

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.

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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. This document supersedes the previously issued Appropriate Assessment Report issued in 2024. The report was updated to consider the nature conservation concerns **2 – Disturbance to and loss to Daubenton’s bats roosts, 3 - Disturbance of Otters** and **4 - Issues related to Water Quality** listed on the Request for Further Information (RFI) from An Bord Pleanála, in relation to the proposed repair works.

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.

2. Field Surveys and Findings

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.

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Date: 18/07/2025

Surveyors: Rory Dalton, Michael O'Connor and James Ambrose

Weather: Dry. Partly cloudy, occasional sunshine, Temperature 17°C.

A detailed otter survey was carried out in accordance with the National Roads Authority (NRA) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes (2008). The survey area covered the suggested 100-metre stretches of the river upstream and downstream of Galbally Bridge, but actually extended to over 200m upstream and downstream of the bridge. The bridge resurvey was completed on 18/07. The site was reassessed by three ecologists. Changes to the general ecology of the study site were also assessed by comparing the findings to the 2024 survey.

Similarly to 2024 arch 4 (south end of bridge) was a dry arch with no river flow present (*Image 2-1*) and arch 1 to 3 had a moderate to fast river flow passing beneath. Arch 4 had a mostly dry earth floor with little vegetation throughout. These conditions were favourable to complete a footprint and general activity assessment of under the bridge. The majority of the tracks identified were rodent and bird tracks. Some larger mammal footprints were present however they appeared aged and disturbed making them unidentifiable (*Image 2-2*). A trial camera was deployed at this under this arch in a position that allowed the images to capture the full width of the arch.



Image 2-1 – Arch 4, south arch of bridge



Image 2-2 – Unidentifiable prints under arch 4 of bridge

The second stage of the otter survey involved an assessment for the signs of otter presence within a close proximity of the bridge.

The survey found no evidence of otter holts, couches, or active resting sites within this search area. Sprainting and foraging signs were minimal and did not indicate the presence of a regularly used otter territory in this section of the watercourse. Downstream, two spraints were identified however both were over 100m from the bridge. The closest spraint, identified at 125m downstream on a rock, appeared aged. The second spraint, identified at 160m from the bridge on a rock, appeared fresher. A single spraint was identified upstream, approximately 110m from the bridge.

These combined results indicate low-level and infrequent use of this section of river by otters, with no indication of established resting sites or intensive foraging activity in the vicinity of Galbally Bridge. The field survey notes were detailed in *table 2-6* below.

The bridge arches were also reassessed for potential bat roosting activity. Most cracks at the underside of the arches exhibited either cobwebs or moisture at the entry point or within, suggesting no recent bat use. Dry cracks with little or no cobweb accumulation were noted. These cracks will be considered for inclusion in future bat surveys to confirm potential roosting use over time.

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Date: 05/08/2025

Surveyors: Rory Dalton, Tadgh Healy and James Ambrose

Weather: Dry. Partly cloudy, occasional sunshine, Temperature 18°C.

The survey commenced with a walkover of the immediate area around the bridge to assess both general ecology changes and for any new signs of otter presence in the area. No changes or indications of otter presence were detected. Arch 4 was then reinspected for new prints. Larger prints assumed to be dogs were detected under the arch. They were accompanied by some light digging/rooting of the dry soil surface. The trail camera was then retrieved and checked. No otter visits to the arch were recorded. Over the 17 day trail cam deployment, the recorded activity consisted of three separate visits by foxes, a small amount of bird activity, and a single visit by four to five foxhounds accompanied by their owner.

A targeted bat emergence survey was carried out on the bridge using two bat detectors and two Pixfra A613 thermal imaging cameras set on record. No bats were seen leaving the bridge on the night, and the recordings from each camera were watched thoroughly again the following day on a large computer screen to double check. High levels of bat activity was recorded along the river channel with multiple species present.



Image 2-3 – Arch 4 – Survey 2, south arch of bridge, light digging/rooting

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Image 2-4 – Survey 2 – Dog prints under arch 4 of bridge

Date: 07/08/2025

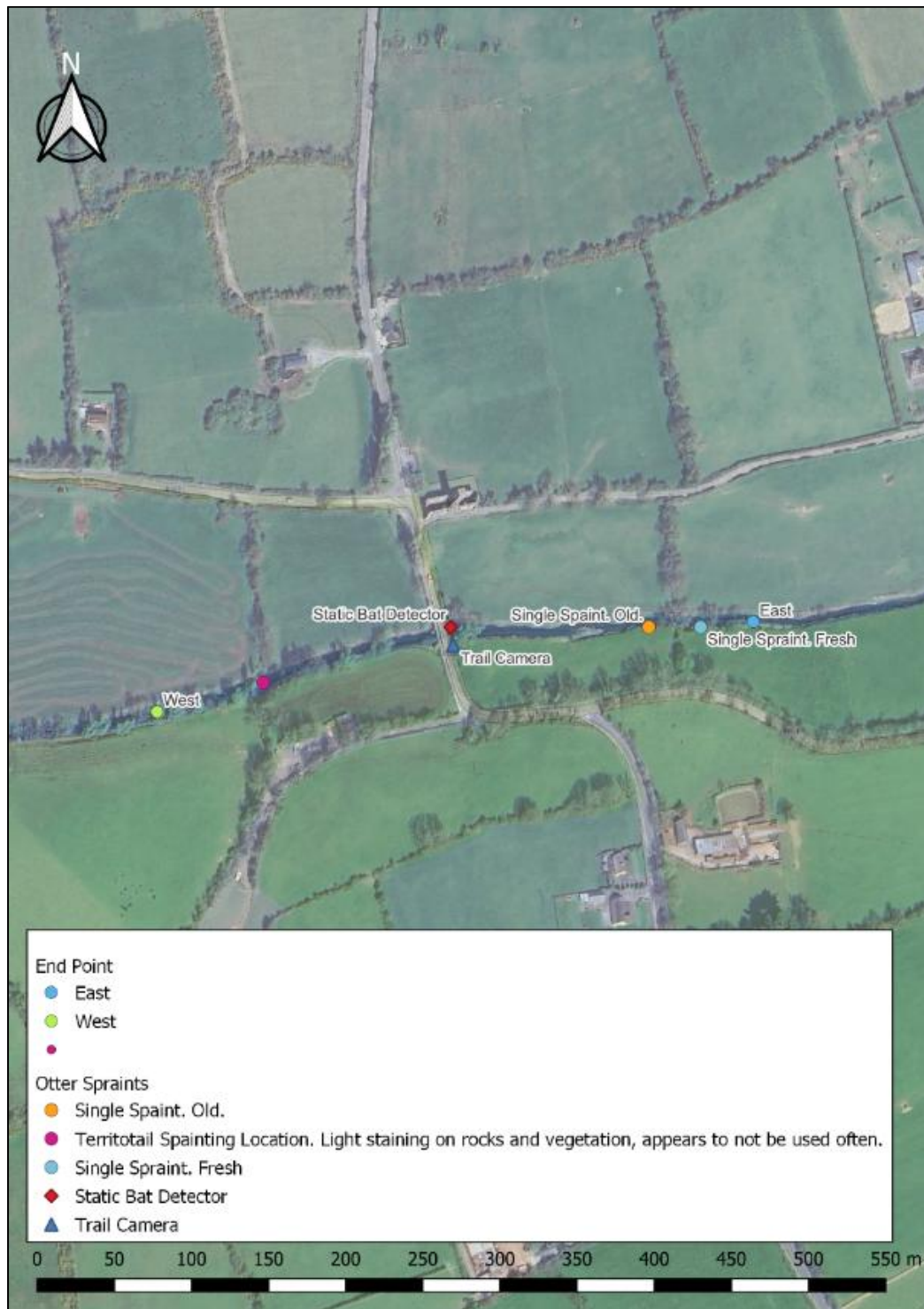
Surveyors: Rory Dalton, Tadgh Healy and James Ambrose

Weather: Dry. Partly cloudy, occasional sunshine, Temperature 18°C.

A targeted bat emergence survey was carried out on the bridge using two bat detectors and two Pixfra A613 thermal imaging cameras set on record. No bats were seen leaving the bridge on the night, and the recordings from each camera were watched thoroughly again the following day on a large computer screen to double check. High levels of bat activity was recorded along the river channel with multiple species present. An emergence survey was carried out by a third ecologist at the Abbey in order to see what level of bat activity was present during emergence time in this optimal bat roost structure; high levels of activity were observed intermediately after emergence and before the high activity levels at the river were witnessed, suggesting that at least a significant proportion of the bats foraging along the stretch of the river in question were roosting in the Abbey.

Summary of Otter Findings

A series of dedicated otter field surveys along the river corridor completed in 2024 and 2025 indicate that Galbally Bridge is not regularly used by otters. This conclusion is based on the absence of key indicators such as holts, couches, active resting sites, and spraints within the survey area. While occasional transient use is certain, the lack of physical evidence suggests the site is of low importance for otter activity at present.



Map 2-5 - Galbally Bridge Otter survey finding's locations

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Table 2-6 – Field Survey results table – European Otter

Site	Date	Findings	Sign found	Notes
Arch 4 - Dry Arch	18-Jul	Visual check on prints under arch - Rodent and unidentified (aged) mammal tracks only	None	
Bridge	18-Jul	Tracks present under dry arch however they appeared aged and deformed making them unable to confirm if they are otter prints.	None	Additional tracks identified - Bird and rodent prints only
Upstream bank	18-Jul	Territorial sprainting identified approx. 110m upstream. Light staining of rocks and vegetation. Appeared to not be used often.	Spraint	Likely to be insignificant with respect to otter presence at the bridge
Downstream bank	18-Jul	Spraint identified approx. 125m downstream, appeared aged. Second spraint identified approx. 160m downstream, appeared fresh.	Spraint	Likely to be insignificant with respect to otter presence at the bridge
Arch 4 - Dry Arch	05-Aug	Visual check on prints under arch - Dry soil surface disturbed, assumed to be dogs, rodent and bird tracks present	None	Prints confirmed on trial cam
Arch 4 - Dry Arch	05-Aug	No otters detected on trial cam - Foxes (3 visits), dogs and birds only	None	Trial cam deployed on 18/07. Retrieved and checked on 05/08

Summary of Bat Findings

During the dusk emergence surveys carried out in 2024 and 2025, a high level of bat activity was recorded both upstream and downstream of Galbally Bridge, as well as within the bridge arches themselves. The greatest level of activity was recorded in arches 1 and 2, with moderate activity noted in arch 3, and minimal activity in arch 4 (the dry arch).

Species confirmed through analysis of bat detector recordings included:

- Daubenton’s bat (*Myotis daubentonii*)
- Leisler’s bat (NSL – *Nyctalus leisleri*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)

Only one structural crevice, located on the underside of arch 2, was observed being used by a bat. A single bat was recorded entering this crevice and emerging 14 minutes later. The bat entered the crevice during a foraging session, perhaps to feed or to rest, and then left again. No other crevices or cracks assessed during the surveys were observed to be used for entry or emergence by bats.

Moor Abbey Ruins, located just north of Galbally Bridge, were also surveyed for bat activity. A notable level of bat activity was recorded at the ruins (12-15 in the air at any one time), with detections occurring prior to any bat activity observed at the bridge. This timing suggests that Moor Abbey may serve as a primary roosting site for bats that forage along the river corridor near the bridge. Additional potential roost sites, such as old farm buildings located to the south and southwest of the bridge, may also support bat populations; however, these locations were not included in the scope of the current survey.

The bridge was assessed as having roosting potential for bats, particularly Daubentons Bats, due to the presence of suitable cracks and crevices; however, no evidence of bat roosting was recorded during the surveys. While the structural features could support the species, the results suggest it was not present at the time of assessment.

The collective results of surveys conducted in 2024 and 2025 suggest that Galbally Bridge is not currently used as a roosting site but is instead used by bats as a temporary resting area during periods of foraging activity along the river corridor. Multiple suitable roosting locations are present in close proximity to the bridge, including Moor Abbey ruins and several old farm buildings in the surrounding area. These structures may support bats that regularly forage along the river corridor, including beneath the bridge itself. The consistent use of the arches by multiple bat species supports the conclusion that the bridge functions as a commuting and foraging route, with occasional use of structural features for resting rather than roosting.

Table 2-7 – Field Survey results table – Bats

Survey detail	Date	Findings	Notes	Results
Visual check - Overall bat roosting potential assessment	18-Jul	Majority of cracks noted as having cobwebs and/or moisture present. Drier cracks more than 10mm wide with no cobwebs were noted as potential focal points for follow-up emergence and closer	Survey completed by 3 ecologists. Static Bat Detector deployed – Song Meter Mini detector just (approx. 3m) downstream of bridge during survey. It was also noted that a high amount of visible surface activity by insects on the river. This was visible both upstream and downstream of the bridge and indicates a very suitable bat foraging area.	All accessible cracks and crevices on Galbally Bridge were inspected during the bat surveys. Approximately 30% were considered potentially suitable for roosting, having adequate depth and entry points ≥ 10 mm. The remaining 70% were deemed unsuitable due to being too narrow, showing signs of moisture ingress, or being covered in cobwebs,

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		inspection bat surveying.		indicating disuse. No confirmed roosts were identified.
Collection of static bat detector	23-Jul	Collecting static detector only	Equipment details - Song Meter Mini detector	
Visual check + emergence survey with two bat detectors and two infrared cameras.	05-Aug	Emergence survey focused on arches with suitable cracks. The Moor Abbey ruins located 80m north of the bridge was noted as a potential for high bat activity within the vicinity of the bridge	Equipment used - Echo Meter Touch 2 – Positioned 3m downstream of arch 3. Anabat Scout Bat Detector – Position 2m to 3m downstream of arch 2. Two infrared camera - Model Pixfra A613. 1 positioned upstream pointed upward into the underside of bridge arches and onto the bridge wall (see Image 2-9). The second positioned in a similar position downstream of the bridge (see Image 2-10). Survey completed by 3 ecologists.	1. Daubenton's bats, NSL (Leisler's bat) bats, common pipistrelle bats and soprano pipistrelle bats were recorded and later analysed on the Anabat Scout Bat Detector and the Echo Meter Touch 2. The first bat was detected was at 21:36. Daubenton's bats were detected early in the survey and soprano pipistrelle were the most common recorded bat 2. The infrared cameras detected bats foraging both upstream and downstream throughout the survey. The arches were used thoroughly by the bats to move upstream and downstream of the bridge. No bats were identified emerging from visible sections of the bridge structure throughout the survey (2x infrared cameras and 3x surveyors).
Visual check + emergence survey with inspection camera, two bat detectors and two infrared cameras.	07-Aug	Emergence survey focused on cracks with arches identified as suitable roosting locations. 1 ecologist focused on bat activity at Moor Abbey	Equipment used - Echo Meter Touch 2, Anabat Scout Bat Detector, static bat detector, two infrared camera - Model Pixfra A613. One positioned within arch 2 point upward to cover all cracks that can be potentially utilised by the bats (see Image 2-11). The second positioned within a similar position within arch 3 (see Image 2-9). Bosch GIC 120C inspection camera. Survey completed by 3 ecologists. 1 ecologist surveyed bat activity at the Abbey ruins just north of the bridge.	1. 90 Daubenton's bat, 2 NSL (Leisler's bat), 30 common pipistrelle and 694 soprano pipistrelle were recorded and later analysed on the Anabat Scout Bat Detector and the Echo Meter Touch. The first bat was detected at 21:39. 2. The infrared cameras detected a single bat entering a crack on arch 2 at 22:22 and flying out of the same crack 14mins later (see Images 2-13). No other bats were observed emerging or flying into any other cracks on the bridge. 4. The survey completed by the Abbey ruins found a high level of bat activity. All bat types detected at the bridge were also detected at the Abbey Ruins. The first bat was detected 21:21. From the main doorway to the Abbey Ruins, 10+ bats were visibly flying multiple times during the survey.



Image 2-8 - Map of the particulars of the bat survey

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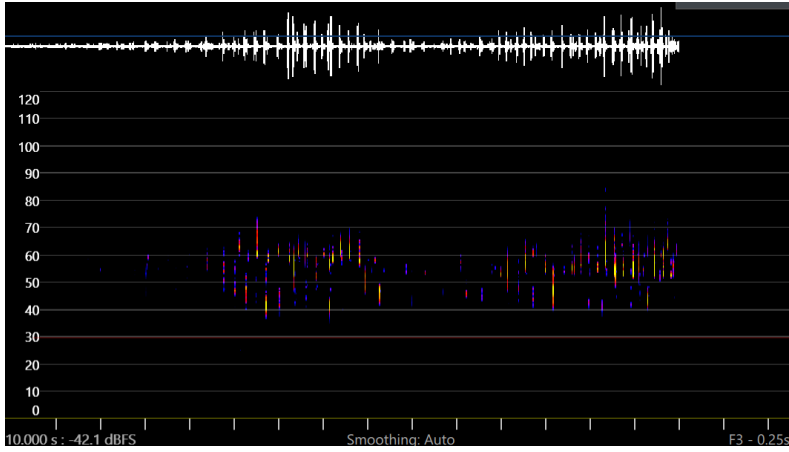


Image 2-8 - Daubenton's bat call sonograph detected on 07/08/25



Image 2-9 - Model Pixfra A613 #1 vantage point 05/08/25



Image 2-10 - Model Pixfra A613 #2 vantage point 05/08/25

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Image 2-11 - Model Pixfra A613 #1 vantage point 07/08/25

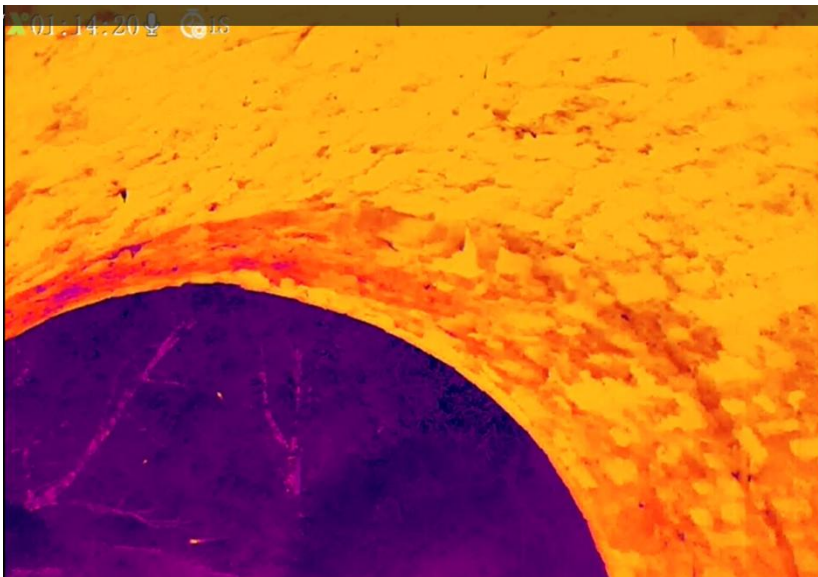
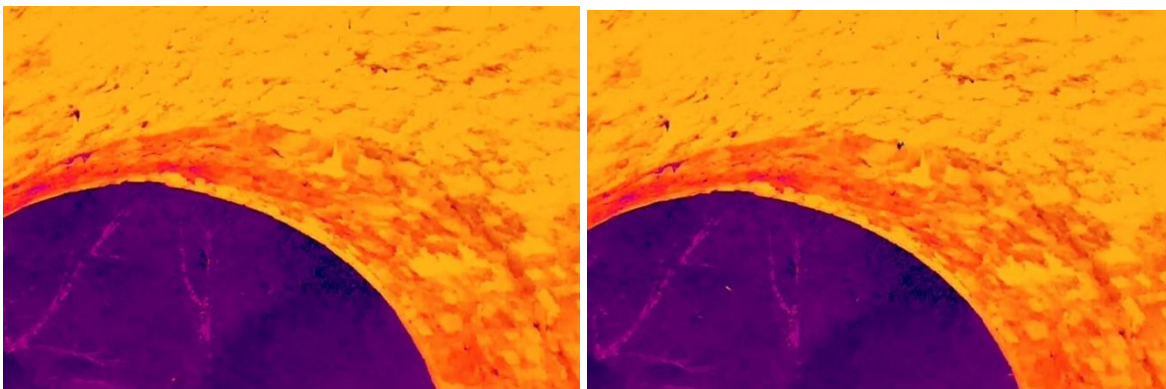


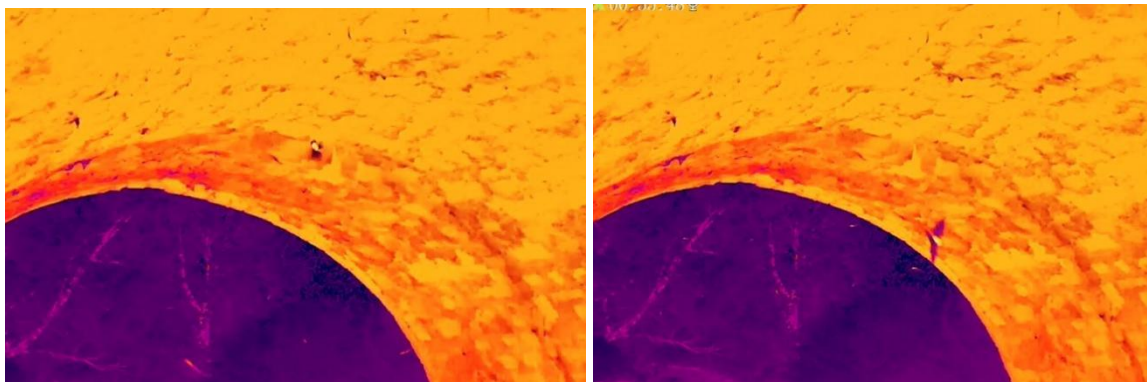
Image 2-12 - Model Pixfra A613 #2 vantage point 07/08/25



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Images 2-13 - Series of images identifying the moment a bat re-emerges from a cervice on arch 2 - 07/08/25



Images 2-14 – Moor Abbey Ruins, Galbally Co. Limerick – Source - www.heritageireland.ie

3. Description of the Site and Proposed works

3.1 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.

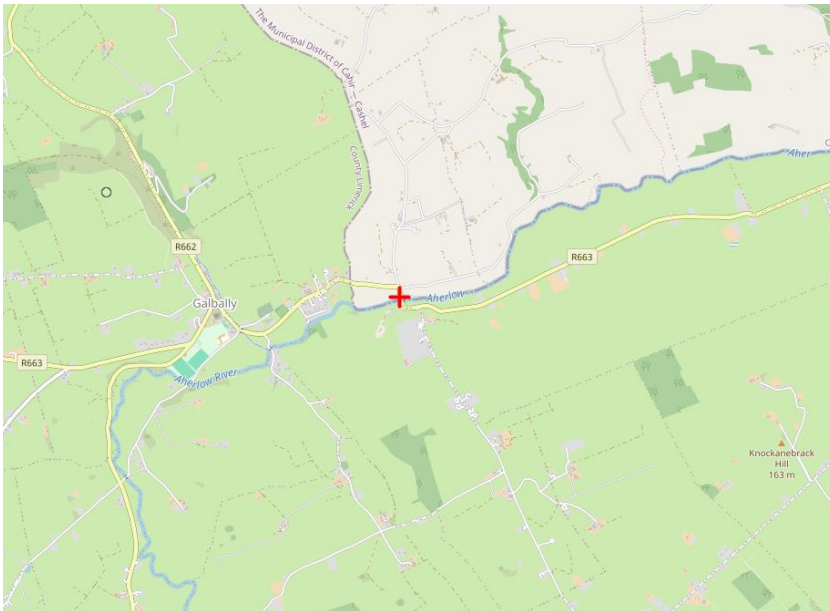


Figure 3-1 Map of site location – Galbally Bridge

3.2 Proposed Works

3.2.1 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 *Image 3-2*, *Image 3-3* and *Image 3-4*). 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 (*Image 3-5*). 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.

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Image 3-2. Cracks, holes and deteriorating stone and mortar on the underside of one of the arches.



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

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Image 3-4. Cracks, holes and dislodged mortar on the underside of one of the arches.



Image 3-5. Vegetation present on the upstream bridge abutment and cutwater.

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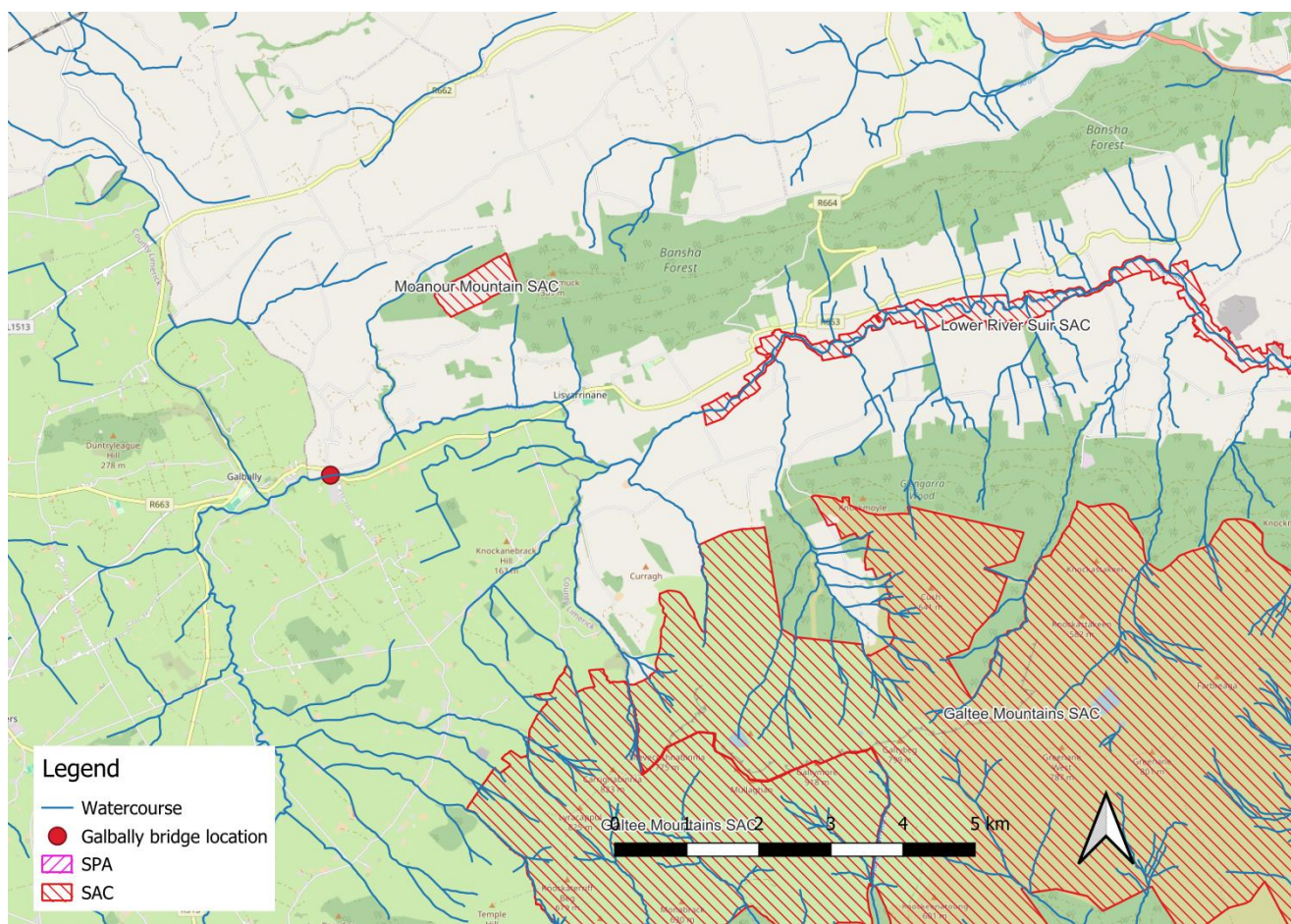
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3.2.2 Outline Construction Methodology

The following construction methodology has been suggested by Mark Murphy Consultancy Ltd within the Tipperary County Council, Galbally Bridge (TS-R663-002.00), Principal Inspection Report 2021.

- 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.
- Vegetation removal on each elevation.
- The riverbed will be strengthened with stonework and rock armour.

4. Natura 2000 Sites and Proposal



Map 4-1. Map showing bridge location and Natura 2000 sites in the vicinity.

4.1 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.

4.2 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>Ranunculus 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

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 Alnus glutinosa and Fraxinus excelsior (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 (Twaite Shad) [1103] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355] Trichomanes speciosum (Killarney Fern) [1421]</p>		

4.3 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.

4.4 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

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	number of the qualifying interests of the SAC. Explained in more detail in section 4 Natura 2000 Sites and Potential Impacts below.
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5. Natura 2000 Sites and Potential Impacts

5.1 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 (Alosa fallax)	<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 (Salmo salar) [1095] Sea Lamprey (Petromyzon marinus) [1096] Brook Lamprey (Lampetra planeri) [1099] River Lamprey (Lampetra fluviatilis)	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 were found within or near the works area during the targeted site surveys – see Section 2. 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

5.2 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.

6. 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).

7. Natura Impact Statement

7.1 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 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
European otter <i>Lutra lutra</i>	Distribution	No significant decline	Considering the scale of the proposed works, and the absence of general otter activity and breeding sites (otter survey findings – see Section 2), the proposed works will not have a significant impact on the distribution of otter.	No

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
	Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 116.17ha above high water mark (HWM); 726.61ha along river banks.	The habitats along the banks within and in the vicinity of the works area are currently minimally or not being utilised by otter. As such, no significant impact on the extent of terrestrial habitat for otter will occur.	No
	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	The habitats along the banks within and in the vicinity of the works area are currently minimally or not being utilised by otter. Therefore, no impact will occur on the extent of couching sites and holts.	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	Juveniles live buried in silt beds. The proposed works could potentially result	Yes

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
		brook/river lamprey at least 2/m ²	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	
	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

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 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 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
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

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
	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 gravels becoming unsuitable for spawning.	Yes
	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	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

Conservation Interest	Attribute/Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
	females with eggs)			
	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 time 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

7.2 Mitigation Measures

7.2.1 Working in the Dry

A “dry cell” will be created to facilitate repair works on the bridge arches. Works will be staged so only one portion of the river is sealed off at a time, with water flow conveyed through the remaining vacant spans. Each span will be blocked sequentially using sandbags placed just upstream of the works. Due to the downstream slope of the river, dry cells can be achieved effectively, though the barrier outline may be adjusted to ensure safe access.

The dry cell will be lined with plastic sheeting to capture any cement or sediment generated during repairs. Captured materials will be collected and disposed of by a registered waste disposal company. A crash-deck may also be used to provide additional containment of materials.

7.2.2 Cement/Grout Pollution Control

Wet cement and grout are highly alkaline and harmful to aquatic life. To prevent pollution:

1. Works will not take place during forecasted heavy rainfall (24-hour advance forecasts from Met Éireann will be used).
2. Only concrete chutes will be washed onsite, on the landward side of the berm.
3. Washout will occur at least 50m from drains or watercourses and be appropriately treated.
4. No disposal of cement remnants will occur onsite.
5. All concrete works will be undertaken by an experienced contractor with proven river works expertise.

7.2.3 Measures to Protect Bat Activity

The proposed methodology outlined in Section 3 should be revised to avoid impacting bat activity at the bridge. Only cracks and crevices confirmed to be unsuitable for bat use should be targeted for repair. These include features with entry points less than 8 mm, evidence of moisture ingress, or cobweb-covered entrances, indicating disuse. Where structural stabilisation is necessary at cracks or crevices identified as potentially suitable for bats, an alternative approach must be used. This method must retain existing crevice

structure and access, such as structural pinning around rather than through the crevice. This approach will ensure that all bat species may continue to use the suitable cracks and crevices as potential roosting sites in the future.

Once a works schedule has been confirmed, a follow-up bat survey should be conducted 1 to 2 weeks prior to the commencement of works. This survey should focus specifically on determining whether any of the previously identified usable cracks and crevices on the bridge have transitioned from occasional resting areas to active roosting sites.

7.2.4 Waste Management

All waste from pointing removal, paint, lubricants, and oils will be stored in appropriate containers within a prefabricated bunded storage unit at the site compound. This storage unit and site compound should be positioned no less than 10m from the riverbank. Waste will be removed by the contractor for disposal at a licensed landfill or sent for recycling.

No discharge of effluent or wastewater will occur onsite.

7.2.5 Timing of Works

The water barrier must remain functional at all times during repair works. Works will be scheduled to allow for the lag time between rainfall events and river level rises, enabling the safe removal of cement and sediment before barriers are overtopped.

To avoid impacts on protected species, works will be completed:

1. Outside lamprey breeding season.
2. Before salmonid spawning season begins.
3. Outside bird breeding season, particularly as an active nest was recorded in cracks on the bridge's east elevation.

The optimal period for works is September.

7.2.6 Invasive Species Prevention

Before use, all machinery will be thoroughly cleaned at the contractor's yard using a power washer, focusing on tracks, buckets, trailer decks, and vehicle wheels.

7.2.7 Crayfish Plague Prevention

The Check, Clean, Dry protocol will be applied to all equipment after use in watercourses:

1. Check for plant/animal material.
2. Clean thoroughly.
3. Dry completely, then allow an additional 48 hours before reuse.
4. If drying is not possible, equipment will be:
 - Power steam washed (>65°C), or
 - Disinfected with approved products (e.g., Milton, Virkon Aquatic 3 mg/L, Proxitane 30 mg/L, or iodine-based products) for 15 minutes.

7.2.8 Otter Protection Measures

Although a very low otter activity was recorded more than 100m from the bridge, precautionary measures will be implemented:

1. **Sequential Flow Diversion:** Sandbags will be used to divert flow and form dry cells beneath each arch, with height limited to 200 mm above prevailing water level.
2. **Otter Access Provision:** Ramped access structures will be installed upstream and downstream of each dry cell to maintain passage during works.
3. **Site Housekeeping:** At the end of each working day, all materials will be removed from the dry cell to reduce obstruction or trapping risk.
4. **Weather Monitoring:** If significant rainfall is forecast, works will be postponed and sandbags removed before water levels rise.

7.3 Compliance with Conservation Objectives

These measures will ensure works are carried out with sensitivity to the site's ecological value and in line with the conservation objectives of downstream protected areas.

7.4 Potential for Ecological improvement to the River

During the initial site survey, it was observed that the flat concrete riverbed/apron beneath the bridge currently allows for fish passage; however, the flat flow distribution is suboptimal for certain species. The lack of flow concentration results in reduced hydraulic diversity, limiting the efficiency of fish movement through the structure.

The proposed repair methodology, which involves creating dry cells beneath each of the three bridge arches under normal flow conditions, provides an opportunity to integrate a targeted ecological improvement. As part of these works, untreated hardwood or fully cured concrete lentils (or equivalent flow-deflecting structures) will be fixed to the flat concrete riverbed/apron. These will be strategically positioned to encourage a more concentrated flow through the centre of the arches—preferably the central arch—thereby funnelling water and creating a more naturalised flow profile downstream.

This installation will enhance water velocities and depth variability within the passage zone, resulting in improved conditions for fish migration and movement, particularly during low- to moderate-flow periods. The improvement will have an overall positive ecological impact on the river system.

No additional mitigation measures are required beyond those already in place for the proposed repair works, as the enhancement can be completed entirely within the dry cell. The installation process will not generate sediment or waste, ensuring compliance with water quality protection measures and safeguarding aquatic ecology.

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Image 7-1 – Proposed layout to baffles under arches

7.5 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.

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