
River Barrow and River Nore SAC (002162)	The site of the proposed works is 125km upstream from the site of the SAC. The site is hydrologically connected for approximately 10km along the River Suir, River Barrow and River Nore combined estuary. The Qualifying Interests will not be affected by the works due to a combination of the distance of the hydrological connection, positioning of the hydrological connection and small scale of the works. The weak hydrological connection to the site and the small scale and duration of the works ensure there is no potential to cause negative impacts or significant effects to the conservation objectives of the SAC.

3.4 Sites Included for Further Assessment

Natura 2000 Site	Rationale for further assessment
Lower River Suir SAC (002137)	The site has a hydrological connection to the Lower River Suir SAC. This project has the potential to impact on water quality, which has the potential to negatively affect a number of the qualifying interests of the SAC. Explained in more detail in section 4 Natura 2000 Sites and Potential Impacts below.

4. Natura 2000 Sites and Potential Impacts

4.1 Lower River Suir SAC

Lower River Suir SAC consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford, and many tributaries including the Clodiagh in Co. Waterford, the Lingaun, Anner, Nier, Tar, Aherlow, Multeen and Clodiagh in Co. Tipperary. The Suir and its tributaries flow through the counties of Tipperary, Kilkenny and Waterford.

Qualifying Interests of Site	Assessment of Potential Impacts	Mitigation Required
[91A0] Old Oak Woodlands [6430] Hydrophilous Tall Herb Communities [91E0] Alluvial Forests* [91J0] Yew Woodlands*	These habitats do not exist within the site footprint of the bridge works, and the works are not of a scale or nature that would impact examples of these habitats further afield. As such, there will be no negative impacts or likely significant effects on these qualifying interests.	No
[3260] Floating River Vegetation	Typically, impacts to this habitat include direct habitat destruction. This habitat does not exist within the footprint of the study area, and so this impact does not apply. Severe siltation is another potential impact, and it could potentially happen to populations of this habitat downstream of the works, if the works were carried out without appropriate water quality mitigations. As such, there is the potential for negative effects.	Yes
[1103] Twaite Shad (<i>Alosa fallax</i>)	<i>"Twaite shad may spawn in, or just above, the tidal reaches of rivers, but many stocks spawn in freshwater well upstream of this Unlike salmonids, however, shads do not enter narrow streams even when these are accessible."</i> Maitland 2003. Due to this species aversion to narrow streams and their propensity toward spawning just upstream of tidal reaches, the section of stream where the bridge in question crosses is unsuitable for twaite shad. In the unlikely event that this species did use this section of watercourse, they would be protected by the water quality mitigations set out below. As such, no likely significant effects are envisaged for this species	No
[1330] Atlantic Salt Meadows [1410] Mediterranean Salt Meadows	These saltmarsh habitats do not exist within the footprint of the works, but instead exist downstream of Waterford City in the river estuary. The scale and nature of the works, the distance to the estuary (over 115km), in combination with the method in which it is being carried out ensure no significant negative impacts are envisaged for these habitats.	No
[1029] Freshwater Pearl Mussel	One Freshwater Pearl Mussel habitat has been identified within the Lower River Suir SAC. This is position on The Clodlugh River, a downstream tributary. As this species exists on The Clodlugh River upstream of where it joins the River Suir, there is no hydrological connection to the proposed work site and as a result no significant negative effects are envisaged for this species.	No
[1106] Atlantic Salmon (<i>Salmo salar</i>) [1095] Sea Lamprey (<i>Petromyzon marinus</i>) [1096] Brook Lamprey (<i>Lampetra planeri</i>) [1099] River Lamprey (<i>Lampetra fluviatilis</i>)	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. Although it is likely that little success of sea lamprey adults and river lamprey adults in passing the weirs in Clonmel in Lower River Suir SAC, however, their detailed assessment is included for those individuals that might get over the weirs. In order to fix the cracks and holes in the arches of the bridge, a cementitious grout mix will be injected into the voids in the bridge under high pressure. As the mix will be injected under pressure, there is a potential risk of the mixture escaping out other cracks and into the watercourse. When lime in cement reacts with water it creates a solution with a high pH	Yes

	of 12 to 13, this has the potential to negatively impact aquatic organisms. Either directly through burns, or indirectly by raising the pH of the water and interfering with cellular processes. Additionally, silts/sediments created during works could also clog gravels where juveniles spend their first few months of life, potentially suffocating and killing them.	
[1092] White-clawed Crayfish	Crayfish plague is already present in this catchment, however, the works have the potential to spread the disease to other catchments at the team of workers move onto another site to fix another bridge.	
[1355] Otter (<i>Lutra lutra</i>)	Otter is known to use the area, however, no holt or feature likely to be used as a holt was found within or near the works area during the initial site walkover. Due to the nature of the works, taking place during the day and passage under the bridge being available at all times, there is no need for mitigations to protect the otter from direct impacts. There is however the potential for indirect impacts due to the possibility of a reduction in prey availability due to ill treatment of the river with regard to water quality.	Yes

4.2 Cumulative Impacts

If this project was to commence without mitigations in place there would be scope for this project to have cumulative negative impacts on the Lower River Suir SAC, which is located downstream of the site.

5. Conclusion

The proposed works on the Galbally Bridge must move to the next stage of the appropriate assessment process, because there is scientific uncertainty as to the absence of significant effects with regard to the Lower River Suir SAC. Further assessment is required to determine whether the project is likely to have adversely affects on the integrity of this 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 the Lower River Suir SAC. For the conservation interests identified as being potentially affected for the Natura 2000 site at Stage 1, 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
European otter <i>Lutra lutra</i>	Distribution	No significant decline	Considering the scale of the proposed works, and the absence of breeding sites, the proposed works will not have a significant impact on the distribution of otter.	No
	Extent of terrestrial habitat	No significant decline. Area mapped and	The habitats along the banks within and in the vicinity of the works area are of limited breeding value to otter. As such,	No

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
		calculated as 116.17ha above high water mark (HWM); 726.61ha along river banks.	no significant impact on the extent of terrestrial habitat for otter will occur.	
	Extent of marine habitat	No significant decline. Area mapped and calculated as 712.27ha	There will be no reduction in the extent of marine habitat. Therefore, no impact will occur on the extent of marine habitat available for otter.	No
	Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 382.31km	There will be no reduction in the extent of freshwater habitat. Therefore, no impact will occur on the extent of freshwater habitat available for otter.	No
	Couching sites and holts	No significant decline	There are no suitable holts or couching sites within or adjacent to the works area. Otters may use the bridge as suspected otter tracks were found under the dry bridge arch. They should still be able to pass under the bridge as all the arches won't be blocked at the same time.	No
	Fish biomass available	No significant decline	The proposed works may result in the reduction of water quality which could reduce prey availability for otter.	Yes
	Barriers to connectivity	No significant increase.	The proposed works will not result in any barrier that would impede the movement of otter upstream or downstream of the proposed works. Therefore, the distribution extent of the population will not be impacted.	No
Brook lamprey <i>Lampetra planeri</i>	Distribution	Access to all water courses down to first order streams	This proposed works 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 proposed works could potentially result in sediment release during repairs and silt up clean gravels downstream and reduce oxygen levels to the eggs. Therefore, there is potential for this conservation objective to be negatively affected.	Yes
	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 proposed works 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

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	The proposed works could potentially result in sediment release from excavations and silt up clean gravels in the main channel and reduce oxygen levels to the eggs. Therefore, there is potential for this conservation objective to be negatively affected.	Yes
	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 proposed works 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. It is unlikely that river lamprey get up this far due to the presence of the weirs in Clonmel.	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, as adults before migration to sea and upon return migration for several months before spawning. The proposed works could potentially result in sediment release during repairs and silt up clean gravels downstream and reduce oxygen levels to the eggs. Therefore, there is potential for this conservation objective to be negatively affected.	Yes
	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 proposed works 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	The proposed works of the project could potentially result in sediment release and silt up clean gravels in the main channel and reduce oxygen levels to the eggs. Therefore, based on the precautionary principle, there is potential for this conservation objective to be negatively affected.	Yes
	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 proposed works could potentially result in release of pollutants in the main channel and affect the quality	Yes

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
			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.	
Sea Lamprey <i>Petromyzon marinus</i>	Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary	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 present	Lamprey can be present as juveniles for several years after hatching from eggs, as adults before migration to sea and upon return migration for several months before spawning. The proposed works could potentially result in sediment release during repairs and silt up clean gravels downstream and reduce oxygen levels to the eggs. Therefore, there is potential for this conservation objective to be negatively affected.	Yes
	Juvenile density in fine sediment	Juvenile density at least 1/m ²	Juveniles burrow in areas of fine sediment in still water. The proposed works 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	The proposed works of the project could potentially result in sediment release and silt up clean gravels in the main channel and reduce oxygen levels to the eggs. Therefore, based on the precautionary principle, there is potential for this conservation objective to be negatively affected.	Yes
	Availability of juvenile habitat	More than 50% of sample sites positive	Juvenile habitat consists of fine silt beds in still water. The proposed works will not affect the stability of the substrates. The proposed works 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, as no more than two arches will be blocked at one time, allowing the salmon free movement upstream.	No
	Number of adult spawning fish	Conservation Limit (CL) for each system consistently exceeded	Atlantic Salmon require clean gravels for spawning. Potential sediment as a result of the proposed works site could result in	Yes

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
			gravels becoming unsuitable for spawning.	
	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 (Number and occurrence)	No decline in number and distribution of spawning redds due to anthropogenic causes	This section of river has no suitable spawning gravels, but downstream gravels could be impacted by silts/sediments released during the works.	Yes
	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
[1092] White-clawed Crayfish	Distribution	No reduction from baseline. See map 7	Crayfish plague is already present in this catchment, however, the works have the potential to spread the disease to other catchments at the team of workers move onto another site to fix another bridge.	Yes
	Population structure: recruitment (Occurrence of juveniles and females with eggs)	Juveniles and/or females with eggs in all occupied tributaries	Crayfish plague is already present in this catchment, however, the works have the potential to spread the disease to other catchments at the team of workers move onto another site to fix another bridge.	Yes
	Negative indicator species	No alien crayfish species	No alien crayfish species will be introduced as part of the project	No
	Disease	No instances of disease	Crayfish plague is already present in this catchment, however, the works have the potential to spread the disease to other catchments at the team of workers move onto another site to fix another bridge.	Yes
	Water quality	At least Q3-4 at all sites sampled by EPA	The project has the potential to induce a short term decrease in water quality in the absence of water quality mitigations	Yes
	Habitat quality: heterogeneity	No reduction in habitat heterogeneity or habitat quality	No reduction in habitat heterogeneity or habitat quality is expected	No

6.2 Mitigation Measures

6.2.1 Working in the dry

A “dry cell” will be created to facilitate works on the arches of the bridge. The works at specific locations along the bridge will need to be staged to allow for this, as only a portion of the river can be sealed off at a time,

with flow conveyed through vacant spans. One span will be blocked at a time and work carried out on it. To do this, the river just upstream of the works will be blocked using sandbags. The dry cell will be easily achieved due to the downstream slope of the river. It may be necessary to adjust the plan outline of the barrier dependent on flows around it, in order to achieve safe access to the works area.

The dry cell will then be lined with plastic to capture any cement and sediment that is used during the repairs in each section. These will then be disposed of by a registered waste disposal company.

A crash-deck may be used in addition to the dry cell if to assist the capture of cement and sediment during works and further contain both.

6.2.2 Cement/Grout Control

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

- Cement/grout filling of the cracks shall not be carried out during forecasted periods of heavy rainfall. Weather forecasts will be monitored during the construction phase. The 24 hours advance meteorological forecasting service from Met Éireann will be used;
- To reduce the volume of cementitious water, only concrete chutes will be washed down onsite, at the landward side of the berm along the river;
- It is recommended that washout of cement chutes be carried out at an appropriate distance of 50m away from drains or watercourses and appropriately treated;
- No disposal of cement remnants will be permitted elsewhere on site; and

An experienced contractor with a proven track record in working in rivers will be used to undertake concrete works.

6.2.3 Waste management

Any waste generated during removal of loose pointing and paints, or any lubricants/oils will be collected and stored in proper waste containers at the site compound within a prefabricated bunded storage unit and will be removed and disposed of appropriately by the contractor for disposal to licensed landfill or to recycling.

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

6.2.4 Timing

It is important that the water barrier is functional at all times during the proposed repair works. Ample time between rainfall events and the river rising significantly enough to overflow the sandbag barriers must be allowed for. This lag time between rainfall and the river rising will allow for the dry cells to be cleared of cement and sediment, in the event that the rainfall is predicted to continue to a level that could threaten the integrity of the dry cell.

6.2.5 Disruption to breeding

Although the site no optimal or even reasonable lamprey/salmonid spawning habitat directly within, 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.

A nest was found in cracks in the bridge east elevation.

To avoid disruption to breeding birds and lamprey/salmonids it is recommended that the works take place outside the breeding times of these species, which is ideally in 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.

6.2.7 Spread of crayfish plague

The single most effective action to reduce the spread of the crayfish plague disease is to use the Check, Clean, Dry protocol. This should be done routinely after entering a stream or river.

CHECK, CLEAN and allow all equipment to thoroughly DRY-out, then dry for a further 48 hours.

If drying out equipment is not feasible, then equipment should be

EITHER:

Power Steam washed at a suitably high temperature (at least above 65 degrees).

OR

Disinfected using an approved disinfectant such as Milton (follow product label), Virkon Aquatic (3mg/L), Proxitane (30mg/L) or an iodine-based product for 15 minutes. Items difficult to soak can be power washed in the contractors yard or wiped down with disinfectant.

6.2.8 Potential for Ecological improvement to the River

During the initial site survey, it was determined that the flat concrete riverbed beneath the bridge allows for a fish passage however it is not optimal due to the flat flow distribution across the riverbed. Creating dry cells beneath the three arches with a constant flow (normal flow conditions) to complete the proposed works, allows for an enhancement to the fish passage. Fixing concrete lentils (or similar) to the flat concrete riverbed/apron of the bridge in a position to encourage flow through the centre of the arches or through the centre arch. The lentils should be positioned so as to funnel the water as it passes downstream through the bridge. This installation will create a more optimal fish passage resulting in the works having an overall positive ecological impact on the river. No mitigations measure additional to those implemented to complete the proposed works are required to complete this ecological improvements as the improvement can be completed without creating sediment or waste when completed within the dry cell.

6.2.9 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 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 09.08.2024 at <https://gis.epa.ie/EPAMaps>

NPWS (2017) Conservation Objectives: Lower River Suir SAC 002137. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2023) Site Synopsis: Lower River Suir SAC 002137. Revision 23. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2016) Conservation Objectives: Galtee Mountains SAC 000646. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2016) Site Synopsis: Galtee Mountains SAC 000646. Revision 16. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2019) Conservation Objectives: Moanour Mountain SAC 002257. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2016) Site Synopsis: Moanour Mountain SAC 002257. Revision 16. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2011) Conservation Objectives: River Barrow and River Nore SAC 002162. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2024) Site Synopsis: River Barrow and River Nore SAC 002162. Revision 24. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

Mark Murphy Consultancy Ltd. (2021) Galbally Bridge (TS-R663-002.00) Principal Inspection Report.

Maitland PS & Hatton-Ellis TW (2003). Ecology of the Allis and Twaite Shad. Conserving Natura 2000 Rivers Ecology Series No. 3. English Nature, Peterborough.

Client: Limerick City and County Council

Project: Proposed bridge repairs on Galbally Bridge, Mandeville Park, Moorabbey, Co. Tipperary

Document: Appropriate Assessment