



CONSULTANTS IN ENGINEERING,  
ENVIRONMENTAL SCIENCE &  
PLANNING

# ENGINEERING CONSULTANCY SERVICES FOR CORK CITY BRIDGES

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## ECOLOGICAL IMPACT ASSESSMENT FOR GLYNTOWN BRIDGE

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Prepared for: Cork City Council



Cork  
City Council  
Comhairle Cathrach Chorcaí

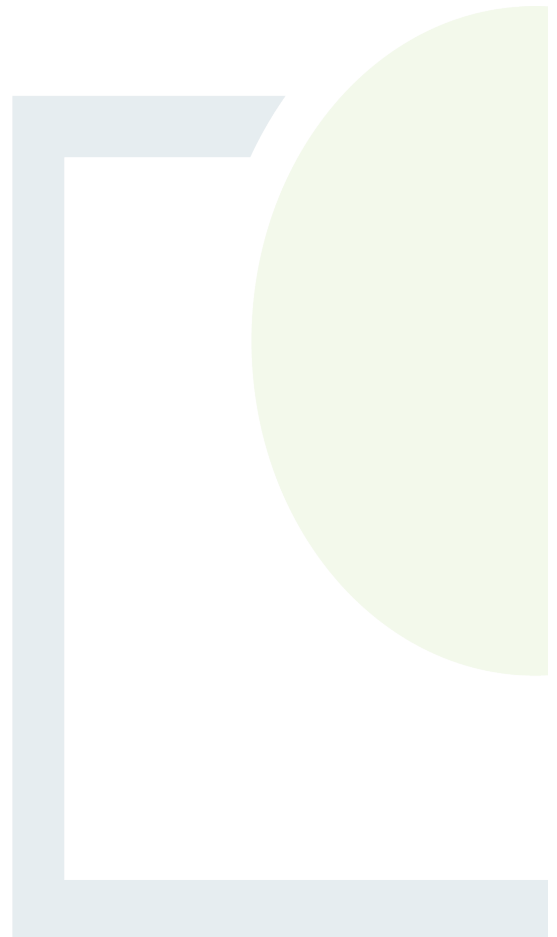
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## ECOLOGICAL IMPACT ASSESSMENT REPORT FOR GLYNTOWN BRIDGE

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**Abstract:** This report details the Ecological Impact Assessment for the repair and rehabilitation of Glyntown Bridge, Cork City.

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## 1. INTRODUCTION

Fehily Timoney and Company (FT) was commissioned by Cork City Council to carry out an ecological appraisal of Glyntown Bridge in Glanmire, Co. Cork (see Figure 1-1 for location).

The proposed works at Glyntown Bridge (repair and rehabilitation), from this point forward referred to as the proposed project, will comprise of the following stages:

- Invasive species treatment
- Installation of temporary site facilities
- Vegetation removal
- Parapet repair
- Pier cutwater repair
- Repointing

The purpose of this evaluation was to:

- Undertake a desktop review of available ecological data for both the receiving environment and greater area, including a review of European sites within the zone of influence of the project (as part of a separate Appropriate Assessment Screening) and nationally designated sites within 10km;
- Undertake ecological field surveys of the receiving environment;
- Identify flora and fauna present within the footprint of all elements of the project;
- Evaluate the ecological significance of the receiving environment;
- Appraise the potential impacts of the project on the ecology of the receiving environment; and
- Consider measures to mitigate the potential negative impact(s) of the project on the ecology of the receiving environment.

### 1.1. Study Area

Glyntown Bridge carries the L2998, East Cliff Road, over the Butlerstown River approximately 9km to the East of Cork City Centre. The year of construction is unknown. The structure is a 3-span masonry arch bridge. Glyntown Bridge carries vehicular and pedestrian traffic in the busy Glanmire townland. The bridge is situated approximately 50m east of the confluence of the Glashaboy River.

The site is located in an urban area, in the vicinity of commercial units, residential estates, sports fields and wooded parklands.

As assessed during the field surveys, the habitat surrounding the bridge and stream is predominantly broadleaved woodland (WD1) and hedgerows/ treeline (WL1/WL2, Fossitt, 2000). Extending beyond these habitats, the surroundings include recolonising hardstanding areas, built land (roads and buildings) and amenity grassland.



Japanese knotweed, a high-impact invasive species, was recorded adjacent to the east facing of the bridge on the northern bank (ITM 573207 575067). *Buddleja* ran from the bridge easterly along the extent of the river to at least 100m upstream. Winter heliotrope was recorded in patches within the woodland and old man's beard along the hedgerows.

The physical aquatic habitat upstream of the bridge is a substratum dominated by large cobbled with a lower proportion of gravels and some sand. The upstream flow type of the Butlerstown River is riffle. There is no siltation, a small amount of litter is present and shade is moderate.

The bridge is located in within the Glashaboy[L.Mahon]\_SC\_010 subcatchment of the Irish River Network System, which is located in the Lee, Cork Harbour and Youghal Bay catchment. The bridge delineates two sub basins: Butlerstown\_030 and Glashaboy (Lough Mahon)\_030.

Upstream of the bridge, the flow type of the Butlerstown River is riffle, with the substratum dominated by large cobbles and with a lower proportion of gravels and some sand. There is no siltation, a small amount of litter is present and shade is moderate. Approximately 20m downstream of the bridge, the Butlerstown River joins the Glashaboy River at a deep pool where the latter river bends sharply to the right. Just downstream of the pool, there is a vegetated gravel island in mid-channel.

The Butlerstown River (Butlerstown 19) flows beneath the Glyntown Bridge, in a westerly direction. An EPA monitoring station is situated on the western side of the bridge. The latest Q Value for this station (assessed in 2020) was Q4-5 indicating High Ecological Water Quality. Approximately 50m east of the bridge, the Butlerstown River meets the Glashaboy River (Glashaboy [L.Mahon]). The Glashaboy River flows in an overall southerly direction for approx. 3.5km, where it meets the River Lee, with flows into Cork Harbour SPA and Great Island Channel SAC.

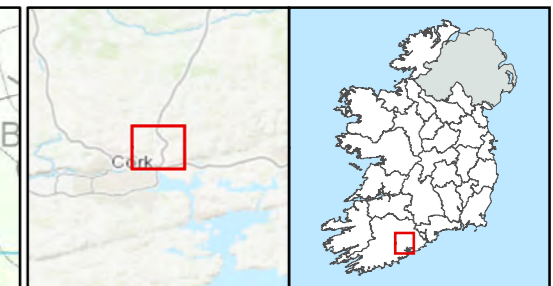
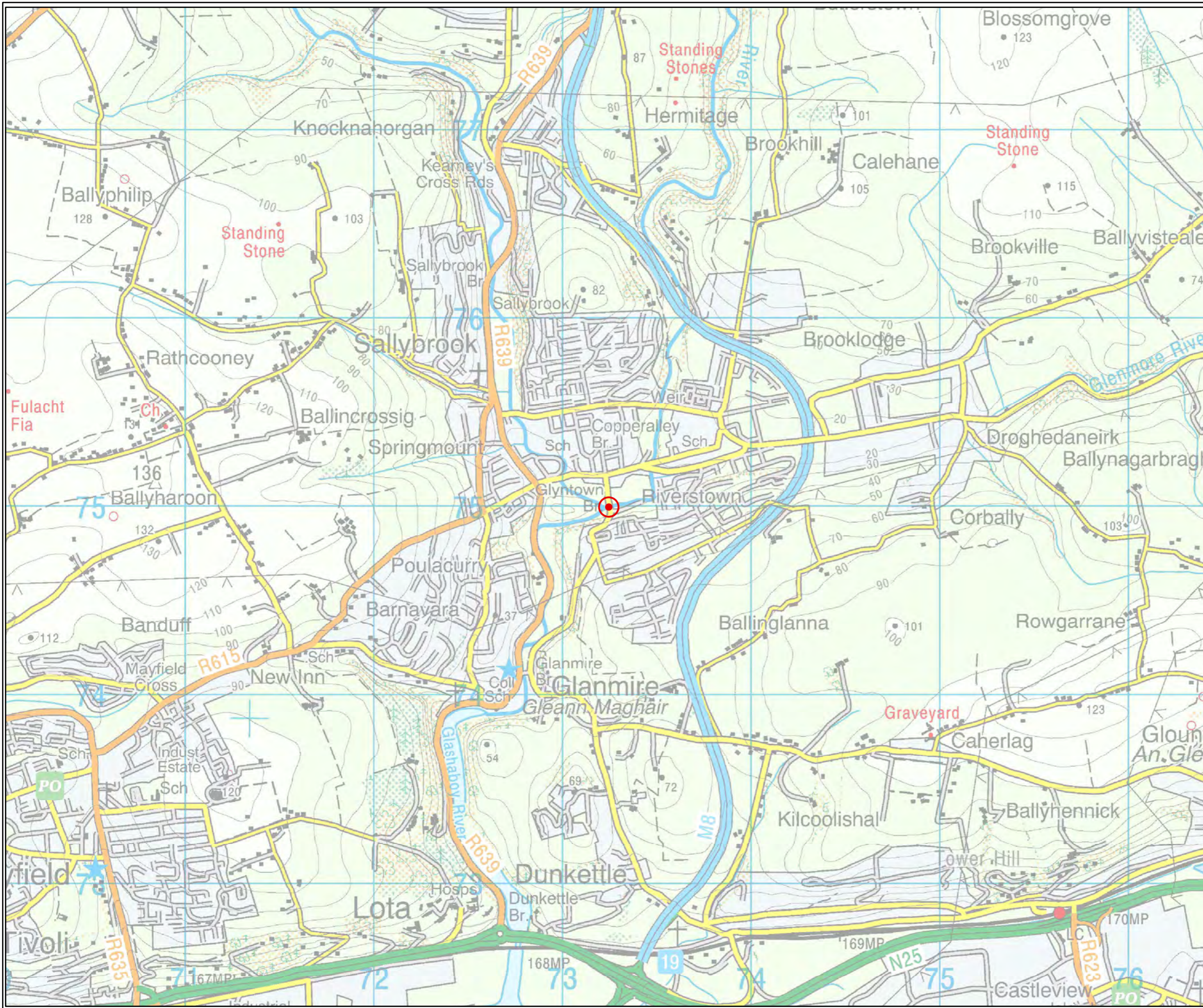
The GSI map viewer<sup>1</sup> indicates:

- The quaternary sediments at the site are described as 'Urban' at the site of the bridge, with 'Till derived from Devonian sandstones' and 'Bedrock outcrop or subcrop' immediately downstream
- The bedrock beneath the site comprises 'Dark muddy limestone, shale' within the Ballysteen Formation, surrounded by 'Flaser-bedded sandstone and mudstone' from the Cuskinny Member.
- Bedrock groundwater beneath site is classified as a 'Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones'.


The bridge is located in the Ballinhassig East groundwater body.

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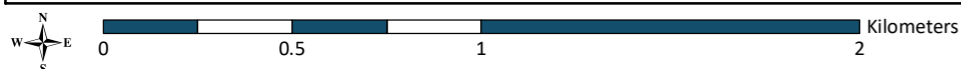
<sup>1</sup> Accessed 29/08/2022



**Legend**

 Site Location

<b>TITLE:</b>	
Site Location	
<b>PROJECT:</b>	
Engineering Consultancy Services for Bridges (Glyntown)	
<b>FIGURE NO:</b>	
2.1	
<b>CLIENT:</b>	
Cork Bridges	
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## 2. METHODOLOGY

### 2.1. Relevant Guidance

The methodology for this appraisal has been devised in consideration of the following relevant guidance published by the Environmental Protection Agency (EPA) including *'Guidelines on the information to be contained in Environmental Impact Statements'* (2022), and *'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment'* (DoECLG, 2013).

Additional guidance available from the EU such as *'Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment'* (2013) has also been considered. The appraisal also takes account of *'Guidelines for Ecological Impact Assessment in the United Kingdom'* (2006), CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester both published by the Chartered Institute of Ecology and Environmental Management (CIEEM). The Heritage Council publication *'Best Practice Guidance for Habitat Survey & Mapping'* (Smith et al., 2011) is also referenced.

Relevant guidance published by the National Roads Authority (NRA) such as *'Guidelines for Assessment of Ecological Impacts of National Road Schemes'* (2009a), and *'Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes'* (2008) have also been followed.

Documentation and guidance available from Cork City Council including the 'Draft Cork City Development Plan 2022-2028' and the 'Cork City Development Plan 2015-2012'.

Relevant guidance published by the National Roads Authority (NRA), and applicable to assessing watercourses in Ireland, was also followed, including *'Guidelines for the Assessment of Ecological Impacts of National Road Schemes – Revision 2'* (NRA 2009a), *'Ecological surveying techniques for protected flora and fauna during the planning of National Road Schemes – Version 2'* (NRA 2009b), *'Environmental Impact Assessment of National Road Schemes – A practical guide'* (NRA 2008a) and *'Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes'* (NRA 2008).

### 2.2. Legislative Context

A diversity of flora and fauna, rare at a national level, are protected under the provisions of the Wildlife Act 1976, as amended, and the orders and regulations made thereunder, such as the Flora Protection Order (2022). The Habitats Directive 1992 has been transposed into Irish law, for the purposes of this application for permission by Part XAB of the Planning and Development Act 2000, as inserted. In addition, certain other obligations of the Habitat Directive have been transposed by the European Communities (Birds and Natural Habitats) Regulations 2011, as amended.

Section 171 of the Fisheries (Consolidation) Act 1959 creates the offence of throwing, emptying, permitting or causing to fall onto any waters deleterious matter. Deleterious matter is defined as not only as any substance that is liable to injure fish but is also liable to damage their spawning grounds or the food of any fish or to injure fish in their value as human food or to impair the usefulness of the bed and soil of any waters as spawning grounds or other capacity to produce the food of fish.



Under Section 3 of the Local Government (Water Pollution) Act, 1977 (as amended by Sections 3 and 24 of the 1990 Act) it is an offence to cause or permit any polluting matter to enter waters. For example, visual evidence of oil/fuel in the river would constitute an offence.

### 2.3. Zone of Influence

CIEEM (2018) defines the Zone of Influence (Zoi) as “... the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities.” Each ecological feature will have different Zones of Influence, depending on its ecological characteristics (CIEEM, 2018); best practice guidance and professional judgement were used to define the Zone of Influence for each ecological feature.

Given the scale and nature of the proposed development, the Zone of Influence defined for most ecological features was the footprint and immediate surroundings. To determine the zone of influence for designated sites, an initial buffer of 15km was first examined using Geographic Information System (GIS) and the conservation interests of these designated sites were examined in order to ascertain whether there could be potential physical or ecological connectivity to the project and the associated likely project impacts. Additionally, any European sites beyond the initial 15km radius with hydrological connectivity were also identified for further examination.

The ‘Source-Pathway-Receptor’ model was used to determine impacts on European designated sites, aided by the EPA’s Appropriate Assessment tool to determine hydrological pathways (<https://gis.epa.ie/EPAMaps/AAGeoTool>).

### 2.4. Desktop Study

A desk study was carried out to collate and review available information, datasets and documentation sources pertaining to the site’s natural environment. These sources included:

- OSI Aerial photography and 1:50000 mapping
- National Parks and Wildlife Service (NPWS);
- Irish Red Data Lists:
  - Ireland Red List No. 2: Non-Marine Molluscs (Byrne *et al.*, 2009)
  - Ireland Red List No. 4: Butterflies (Regan *et al.*, 2010)
  - Ireland Red List No. 5: Amphibians, Reptiles and Freshwater Fish (King *et al.*, 2011)
  - Ireland Red List No. 10: Vascular Plants (Wyse *et al.*, 2016)
  - Ireland Red List No. 12: Terrestrial Mammals (Marnell *et al.*, 2019)
- Geological Survey Ireland (GSI) area maps (<https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx> accessed April 2022);
- EPA website datasets (soil, surface water quality, ground water quality, designated sites) (<https://gis.epa.ie/EPAMaps/> accessed April 2022).
- Bat Conservation Ireland (BCI)
- Geological Survey Ireland (GSI) area maps
- Offaly County Development Plan 2021 – 2027



#### 2.4.1. Designated Nature Conservation Sites

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) within 10km of the proposed site were identified as part of this ecological appraisal using in-house GIS systems to integrate datasets obtained from the NPWS at [www.npws.ie](http://www.npws.ie). These designated sites are described in Table 3-1 of this document.

European (Natura 2000) sites within 15 km of this project, such as candidate Special Areas of Conservation (SACs) and Special Protection Areas for birds (SPAs) were also identified as part of this ecological appraisal. A separate Appropriate Assessment (AA) screening was carried out in order to appraise the potential impact on European sites.

#### 2.4.2. Flora and Fauna

A desktop study was undertaken to locate any records of rare or protected flora and fauna that have previously been recorded for the site and surrounding area. Records available on the NPWS and the National Biodiversity Data Centre websites were reviewed. Other data sources include:

- Ireland's Wetlands and their Waterbirds: Status and Distribution (Crowe 2005),
- The Atlas of Wintering Birds in Britain and Ireland (Lack, 1986),
- The Atlas of Breeding Birds in Britain and Ireland (Sharrock, 1976),
- Bird Atlas 2007-2011. The breeding and wintering birds of Britain and Ireland (Balmer et al., 2013),
- Birds of Conservation Concern in Ireland 2020-2026 (Gilbert et al., 2021).

Botanical species were assessed in accordance with their occurrence on the Flora Protection Order (2022) and The Ireland Red List No. 10: Vascular Plants (Wyse et al. 2016).

Other species records were assessed according to the following Irish Red Data Lists.

## 2.5. Field Assessment Methodology

The following habitats and species were assessed: terrestrial, aquatic, mammals, bats, avifauna and other species.

#### 2.5.1. Terrestrial Habitats

An ecological site walkover of terrestrial habitats was carried out on the 08<sup>th</sup> November 2021 by FT Project Ecologist David Daly. The habitats within the site of the proposed development were identified and classified according to 'A Guide to Habitats in Ireland' (Fossitt, 2000) during the walkover. The dominant plant species present in each habitat type was recorded.

Habitats were appraised and evaluated according to their occurrence as protected habitats under Annex I of the EU Habitats Directive (92/43/EEC) and for their capacity to support rare, threatened and endangered species. The methodology used in this report to assess the impact on habitats is based on NRA guidelines (2009).



The habitat mapping exercise had regard to the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011) published by the Heritage Council. Scientific and common names for plants follow Parnell et al. (2012) and Blamey et al. (2003), respectively. In addition to habitat identification, each habitat was assessed for its ecological significance, based on the National Roads Authority (NRA) Site Evaluation Scheme (NRA, 2009).

#### 2.5.2. [Aquatic Habitats and Species](#)

Aquatic habitats were assessed by Sweeney Consultancy during November 2021, 100m upstream and 100m downstream of the bridge. The habitat quality of the following was determined: white-clawed crayfish, salmonids, freshwater pearl mussel, and physical aquatic and riparian habitat. The following were also assessed: Physical habitat, Biological Water Quality, and Aquatic habitats. Aquatic macrophytes were assessed, and the presence of any protected or rare aquatic plant or animal species was noted. Methodology and full results are presented in Appendix 2.

#### 2.5.3. [Mammals \(excluding Bats\)](#)

During mammal surveys suitable areas of habitat that might support protected mammals in addition to recording any field signs such as well-used pathways, droppings, places of shelter and features or areas likely to be of particular value as foraging resources. Survey techniques followed the following best practice guidance:

- NRA (2009) 'Ecological Surveying Techniques for Protected Flora and Fauna During the Planning of National Road Schemes'
- NRA, (2006). Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes
- NRA, (2008). Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes
- JNCC (2004) 'Common Standards Monitoring Guidance for Mammals'
- Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1
- Reid (2013) National Otter Survey of Ireland 2010/12. Irish Wildlife Manuals No. 76

#### 2.5.4. [Bats](#)

A bat roost survey and emergence roost survey were carried out to identify the presence of bats in and near the bridge structure. Bat surveys were conducted by Karen Banks, and a full report is provided in Appendix 4.

#### 2.5.5. [Avifauna](#)

All bird species observed and heard within in the vicinity of the bridge were noted during the ecological survey within the site.

#### 2.5.6. [Other Fauna](#)

During the course of the ecological survey at the proposed site, species from other groups of fauna were noted and included in the report.



## 2.6. Evaluation and Impact Assessment

The value of the ecological resources and features or receptors was determined using the ecological evaluation guidance given in the National Roads Authority (NRA) Ecological Assessment Guidelines as outlined in Table 2-1 (NRA, 2009). This evaluation scheme seeks to provide value ratings for ecological receptors, with values ranging from internationally to locally important. Internationally important receptors would include candidate Special Areas of Conservation (cSAC) or Special Protected Areas (SPA) while those of national importance would include Natural Heritage Areas (NHA).

This evaluation scheme is aimed at assessing the value of sites (see Table 2-1). It has been adapted here to assess the value of habitats and fauna within one site. The value of habitats is assessed based on its condition, size, rarity, conservation and legal status. The value of fauna is assessed on its biodiversity value, legal status and conservation status. Biodiversity value is based on its national distribution, abundance or rarity, and associated trends.

All Irish bat species are protected under the Wildlife (Amendment) Act 2000 and the EU Habitats Directive. Some of the habitats and species identified were selected as key ecological receptors. The NRA (NRA, 2009) refer to key ecological receptors as those ecological features which are evaluated as Locally Important (higher value) or higher and are likely to be impacted significantly by the proposed development. The features that were evaluated as being of Local Importance (higher value) and higher in this study were selected as key ecological features and the impact significance on each of these features was assessed.

### 2.6.1. [Ecological Resource Evaluation](#)

Ecological resources are evaluated using the criteria outlined in Appendix 1.

### 2.6.2. [Assessing Impact Significance](#)

Once the value of the identified ecological receptors (features and resources) was determined, the next step was to assess the potential effect or impact of the proposed works on the identified key ecological receptors. This was carried out with regard to the criteria outlined in various impact assessment guidelines (NRA, 2009; CIEEM, 2018 and revisions). The impacts were assessed under a number of parameters such as magnitude, extent, duration and reversibility.

Table 2-1 to Table 2-6 outline the EPA (2022) evaluation criteria utilised in this appraisal of the Environmental Factor, Biodiversity. These criteria are included in the Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022).



**Table 2-1: Table of Probability of Effects (EPA, 2022)**

Likely Effects	Unlikely Effects
The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

**Table 2-2: Quality of Effects (EPA, 2022)**

Quality of Effect	Description
Positive Effect	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or removing nuisances or improving amenities)
Neutral Effect	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Negative/Adverse Effect	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).

**Table 2-3: Significance of Effects (EPA, 2022)**

Significance of Effect	Description
Imperceptible	An effect capable of measurement but without significant consequences
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Profound	An effect which obliterates sensitive characteristics



**Table 2-4: Duration of Effects (EPA, 2022)**

Duration of Effect	Description
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects lasting less than a day
Temporary Effects	Effects lasting less than a year
Short-term Effects	Effects lasting one to seven years
Medium-term Effects	Effects lasting seven to fifteen years
Long-term Effects	Effects lasting fifteen to sixty years
Permanent Effects	Effects lasting over sixty years

**Table 2-5: Types of Effects (EPA, 2022)**

Type of Effect	Description
Effect/Impact	A change resulting from the implementation of a project
Likely Effects	The effects that are specifically predicted to take place – based on an understanding of the interaction of the proposed project and the receiving environment.
Indirect Effects (a.k.a. secondary effects)	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway
Cumulative Effects	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
‘Do Nothing’ Effects	The environment as it would be in the future should the subject project not be carried out.
‘Worst Case’ Effects	The effects arising from a project in the case where mitigation measures substantially fail
Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Reversible Effects	Effects that can be undone, for example through remediation or restoration
Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect
Synergistic Effects	Where the resultant effect is of greater significance than the sum of its constituents (e.g. combination of SO <sub>x</sub> and NO <sub>x</sub> to produce smog).



**Table 2-6: Definition of Terms – Source, Pathway, Receptor (EPA, 2022)**

Term	Description
Source	The activity or place from which an effect originates
Pathway	The route by which an effect is conveyed between a source and a receptor.
Receptor	Any element in the environment which is subject to effects.
Effect/Impact	A change resulting from the implementation of a project

Where impacts are assessed to be significant, mitigation measures have been incorporated into the project design to remove or reduce these impacts. The residual impacts after mitigation were then assessed.

The cumulative impact of the development was also assessed by discussing the impact repair and rehabilitation in terms of other developments that have planning permission, that are under construction or are in existence in the area. The cumulative impact of neighbouring developments, and agriculture in the greater area are also considered.





## 3. EXISTING ENVIRONMENT

### 3.1. Sites of International and National Importance

An Appropriate Assessment Screening Report was prepared to examine the potential for likely significant effects to European Sites (SACs and SPAs) that might arise from the proposed development (either alone or in combination). This was done in accordance with Article 6(3) of the 'Habitats' Directive (92/43/EEC) and is presented along with the Environmental Report.

#### 3.1.1. Special Areas of Conservation (SACs)

Special Areas of Conservation (SACs) are protected under the European Union (EU) 'Habitats Directive' (92/43/EEC), as implemented in Ireland by the European Communities (Natural Habitats) Regulations, 1997. Within the Zol of the proposed development there are two SACs within 15km (Figure 3-1): Great Island Channel SAC (001058) and Blackwater River (Cork/Waterford; 002170).

#### 3.1.2. Special Protection Areas (SPAs)

Special Protection Areas (SPAs) were initially designated under Directive 79/409/EEC, The Directive on the Conservation of Wild Birds ('The Birds Directive') and are now protected as Natura 2000 Sites under the EU 'Habitats Directive'. There is one SPA within 15km of the proposed works, Cork Harbour SPA (004030; Figure 3-2).

#### 3.1.3. Natural Heritage Areas and proposed Natural Heritage Areas (NHAs and pNHAs)

Sites of National Importance in the Republic of Ireland are termed, Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs). While the Wildlife (Amendment) Act 2000 has been passed into law, pNHAs will not have legal protection until the consultative process with landowners has been completed; this process is currently ongoing. However, they have been treated as fully designated sites for the purposes of this assessment. A total of 10 pNHAs are present within 10 km of the Study Area (Table 3-1). There are no NHAs within 10 km of the proposed works.



**Table 3-1: European Conservation Sites and National Conservation Sites within proximity of the proposed works**

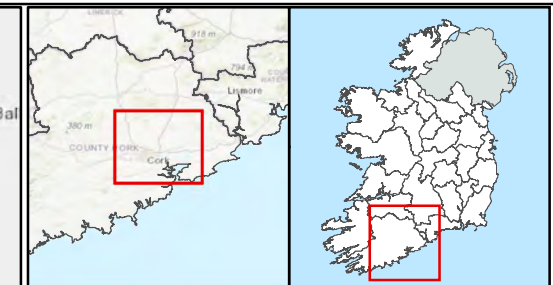
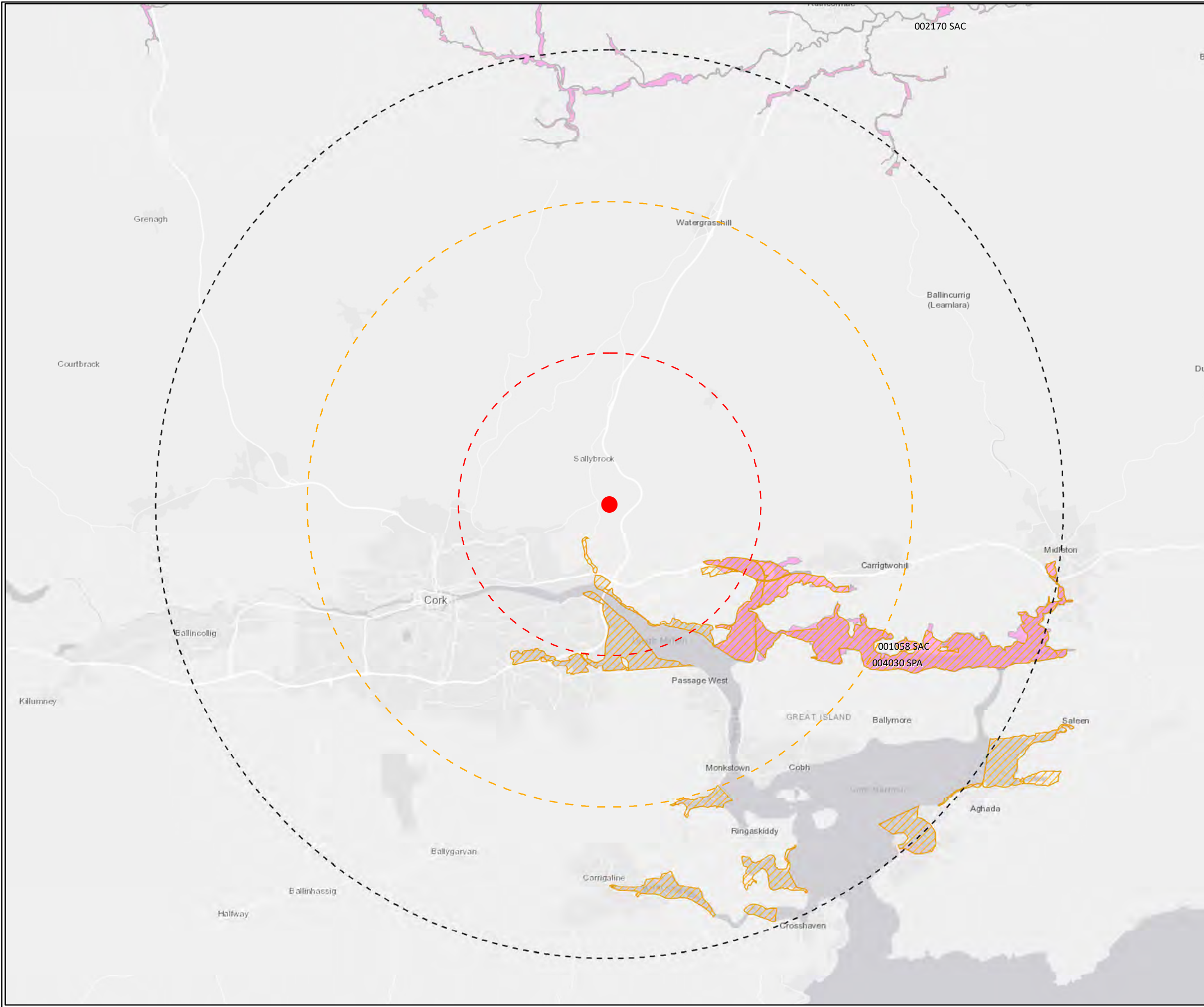
Site Name	Site Code	Summary Details	Distance from Proposed Project (km)
<b>European Sites</b>			
Cork Harbour SPA	004030	Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. It supports an internationally important population of <i>Tringa totanus</i> . A further 15 species have populations of national importance. It is an important site for gulls in winter and autumn, especially <i>Larus canus</i> and <i>Larus fuscus</i> . The site provides both feeding and roosting areas for the waterfowl species. The quality of most of the estuarine habitats is good. The wintering birds have been well-monitored since the 1970s. The site has a breeding colony of <i>Sterna hirundo</i> which is of national importance. The colony is monitored annually and the chicks ringed.	1.3km Direct Distance 1.8km Instream Distance
Great Island Channel SAC	001058	The site is of ecological importance for its examples of intertidal mud and sand flats and Atlantic salt meadows of the estuarine type. Both habitats are fairly extensive in area and of moderate to good quality. Site has high ornithological importance, supporting regularly c.50% of the wintering waterfowl of Cork Harbour. Significant proportions of the internationally important populations of <i>Limosa limosa</i> and <i>Tringa totanus</i> which winter in Cork Harbour utilise the site and it supports nationally important populations of a further 12 species, including <i>Pluvialis apricaria</i> and <i>Limosa lapponica</i> , both listed on Annex I of the EU Birds Directive.	3.6km Direct Distance
Blackwater River (Cork/Waterford) SAC	002170	The site supports important examples of a range of Annex I habitats, notably estuaries, intertidal mudflats and sandflats, perennial vegetation of stony banks, salt meadows, floating river vegetation, alluvial forests and oak woodlands. Most of these are of good quality and extensive in area. The Blackwater system is an important salmonid fishery and is of high conservation value for <i>Salmo salar</i> . Also supports important populations of <i>Lampetra planeri</i> , <i>L. fluviatilis</i> , <i>Petromyzon marinus</i> and <i>Alosa fallax fallax</i> . Substantial populations of <i>Margaritifera margaritifera</i> occur, while <i>Austropotamobius pallipes</i> is found in the Awbeg River. <i>Lutra lutra</i> is widespread throughout the site and has been subject to detailed surveys. <i>Trichomanes speciosum</i> occurs at one location. Annex I bird species present in the site include breeding <i>Egretta garzetta</i> , <i>Alcedo atthis</i> and <i>Falco peregrinus</i> and wintering <i>Cygnus cygnus</i> and <i>Pluvialis apricaria</i> . A good diversity of other winter waterfowl species also occurs.	11.8km Direct Distance



Site Name	Site Code	Summary Details	Distance from Proposed Project (km)
<b><i>NHA's and pNHA's</i></b>			
Glanmire Wood	001054	The main habitat of interest is mixed broad-leaved woodlands. The ground flora is particularly rich and includes two grasses, wood fescue and wood millet, which are thought to indicate ancient woodland. The tidal river below the wood adds to the diversity of the site with patches of saltmarsh. This site is of interest because this type of woodland is rare in east Cork.	1.2km
Dunkettle Shore	001082	The site is of value because its mudflats provide an important feeding ground for waterfowl and it acts as a significant roost for birds in the upper harbour. Furthermore, it is an integral part of Cork harbour which is an internationally important wetland, regularly holding flocks of over 20,000 waterfowl.	1.9km
Douglas River Estuary	001046	This site occurs within the upper harbour and consists of extensive mudflats, formed from fine silts, bisected by the Douglas River. Damp grassland occurs on part of the southern side, extending to some low islands which are inundated in extreme tides. This site is of interest because it is an essential part of the Cork Harbour complex and contains much higher densities of waders than would be expected from its relative size. It is ranked as the second most important area within the harbour.	2.9km
Great Island Channel	001058	See Great Island Channel SAC	3.4km
Rockfarm Quarry, Little Island	001074	The area is of considerable interest botanically because of its species diversity and the presence of 'rarities' for the region, such as Dense-flowered Orchid and Portland Spurge. The area could also be used as an educational resource for local schools – for example, projects such as comparing the species composition and phenology of the cut and uncut areas of the golf course, species composition changes with scrub invasion, invertebrate sampling and fossil identification.	4.3km
Cork Lough	001081	This small lake is situated in the north-west of Cork City, 1km north of the River Lee. The site is a NHA of local importance for its bird community	7.8km
Blarney Bog	001857	The main habitats of the area are lowland wet grassland, both grazed and ungrazed and freshwater marsh/fen. South of the river the land is wetter with scattered willow ( <i>Salix</i> spp.) trees, purple moor-grass ( <i>molinia caerulea</i> ), tufted hair-grass and soft rush dominating the vegetation. the area as a whole is used by a variety of bird species.	9.6km



Site Name	Site Code	Summary Details	Distance from Proposed Project (km)
		Birds noted to be breeding in the site include sedge and grasshopper warblers, reed bunting, stonechaff, meadow pipit, snipe and mallard. Hen harriers, a species listed in Annex I of the E.U. Birds Directive and also a Red-Listed species whose status is threatened in Ireland, are regularly seen in this area, hunting over the wetter ground and sometimes nesting in the reedbeds.	
Lee Valley	000094	A diverse range of semi-natural habitats occurs here including wet broadleaved woodland. Some areas behind the riverbank are frequently flooded and support wet grassland communities. Dry broadleaved woodland exists in other sections of the valley. Unimproved dry grassland occurs on an area of soil that has probable glacial origins. Freshwater marsh fringes the river itself in places. A number of wetland bird species breed here, including mallard, heron, sedge and grasshopper warblers and reed bunting and two rather locally distributed butterflies, the small blue and the wood white also occur. The diverse range of intact semi-natural habitats in the Lee Valley makes this a site of regional conservation importance.	9.7km
Monkstown Creek	001979	The area is of value because its mudflats provide an important feeding area for waterfowl and it is a natural part of Cork Harbour which, as a complete unit, is of international importance for waterfowl.	9.7km
Leamlara Wood	001064	This area is considered of local importance as there are few areas of semi-natural oak woodland in east Cork and it is a good example of this community.	9.8km

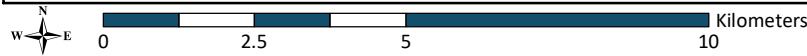


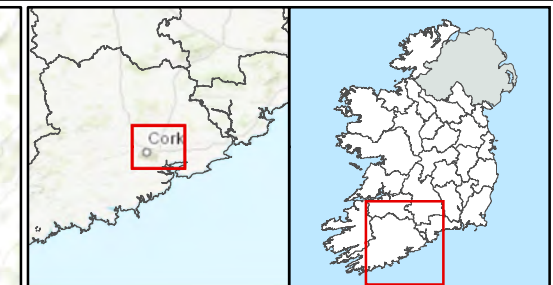
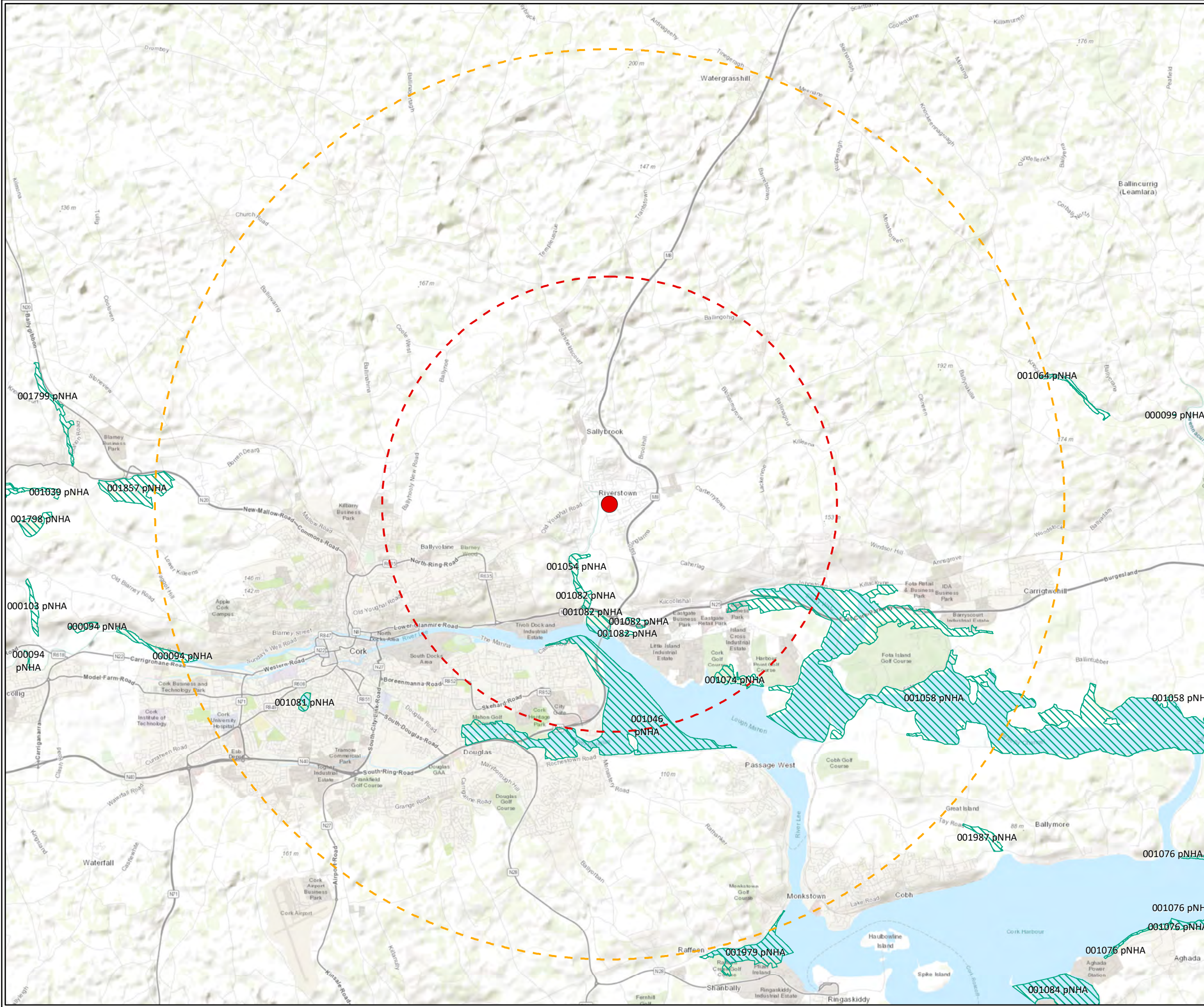
**Legend**

- Site Location
- 5km Distance Band
- 10km Distance Band
- 15km Distance Band
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)

<b>TITLE:</b> European Sites within proximity the Proposed Development	
<b>PROJECT:</b> Engineering Consultancy Services for Bridges (Glyntown)	
<b>FIGURE NO:</b>	3.1
<b>CLIENT:</b>	Cork City Council
<b>SCALE:</b> 1:124836	<b>REVISION:</b> 1
<b>DATE:</b> 31/08/2022	<b>PAGE SIZE:</b> A3

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**Legend**

- Site Location
- 10km Distance Band
- 5km Distance Band
- Proposed Natural Heritage Area (pNHA)

<b>TITLE:</b>	National Sites within proximity of the Proposed Development
<b>PROJECT:</b>	Engineering Consultancy Services for Bridges (Glyntown)
<b>FIGURE NO:</b>	3.2
<b>CLIENT:</b>	Cork City Council
<b>SCALE:</b>	1:83102
<b>REVISION:</b>	0
<b>DATE:</b>	07/09/2022
<b>PAGE SIZE:</b>	A3



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## 3.2. Habitats

There are no habitats within the study area that conform to those listed under Annex I of the EU Habitats Directive. The habitats surrounding the bridge is predominantly Broadleaved Woodland (WD1) and hedgerows/treeline (WL1/WL2). Extending beyond these habitats, the surroundings included recolonising hardstanding areas, built land (roads and buildings) and amenity grassland.

### 3.2.1. [Habitats within and adjacent to the Proposed Works Site](#)

#### **Broadleaved Woodland (WD1)**

Woodland was present at the west facing of the bridge. Sycamore (*Acer pseudoplatanus*) was the dominant species here, with abundant ivy (*Hedera hibernica*). Elder (*Sambucus nigra*), bramble (*Rubus fruticosus* agg.) and beech (*Fagus sylvatica*) were frequently occurring species, with occasional ash (*Fraxinus excelsior*), male fern (*Dryopteris filix-mas*) and Hart's tongue fern (*Asplenium scolopendrium*). The rarer species observed were wood anemone (*Anemone nemorosa*), hazel (*Corylus avellana*), nettle (*Urtica dioica*), herb-robert (*Geranium robertianum*) and willow (*Salix* sp.). Winter heliotrope (*Petasites pyrenaicus*) was recorded in patches within the woodland. Standing dead trees (no=2) with ivy cladding were observed.



**Plate 3-1: Broadleaved Woodland (WD1) at the western facing of the bridge**

#### **Hedgerows/Treelines (WL1/WL2)**

The hedgerows and treelines adjacent to the bridge were dominated by butterfly bush (*Buddleja davidii*), which ran from the bridge easterly along the extent of the river. There was an abundance of sycamore (*Acer pseudoplatanus*) and bramble (*Rubus fruticosus* agg.). Nettle (*Urtica dioica*) and ivy (*Hedera hibernica*) are frequent within the hedgerows with occasional cleavers (*Galium aparine*), dandelion (*Taraxacum* sp.), hard fern (*Blechnum spicant*) and willow (*Salix* sp.). A row of cherry laurel (*Prunus laurocerasus*) hedging was present to the northeast of the bridge. Species including ash (*Fraxinus excelsior*), cock's foot (*Dactylis glomerata*), herb-robert (*Geranium robertianum*) and Hart's tongue fern (*Asplenium scolopendrium*) were also rarely observed.



Japanese knotweed (*Fallopia japonica*) was recorded adjacent to the east facing of the bridge (ITM 573207 575067).



Plate 3-2: Buddleia present in the hedgerows on the eastern side of the bridge

### ***Depositing/Lowland River FW2***

The Butlerstown River, which flows beneath the bridge has a variety of flow types, with a substratum dominated by large cobbles with a lower proportion of gravel, some sand, and no siltation. Where the Butlerstown River converges with the Glashaboy River 20m downstream, there is a pool (Plate 3-3). Downstream of the pool is a vegetated gravel island. Donkeys have access to the right bank between the bridge and the confluence of the two rivers, causing mild poaching on the ground. Moderate shade limits plant growth in this stretch of river. The most abundant aquatic plant is water crowfoot (*Ranunculus aquatilis*), downstream of the bridge.



Plate 3-3: Depositing/Lowland River view upstream





The evaluation of these habitats with regards to biodiversity informs whether these habitats are ecological receptors of the proposed development, see Table 3-2 below.

**Table 3-2: Evaluation of habitats within the study area (CIEEM, 2018)**

Habitat	Evaluation	Rationale	Selection as key ecological receptor
Broadleaved Woodland (WD1)	Site	Semi-natural habitat with presence of invasive species. Not within the footprint of development.	No
Hedgerows/Treelines (WL1/WL2)	Site	Semi-natural habitat with presence of invasive species and ornamental planting. Invasive species in the vicinity of the bridge will be treated.	Yes
Depositing/Lowland River (FW1)	River Basin District	Important to local wildlife; can act as ecological corridors.	Yes
Buildings and artificial surfaces BL3	Site	Hardstanding and Roads: artificial habitats of low value to local wildlife	No



### 3.3. Flora

#### 3.3.1. Protected or Rare Flora

No rare or protected flora species protected under the Flora Protection Order (2022), listed in Annex II and IV of the EU Habitats Directive (92/43/ECC), or listed in the Irish Red Data were recorded during the surveys.

No records of rare and/or protected flora from NBDC data within the 2km grid square (W77H) surrounding the proposed works were returned. Furthermore, the bridge does not overlap any Bryophyte Sites, according to the NPWS FPO Bryophyte Sites Mapview<sup>2</sup>. However, two Bryophyte Sites (pNHA Glanmire Wood: 001054 and pNHA Dunkettle Shore) occur downstream of the Bridge in the Glashaboy Estuary.

Additionally, according to BSBI data<sup>3</sup>, two species (*Ligustrum vulgare* and *Pinus sylvestris*) were present within the W77H grid square that are awaiting assessment. However there are unlikely to be threatened species (Wyse Jackson et al., 2016).

#### 3.3.2. Invasive Non-Native Flora

A number of invasive species were identified at the site. Japanese knotweed, a high-impact invasive species, was recorded adjacent to the east facing of the bridge on the northern bank (ITM 573207 575067). *Buddleja* ran from the bridge easterly along the extent of the river to at least 100m upstream. Winter heliotrope was recorded in patches within the woodland and old man's beard along the hedgerows.

A total of five non-native invasive plant species listed below in Table 3-4 below are recorded within the 2km grid square (W77H) overlapping the bridge.

**Table 3-3: Historic Records of Invasive Non-native Flora within the 2km Grid Square (W77H) overlapping Glyntown Bridge.**

Common Name	Scientific Name	Invasive Impact	Last Record Date
Knotweed Hybrid	<i>Fallopia japonica x sachalinensis</i>	High	27/08/2014
Giant hogweed	<i>Heracleum mantegazzianum</i>	High	30/05/2018
Giant rhubarb	<i>Gunnera tinctoria</i>	High	13/06/2020
Japanese knotweed	<i>Fallopia japonica</i>	High	15/05/2018
Sycamore	<i>Acer pseudoplatanus</i>	Medium	28/08/2008

<sup>2</sup> NPWS Bryophyte Viewer <http://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48edbb70369d7fb26b7e> Accessed 01/09/2022

<sup>3</sup> Botanical Society of Britain and Ireland, Grid Reference Parser <https://database.bsbi.org/gridref.php> Accessed 01/09/2022



### 3.4. Fauna

#### 3.4.1. Avifauna

##### **Birds Recorded During Site Walkover**

No protected bird species were observed during the walkover of the site. Due to the timing of the surveys in November, nesting birds were not surveyed.

##### **Birds Species Within 2km of Site (Desktop Study)**

The desktop review using the National Biodiversity Data Centre's W77H Grid Square highlighted that within 2km surrounding of the bridge a total of 32 species have been recorded (see Table 3-5 below).

Three red-listed species were recorded: swift, grey wagtail and redwing. A total of five Amber-listed species were recorded in the W77H grid square: greenfinch, goldcrest, goosander, house sparrow and mallard. Potential nesting habitat for grey wagtail, swift and house sparrow is present in the bridge structure. Additionally hedgerows and treelines surrounding the site may provide nesting habitat for greenfinch and goldcrest. Goosander is unlikely to breed near the site and would be more likely found further downstream in the estuary. There is potential for mallard breeding in the vegetation surrounding the river.

**Table 3-4: Bird Records within the W77H grid square surrounding Glyntown Bridge**

Common Name	Scientific Name	Date of Last Record
Blackcap	<i>Sylvia atricapilla</i>	27/01/2017
Blue Tit	<i>Cyanistes caeruleus</i>	31/12/2011
Chaffinch	<i>Fringilla coelebs</i>	31/12/2011
Coal Tit	<i>Periparus ater</i>	31/12/2011
Blackbird	<i>Turdus merula</i>	31/12/2011
Chiffchaff	<i>Phylloscopus collybita</i>	31/12/2011
Swift	<i>Apus apus</i>	10/06/2021
Wood Pigeon	<i>Columba palumbus</i>	31/12/2011
Collared Dove	<i>Streptopelia decaocto</i>	31/12/2011
Hobby	<i>Falco subbuteo</i>	01/06/1988
Jackdaw	<i>Corvus monedula</i>	31/12/2011
Jay	<i>Garrulus glandarius</i>	31/12/2011
Siskin	<i>Carduelis spinus</i>	31/12/2011
Sparrowhawk	<i>Accipiter nisus</i>	31/12/2011
Treecreeper	<i>Certhia familiaris</i>	31/12/2011
Goldfinch	<i>Carduelis carduelis</i>	31/12/2011



Common Name	Scientific Name	Date of Last Record
Greenfinch	<i>Carduelis chloris</i>	31/12/2011
Robin	<i>Erithacus rubecula</i>	31/12/2011
Goldcrest	<i>Regulus regulus</i>	31/12/2011
Goosander	<i>Mergus merganser</i>	31/12/2011
Great Tit	<i>Parus major</i>	31/12/2011
Grey Wagtail	<i>Motacilla cinerea</i>	31/12/2011
Hooded Crow	<i>Corvus cornix</i>	31/12/2011
House Sparrow	<i>Passer domesticus</i>	31/12/2011
Long-tailed Tit	<i>Aegithalos caudatus</i>	31/12/2011
Mallard	<i>Anas platyrhynchos</i>	31/12/2011
Mistle Thrush	<i>Turdus viscivorus</i>	31/12/2011
Redwing	<i>Turdus iliacus</i>	31/12/2011
Song Thrush	<i>Turdus philomelos</i>	31/12/2011
White Wagtail	<i>Motacilla alba</i>	31/12/2011
White-throated Dipper	<i>Cinclus cinclus</i>	31/12/2011
Wren	<i>Troglodytes troglodyes</i>	31/12/2011

#### 3.4.2. Non-volant Mammals

No mammal signs were recorded within the vicinity of the bridge. High water levels due to recent rain may have washed away existing signs.

While no evidence of otters was seen on 08/11/2021, the National Biodiversity Data Centre (NBDC) website (Table 3-6) shows a record for otter in the 100m square at Glyntown Bridge, as well as farther upstream and on Glashaboy River c. 1.3km upstream of the confluence. This indicates at least occasional presence of otter at Glyntown Bridge.

Hedgehog and red squirrel (Table 3-6) have been recorded within the area and could potentially be present within hedgerow, treelines, as well as the adjacent woodland which may provide foraging habitat.

The high-impact invasive mammal species feral ferret has been recorded historically within the 2km Grid Square surrounding the bridge (Table 3-7).



**Table 3-5: Non-volant Mammals (records within the W77H grid square)**

Common Name	Scientific Name	Irish Red List	EU Habitat Directive Annex Listing	Wildlife Act
Eurasian Otter	<i>Lutra lutra</i>	Least Concern	II & IV	✓
European Hedgehog	<i>Erinaceus europaeus</i>	Least Concern	N/A	✓
Red Squirrel	<i>Sciurus vulgaris</i>	Least Concern	N/A	✓

**Table 3-6: Invasive Mammal Species (records within the W77H grid square)**

Common Name	Species Name	Invasive Impact	Date of Last Record
Feral Ferret	<i>Mustela furo</i>	High	27/11/2014

### 3.4.3. Bats

Visual inspections of the bridge structure did not identify any signs of bat roosting. However, even if a roost is sometimes used by bats, once off surveys may not reveal the bridge as a bat roost due to their sometimes transient nature, or signs being washed away or fading. The bridge structure was classified as Grade 1 as it supports a low number of crevices that bats could use but would be sub-optimal due to exposure to weather and light. Furthermore, bats were not identified emerging from the bridge.

The bridge is part of a landscape considered to be of moderate to high suitability for bats in general; and is of high suitability for soprano pipistrelle, common pipistrelle, brown long-eared, Leisler's, whiskered and natterer's bat<sup>4</sup>.

Three bat species have been recorded within 2km (grid square W77H) of the site (Table 3-9 below). Soprano pipistrelle and Leisler's bat were recorded flying during the emergence survey.

The hedgerows, treelines, woodlands, and river at the bridge offer potential foraging and commuting areas for bats.

**Table 3-7: Bat Species recorded within the 2km grid square (W77H) surrounding Glyntown Bridge**

Common Name	Scientific Name	Irish Red List	EU Habitat Directive Annex Listing	Wildlife Act
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	Least Concern	IV	✓
Common Pipistrelle	<i>Pipistrellus pipistrellus sensu lato</i>	Least Concern	IV	✓
Daubenton's Bat	<i>Myotis daubentonii</i>	Least Concern	IV	✓

<sup>4</sup> Lundy et al., 2011 and www.biodiversityireland.ie Landscape Model layer.



#### 3.4.4. Other Fauna

No crayfish were found on 08/11/2021. There are no known records for white-clawed crayfish in the Butlerstown River. A predominantly sandstone catchment would make the water chemistry unsuitable for crayfish (Holdich, 2003).

There are no records of freshwater pearl mussels in this watercourse. No suitable habitat for the freshwater pearl mussel was seen.

Salmon and trout presence in the Butlerstown River is indicated by very good salmonid spawning and nursery habitat, combined with very good water quality.

The near threatened large red tailed bumble bee (*Bombus lapidarius*) was recorded in 2019 in the W77H grid square. This species is listed as Near-threatened and may utilise the hedgerows and woodland edges at the bridge.

Two other invasive fauna species were recorded in the W77H grid square, harlequin ladybird and Jenkin’s spire snail (Table 3-9).

**Table 3-8: Other Invasive Fauna Recorded within the 2km grid square (W77H) surrounding Glyntown Bridge**

Common Name	Scientific Name	Invasive Impact	Date of Last Record
Harlequin Ladybird	<i>Harmonia axyridis</i>	High	13/06/2022
Jenkin’s Spire Snail	<i>Potamopygrus antipodaum</i>	Medium	21/06/2017



## 4. POTENTIAL IMPACTS

### 4.1. Impacts During Construction

#### 4.1.1. Designated Sites

The proposed works at Glyntown Bridge is not within the boundary of any designated conservation areas and does not require any resources from designated areas. European designated sites within 15km of the proposed development site, which are both SACs and SPAs, are considered under their higher European designation within the accompanying Appropriate Assessment Screening Report. Details of the NHAs and pNHAs assessed within this Ecological Appraisal are discussed below:

- Glanmire Wood (001054) is located c. 1.2km southwest of the proposed works and is comprised of mixed broadleaved woodland, with two possible ancient woodland indicator species (wood fescue and wood millet). There is hydrological connectivity between the proposed development and the NHA via the Glashaboy River, which flows along the western edge of the NHA.
- Dunkettle Shore (0018082) is located c. 1.9km south of the proposed works and comprises mudflats of importance for water birds. There is hydrological connectivity via the Glashaboy River.
- Douglas River Estuary (001046) is located c. 2.9km south of the proposed works and comprises mudflats and damp grassland of importance for waders. The northern boundary of the NHA lies close to the Glashaboy Estuary, therefore there is hydrological connectivity with the proposed works (which would be diluted by the River Lee and Cork Harbour).
- Great Island Channel (001058) is located c. 3.4km south of the proposed site and is of ecological importance for its examples of intertidal mud and sand flats and Atlantic salt meadows of the estuarine type. It is also an important area for waterfowl. There is low hydrological connectivity as this lies within the Inner Cork Harbour, into which the Glashaboy River also flows.
- Rockfarm Quarry, Little Island (001074) is located c. 4.3km southeast of the proposed works and is of importance for rare botanical species such as dense-flowered orchid and Portland spurge. This site is within Cork Harbour but is a terrestrial habitat therefore there is deemed to be no hydrological connectivity.
- Cork Lough (001081) is located c. 7.8 km southwest of the proposed works and is locally important for birds. There is no hydrological connectivity between the proposed development and the NHA.
- Blarney Bog (001857) is located c. 9.6 km west of the proposed works and comprises lowland wet grassland. There is no hydrological connectivity between the proposed works and the NHA.
- Lee Valley (000094) is located c. 9.7 km southwest of the proposed development site and is comprised of semi-natural habitats including wet and dry broadleaved woodland. It is also important for wetland birds. There is no hydrological connectivity between the proposed development and the site.
- Monkstown Creek (001979) is located c. 9.7 km southeast of the proposed works and is designated for its mudflats, which are of value to waterfowl. There is negligible hydrological connectivity between the proposed works and the NHA, as it lies in Outer Cork Harbour.
- Leamlara (001064) is located c. 9.8km northeast of the proposed works comprises semi-natural oak woodland. There is no hydrological connectivity between the proposed development and the site.



Due to the hydrological connectivity between the proposed works Glanmire Wood, Dunkettle Shore and Douglas River Estuary, there is possibility for disturbance and displacement of species during the construction phase. Refer to section 4.1.3 below for potential impacts to avifauna at these NHAs.

For the remainder of the NHAs, given the lack of a hydrological link, and the fact that they are designated primarily for habitats, flora, and fauna occurring within their boundaries, and will not be subject to habitat loss, disturbance and/or displacement during the construction phase or any of the development, **no impact** is envisaged to these NHAs.

#### 4.1.2. [Habitats and Flora](#)

##### ***Habitats within the development zone***

There are no Annex I habitats within the works footprint. A total of three habitat types were identified as key ecological receptors (See Table 3-2) within the vicinity of the bridge, namely Hedgerows (WL1), Treelines (WL2) and Depositing/Lowland River (FW1).

Hedgerows (WL1) and Treelines (WL2) will be impacted by vegetation removal, however most of the removed vegetation is invasive. Trees and other vegetation will be removed from the stonework of the bridge. Due to the small footprint of works, and removal of invasive species, this impact is classified as ***not significant, neutral, long term effects in a local context.***

Depositing/Lowland (FW1) will be impacted by instream works. Concrete will be poured to rebuild the cutwater, requiring damming during works (lasting approx. 2.5 weeks). The Butlerstown River has hydrological connectivity with Cork Harbour. In the absence of mitigation, the impact is classified as ***significant, negative, long-term in a river basin district/estuarine system context.***

##### ***Habitats adjacent to the development zone***

No Annex I habitats are present in the areas surrounding the works area.

##### ***Protected or Rare Flora***

No rare or protected flora were recorded within the works area.

##### ***Invasive Non-native Flora***

Invasive species (Japanese knotweed, winter heliotrope and cherry laurel) are present in the vicinity of the bridge. These species could be disturbed and spread during works. This could cause ***significant, negative, long-term impact in a river basin district/estuarine system context***

#### 4.1.3. [Avifauna](#)

The Amber and Red-listed species identified during field surveys and during the desktop study fall into a number of general groups which are likely to use the habitats within the proposed works area in a particular way.





The passerine species, including the Amber-Listed greenfinch and goldcrest, may breed and/or forage within hedgerows and treelines within the site. Since vegetation and invasive species are proposed to be removed, if construction were to take place during the breeding season, disturbance to this species could be **significant**; as such, in the absence of mitigation measures (e.g. disturbance during the nesting season between 1<sup>st</sup> March and 31<sup>st</sup> August)

The species likely to build nests (house sparrow, swift, grey wagtail) associated with the bridge structure may also be disturbed during construction. Furthermore, in-stream works may disturb mallards if present.

Red-listed redwing is not considered to be breeding in the location of works, as this is a winter visitor from Scandinavia. Additionally, Amber-Listed goosander is unlikely to be breeding in the vicinity of the bridge, as it is not an estuarine location (however breeding has been recorded inland in lakes and pools).

The proposed works location is already located on a busy road with regular human activity associated with pedestrian and vehicle traffic. There is the potential for some localised disturbance or avoidance, but this would be considered temporary with species highly likely to return once construction has been completed. The increase in noise and human activity during the construction phase for all key species is considered to be a **negative, reversible, temporary, slight impact in a local context**.

#### 4.1.4. [Non-volant Mammals](#)

There are no breeding and resting places (i.e. couches and hots) within the vicinity of the bridge, however, otter has been observed in the vicinity of the bridge. Impacts to otter are likely to be limited to potential reductions in water quality, due to pollution or contamination in the absence of mitigation measures. As such, in the absence of mitigation measures, the potential impact to this species is envisaged to be **negative, reversible, short-term slight in a local context**.

Hedgehog and red squirrel (Table 3-6) have been recorded within the area and could potentially be present within hedgerow, treelines, as well as the adjacent woodland which may provide foraging habitat. Considering these woodlands are outside the development footprint, and that a total of only vegetation within the footprint of the bridge will be removed, the impact to red squirrel and hedgehog are envisaged to be **negative, irreversible, long-term slight in a local context**.

#### 4.1.5. [Bats](#)

Bat roosts were not identified within the bridge structure. However, vegetation at the site provides suitable foraging habitat for bats. Interruptions to these linear foraging habitats may result in a reduction in foraging habitat quality for bats, however the removal of vegetation is confined to the bridge footprint, therefore impacts are unlikely to be severe. Considering these factors, impacts to bats are envisaged to be **negative, reversible, short-term, slight in a local context**.

#### 4.1.6. [Other Fauna](#)

Salmon and trout are likely to be present in the Butlerstown River. The proposed works have the potential for both direct and indirect impacts on these species, due to disturbance of substrate due to in-stream works, release of contaminants from concrete usage and invasive species treatment, and sediment run off from vegetation removal.



This may impact the receiving watercourse, with resultant impacts on aquatic habitats and species. In the absence of mitigation, this impact is characterised as **Negative, Irreversible, Short-term, Significant in a local context**.

The large red tailed bumble bee (*Bombus lapidarius*) was recorded in 2019 in the W77H grid square. This species is listed as near-threatened and may utilise the hedgerows and woodland edges at the bridge. As vegetation will be removed from hedgerows and bridge stonework within the works footprint, there is a potential for impacts to the foraging and nesting of this species. This impact is characterised as **Negative, Irreversible, Slight in a site context**.

## 4.2. Impacts During Operation

### 4.2.1. Invasive Species

There will be ongoing treatment of invasive species during the operation of the bridge. The impacts of this are the same as those discussed in Section 4.1.2.

### 4.2.2. Other Sites, Habitats and Species.

Given the return to current usage, and lack of further works, there are no envisaged potential impacts on designated sites, habitats and flora, avifauna, non-volant mammals, bats, or other fauna, as a result of operating Glyntown Bridge following the proposed works.

## 4.3. Impacts During Decommissioning

There is no plan for the decommissioning of the structure.

## 4.4. Cumulative Impact

Cumulative impacts will depend on species present, number and frequency of occurrence of fauna observed at the proposed site and at adjacent proposed and existing developments. The timing of the construction phase can also have a bearing on the magnitude of the impact. It is also dependent on distance from the proposed works in to other existing and proposed developments and the habitats present between same or their linkage to the proposed development site.

A cumulative impact arises from incremental changes caused by other past, present or reasonably foreseeable actions together with the proposed development. The surrounding environment is dominated by commercial and residential properties.



#### 4.4.1. Other Developments

A planning search was carried out using the online planning enquiry system at: <https://www.corkcity.ie/en/council-services/services/planning/search-for-a-planning-application/> with other plans and projects within the zone of influence of the proposed works and with connectivity to the Butlerstown and Glashaboy Rivers, within the previous five years.

The majority of consent applications pertain to one-off residential dwelling, change of use and small structures. The individual projects may not have potential for in-combination effects with the proposed project, however, cumulatively there is potential for in-combination effects with the proposed project.

Three large scale infrastructure projects within the planning application in the past five years with connectivity to the Butlerstown River and Glashaboy River are:

- Glashaboy River (Glanmire/Sallybrook) Drainage Scheme
- Dunkettle Interchange Upgrade
- Residential development of 30 no. houses

These larger applications were identified as having potential for in-combination effects with the proposed works, however, were ruled out by an appropriate EIAR/NIS or granting permission under conditions ensuring no environmental impacts). Therefore, no in-combination impacts will occur with other projects identified.

#### 4.4.2. Plans

##### ***Cork City Development Plan***

The City Development Plan is currently under review. The Proposed Cork City Development Plan 2022-2028 has recently been published and will ultimately replace the Cork City Development Plan 2015-2021 once adopted.

The current plan includes several policies for the protection of wildlife and European sites, encouraging the appropriate assessment of potential effects from future development. The implementation of the policies and objectives of the County Development Plan in-combination with the design of the proposed project would have a positive effect for biodiversity in the local area.

Without mitigation the proposed project could result in a significant impact to biodiversity, therefore, it would be contrary to the policies and objectives of the aforementioned plans in the absence of mitigation.



## 5. MITIGATION MEASURES

Without mitigation, the project may have long-term significant impacts at a local/river basin district/estuarine system context. These impacts would be as a result of invasive species and in-stream works. As part of the proposed development the following mitigation measures are to be implemented in order to minimise the potential impacts on the existing ecology which are discussed below.

### 5.1. Mitigation by Avoidance and Design

With regard to the construction phase of the proposed project, the following design and best practice measures are incorporated into the proposed plan for the bridge repair and rehabilitation

- In-stream works will only occur following examination of the eastern cutwater. If good stone is located, the cutwater will not need to be underpinned with a concrete base
- In areas where water contact is more frequent, a more resistant NHL 5 mortar mix will be used, preventing washout
- Concrete if required, will be pumped into place from the bridge deck
- Tree trunks that are removed will be collected and disposed of offsite by means of recycling as wood chippings
- Damming will only occur during periods of low flow.

Further mitigation measures prescribed to reduce and/or avoid the potential for the proposed project to have significant impact on the existing ecology is described below.

### 5.2. Site Supervision

A Project Ecologist/Ecological Clerk of Works (ECoW) with appropriate experience and expertise (in bridge works) will be employed for the duration of the construction phase to ensure that all the mitigation measures outlined in relation to the environment are implemented.

The Project Ecologist/ECoW will be awarded the authority to stop construction activity if there is potential for adverse ecological effects to occur.

Toolbox talks will be given to construction staff on disturbance to key species and invasive species prevention and contamination control, prior to and during construction. The Project Ecologist/ECoW will provide these talks. This will ensure all personnel present receive relevant information on the site prior to works.



### 5.3. Water Quality Measures

The mitigation measures proposed to reduce potential direct and indirect impacts are outlined below:

- All site plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed.
- All major repair and maintenance operations will take place off site.
- Vehicles entering the site will be in good working order, free from leakage of fuel or hydraulic fluid.
- All personnel working on site will be trained in pollution incident control response.
- A regular review of weather forecasts of heavy rainfall (>10mm/hour) is required.
- All major repair and maintenance operations will take place off site.
- Vehicles entering the site will be in good working order, free from leakage of fuel or hydraulic fluid.
- Portaloo's and / or containerised toilets and welfare units will be used to provide toilet facilities for site personnel.
- Sanitary waste will be removed from site via a licensed waste disposal contractor.
- Major construction works including concrete pours onsite will be timed to occur outside periods where heavy rainfall (>10mm/hour) would be expected.
- A regular review of weather forecasts (weather forecasts will be checked at least 24 hours in advance of works.) of heavy rainfall is required, and the site contingency plan will be updated in accordingly before and after such events.
- Concrete to be utilised will contain curing agents to ensure fast setting.
- Instream isolation will be necessary if the cutwater is in poor condition requiring underpinning. This will require sediment control in the flowing water and isolating sediment from the work area from the watercourse.
- A cofferdam will be installed during instream works. This will consist of a polypropylene bag, filled with clean pea gravel grade (sand or deleterious materials will not be permitted in the event of bag breakage). These bags will provide a structural barrier to the watercourse and provide a dry area for works.
- Dye testing will be implemented to ensure efficacy of the dam prior to concrete works. Small amounts of 'Fluorescein' an effective non-toxic dye is recommended to ensure visibility in the water column. Food dyes and other common dyes are not effective for testing due to the lack of visibility. Any leaks identified will be plugged to minimise concrete washout reaching the river.
- A second dammed area shall be constructed using smaller (e.g. 25kg) pea gravel filled sand bags. This secondary dammed area shall be placed immediately downstream and connected to the cofferdam. The ponded area of still water will capture concrete washout water to allow for it to be pumped out of the watercourse, minimising the volume of concrete washout entering the watercourse.
- Water will be pumped out of this area using a mobile bowser which will be treated using best practice systems before discharging over land. Water that is pumped out will not be discharged into the river.
- Water will be continually pumped from behind the dam to ensure a dry area for works.
- The bags will be sealed, and a liner will be installed in the event of stacking being required due to water depths. Bags will not be filled to capacity to avoid breakage.



## 5.4. Invasive Species

Prior to commencing works, Japanese knotweed species will be treated on site. This is the only Schedule III species present. Additionally the other species in the vicinity are not within the bridge footprint. The invasive species management plan in Appendix 3 for all works in areas is included.

Where invasive species have been physically removed and soil disturbed, this soil will be seeded or replanted (including 5cm deep mulch) with native plant species. This will prevent erosion of the riverbank and the easy colonisation of bare soil by invasive species in the area.

Soil imported to the site for infilling of embankments will receive documentation from suppliers stating that it is free from invasive species.

## 5.5. Habitats and Flora

The area of the proposed works will be kept to the minimum necessary, including all site clearance works, to minimise disturbance to habitats and flora. In this case, the footprint of the proposed development has been kept to the minimum necessary.

No disturbance to habitats or flora outside the proposed project area will occur.

Machinery, and equipment will be stored within the site compound.

Designated access points will be established within the site and all construction traffic will be restricted to these locations. In the event of in-stream works, designated access points to the river will be established for personnel.

## 5.6. Avifauna

Construction operations will take place during the hours of daylight to minimise disturbances to roosting birds or any active crepuscular/nocturnal bird species and the construction compound will not be lit at night.

Removal of mature vegetation will be carried out outside of the bird breeding season (March 1st – August 31st). Where this is not possible due to construction program constraints the appointed ECoW will inspect the area to be felled no more than 48hrs in advance of the felling/clearance works and advise if bird species are present and if so, on a suitable exclusion buffer needed until the species has fledged.

## 5.7. Terrestrial Mammals

Construction operations within the proposed development site will take place during the hours of daylight to minimise disturbances to faunal species at night.

The water quality mitigation measures outlined above will ensure otter are not negatively impacted by declines in water quality.



A pre-construction otter survey should be carried out to ensure no resting or breeding areas are located within 150m of the bridge (should any become utilised between the survey date and works commencement, to confirm the findings of the Ecological Assessment. Should an otter breeding or resting area be identified, a derogation licence will be acquired from the National Parks and Wildlife Service (NPWS) in advance of works and mitigation measures adjusted accordingly.

## **5.8. Bats**

There was no evidence of bats roosting within the Glyntown Bridge. However, as a precautionary measure the bridge will be subject to a roost survey prior to commencement of works to determine the presence or absence of bats, confirming the findings of the Ecological Assessment. If any new roosts are found during these surveys a relevant bat derogation licence shall be sought prior to construction works commencing and works will be carried out under the terms of the relevant derogation licence this shall include any felling works/construction being undertaken, and works will be timed and conducted in a manner to ensure that no bats are harmed as a result of felling. Relevant guidance including the NRA (2006) guidelines for the treatment of bats during the construction of national road schemes.

Construction operations within the proposed development site will take place during the hours of daylight to minimise disturbances to bat species at night.

Lighting shall not be left switched on overnight within the site. The use of lighting within the site can discourage bats from utilising the site during construction.

## **5.9. Other Taxa**

In addition to the Water Quality Measures outlines in Section 5.3, Inland Fisheries Ireland guidance on protection of fisheries during construction works in and adjacent to watercourses (IFI, 2016) should be adhered to.

Prior to dewatering of the cofferdam, all fish will be removed via depletion electro-fishing (under DCCAE licence) and translocated to suitable areas upstream of the works area. Dewatering activities will be monitored and any residual fish observed on/in the stream bed (e.g. salmonids) will also be translocated upstream.

Proposed works shall be carried out during July 1st and September 30th inclusive, unless otherwise agreed with IFI, to protect sensitive salmonids.



## 6. RESIDUAL IMPACT

Following the proposed works, the Invasive Species Management Plan prescribes continual monitoring for at least after two years following successful eradication.

Following the full implementation of both the mitigation and recommended measures, the residual impacts on biodiversity vary from ***Imperceptible*** to ***Not Significant***.





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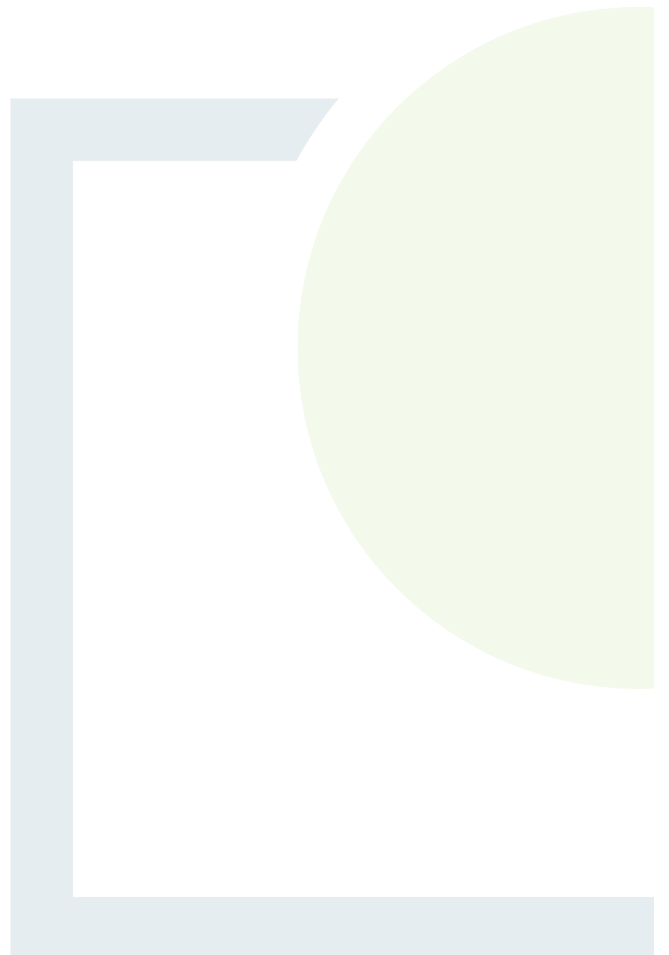
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# **APPENDIX 1**

Evaluation Criteria (NRA 2009  
CIEEM 2018)



NRA (2009)	CIEEM (2018)	Criteria
International Importance	International and European	<p>'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.</p> <p>Proposed Special Protection Area (pSPA).</p> <p>Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).</p> <p>Features essential to maintaining the coherence of the Natura 2000 Network.<sup>5</sup></p> <p>Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.</p> <p>Resident or regularly occurring populations (assessed to be important at the national level)<sup>6</sup> of the following:</p> <p>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</p> <p>and/or</p> <p>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.</p> <p>Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).</p> <p>World Heritage Site (Convention for the Protection of World Cultural &amp; Natural Heritage, 1972).</p> <p>Biosphere Reserve (UNESCO Man &amp; The Biosphere Programme).</p> <p>Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).</p> <p>Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).</p> <p>Biogenetic Reserve under the Council of Europe.</p> <p>European Diploma Site under the Council of Europe.</p> <p>Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).<sup>7</sup></p>
National Importance	National	<p>Site designated or proposed as a Natural Heritage Area (NHA).</p> <p>Statutory Nature Reserve.</p>

<sup>5</sup> See Articles 3 and 10 of the Habitats Directive

<sup>6</sup> It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

<sup>7</sup> Note that such waters are designated based on these waters' capabilities of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

NRA (2009)	CIEEM (2018)	Criteria
		<p>Refuge for Fauna and Flora protected under the Wildlife Acts. National Park.</p> <p>Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA);</p> <p>Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.</p> <p>Resident or regularly occurring populations (assessed to be important at the national level)<sup>8</sup> of the following:</p> <p>Species protected under the Wildlife Acts; and/or</p> <p>Species listed on the relevant Red Data list.</p> <p>Site containing 'viable areas'<sup>9</sup> of the habitat types listed in Annex I of the Habitats Directive.</p>
County Importance	County (or other local authority-wide area)	<p>Area of Special Amenity.<sup>10</sup></p> <p>Area subject to a Tree Preservation Order.</p> <p>Area of High Amenity, or equivalent, designated under the County Development Plan.</p> <p>Resident or regularly occurring populations (assessed to be important at the County level)<sup>11</sup> of the following:</p> <p>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</p> <p>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</p> <p>Species protected under the Wildlife Acts; and/or</p> <p>Species listed on the relevant Red Data list.</p> <p>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</p> <p>County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP<sup>12</sup>, if this has been prepared.</p>

<sup>8</sup> It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

<sup>9</sup> A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

<sup>10</sup> It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

<sup>11</sup> It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

<sup>12</sup> BAP: Biodiversity Action Plan

NRA (2009)	CIEEM (2018)	Criteria
		<p>Sites containing semi-natural habitat types with high biodiversity in a county con-text and a high degree of naturalness, or populations of species that are uncommon within the county.</p> <p>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</p>
N/A	River Basin District	<p>Hydrological Catchment Area</p> <p>Connectivity to downstream waterbodies</p>
N/A	Estuarine system/Coastal cell	Estuary of river system or shoreline
Locally Important (higher level)	Local	<p>Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;</p> <p>Resident or regularly occurring populations (assessed to be important at the Local level)<sup>13</sup> of the following:</p> <p>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</p> <p>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</p> <p>Species protected under the Wildlife Acts; and/or</p> <p>Species listed on the relevant Red Data list.</p> <p>Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;</p> <p>Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value</p>
Locally Important (lower level)	Site	<p>Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;</p> <p>Sites or features containing non-native species that are of some importance in maintaining habitat links.</p>

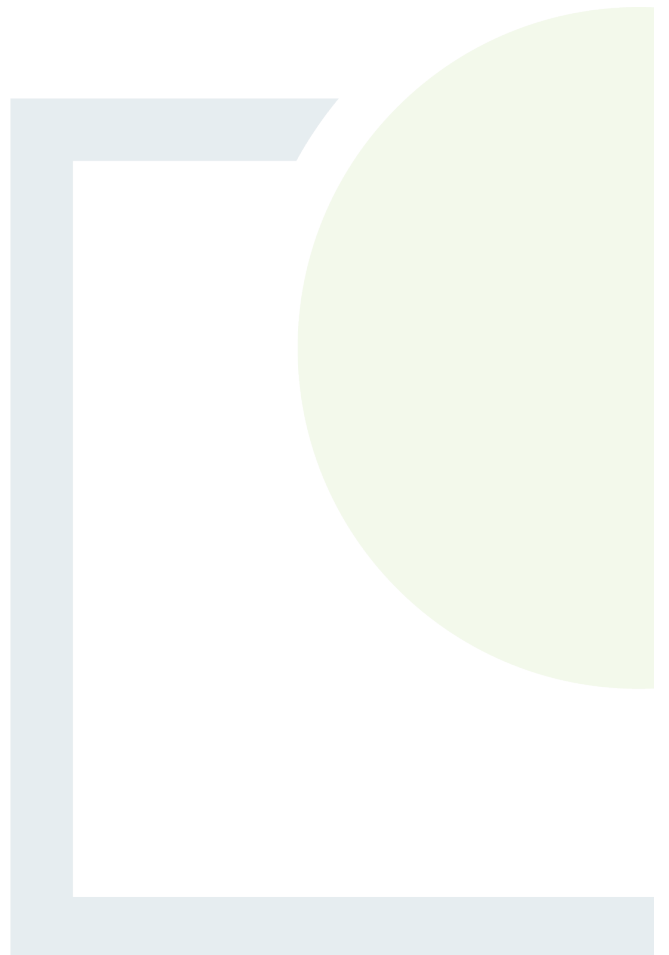
<sup>13</sup> It is suggested that, in general, 1% of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.



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## APPENDIX 2

Aquatic Ecology Surveys



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E-mail [sweeneyconsultancy@gmail.com](mailto:sweeneyconsultancy@gmail.com)**AQUATIC ECOLOGY SURVEYS AT SIX WATERCOURSE CROSSING IN CORK.**

- **17 November 2021**



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## 1. INTRODUCTION

Sweeney Consultancy was sub-contracted by Fehily Timoney and Company to survey elements of the aquatic ecology from 100m upstream to 100m downstream of six watercourse road crossings at the following locations in Co. Cork:

Glyntown Bridge

The elements of the aquatic ecology surveyed were:

- Physical Habitat: Description of channel and flow type.
- Biological Water Quality assessment by the EPA Q-value method.
- White-clawed crayfish habitat quality and population.
- Salmonid habitat quality.
- Lamprey habitat quality.
- Freshwater pearl mussel habitat quality.
- aquatic macrophytes (vascular plants, mosses, liverworts and algae)
- Presence of any protected or rare aquatic plant or animal species, including otter.
- Physical aquatic & riparian habitat quality assessment.



## 2. METHODOLOGY

Physical Habitat: In November 2021, the watercourses from 100m upstream to 100m downstream of the road crossing were assessed. Grid reference of photographs were recorded using a hand-held Garmin GPS 72H and photographs (Appendix 1) were taken with a Sony DSLR-A100 digital camera.

Biological Water Quality: An assessment was undertaken on each watercourse following the most recent EPA Standard Operational Procedure for the Q-value methodology (EPA 2021). The most suitable location for application of the methodology within the 200m assessment stretch was chosen. Invertebrates were identified on the bankside to the lowest taxonomic level possible with the naked eye. Lists of taxa and relative abundances are presented in Appendix 2.

White-clawed Crayfish (*Austropotamobius pallipes*): The habitat quality for white-clawed crayfish was assessed, based on the criteria outlined by Holdich (2003). Available records on the distribution of this species were checked. Where it was considered that crayfish presence was possible, a licensed survey (C15/2021) was carried out by the standard methodology of Peay (2003), using a Perspex-bottomed viewer.

Salmonids (*Salmo salar* and *Salmo trutta*): The habitat quality for salmonids was assessed, based on the criteria outlined by Kennedy (1984), Crisp (1996), Bardonnet and Baglinière (2000) and by Hendry and Cragg-Hine (2003) for the physical instream requirements of these species for spawning, nursery and adult habitat. Available records on the distribution of these species were also checked.

Lampreys (*Lampetra planeri*, *Lampetra fluviatilis* and *Petromyzon marinus*): The habitat quality for the three species of lamprey, the brook lamprey, river lamprey, and sea lamprey was assessed, based on the criteria outlined by Maitland (1980) and by Johns (2002) for the physical instream requirements of these species for spawning, nursery and adult habitat. Available records on the distribution of these species were also checked.



Freshwater pearl mussel (*Margaritifera margaritifera*): Visual assessment of the habitat quality is based on the criteria outlined by Skinner et al. (2003). Available records on the distribution of this species were also checked.

Aquatic Macrophytes, Mosses and Liverworts: On-site identification, with the aid of a magnifying eyepiece, where necessary, and using the identification keys listed in the Reference Section (Appendix 4). Liverworts and mosses that could not be fully identified on the bankside were retained for later microscopic identification. Lists of taxa and SACFOR scale abundances are presented in Appendix 3.

Otter (*Lutra lutra*): The presence of otter was checked for by a survey of the riverbank for holts or couching sites and an examination of hard bankside surfaces for the presence of spraints and bankside mud for imprints. The habitat quality for this species was assessed, based on the criteria outlined by Chanin (2003). Available records on the distribution of these species were also checked.



## 2. RESULTS

### 2.1 Glyntown Bridge

Grid Reference: ITM: 573203 575062

Watercourse: Butlerstown River (Tributary of Glashaboy River).

2.1.1 Physical Habitat: Upstream of the bridge (Photo 1), the flow type of the Butlerstown River is riffle, with the substratum dominated by large cobbles and with a lower proportion of gravels and some sand. There is no siltation, a small amount of litter is present and shade is moderate.

Approximately 20m downstream of the bridge, the Butlerstown River joins the Glashaboy River at a deep pool where the latter river bends sharply to the right (Photo 2). Just downstream of the pool, there is a vegetated gravel island in mid-channel.

2.1.2 Biological Water Quality: The sample was taken in habitat ideal for the assessment methodology where the river can be accessed c. 100m upstream of the bridge, near the corner of the supermarket car park. With good abundance of three pollution sensitive flat mayfly genera (Appendix 2), Q4-5 is assigned, indicating High Ecological Water Quality.

2.1.3 White-clawed Crayfish: No crayfish were found on 08/11/2021. There are no known records for white-clawed crayfish in the Butlerstown River. A predominantly sandstone catchment would make the water chemistry unsuitable for crayfish (Holdich, 2003).

2.1.4 Salmonids: Salmon and trout presence in the Butlerstown River is indicated by very good salmonid spawning and nursery habitat, combined with very good water quality.

2.1.5 Lampreys: There is suitable spawning habitat for all three lamprey species in the Butlerstown River and there is habitat with finer material, suitable for lamprey ammocoetes, in the lee of the gravel island downstream of the confluence.

2.1.6 Freshwater pearl mussel: There are no records of freshwater pearl mussels in this watercourse. No suitable habitat for the freshwater pearl mussel was seen.



2.1.7 Aquatic Macrophytes, Mosses and Liverworts: Moderate shade limits plant growth in this stretch of river. The most abundant aquatic plant is water crowfoot, downstream of the bridge.

2.1.8 Other Protected or Rare Aquatic Species: While no evidence of otters was seen on 08/11/2021, the National Biodiversity Data Centre (NBDC) website shows a record for otter in the 100m square at Glyntown Bridge, as well as farther upstream and on Glashaboy River c. 1.3km upstream of the confluence. This indicates at least occasional presence of otter at Glyntown Bridge.

2.1.9 Aquatic and riparian habitat quality: The instream habitat of the 200m stretch surveyed is good, with a variety of flow types. The riparian habitat on the right-hand side is poor: the right bank upstream of the bridge is walled, outside which is a laurel hedge. Donkeys have access to the right bank between the bridge and the confluence of the two rivers, causing mild poaching of the ground. Downstream of the confluence, the habitat on the right bank is primarily amenity grassland. The riparian habitat on the left-hand side is much more natural, with a variety of species and growth forms.



## APPENDIX 1

### PHOTOGRAPHS

**Photo 1: Glyntown Bridge upstream**



**Photo 2: Glyntown Bridge downstream**



## APPENDIX 2

### BIOLOGICAL WATER QUALITY

### INVERTEBRATES RESULTS

Relative abundance expressed as E: Excessive; D: Dominant; N: Numerous; C: Common; F: Few; SS: Single Specimen

TAXON	Glyntown Br.
<b>Group A (Sensitive)</b>	
<i>Ecdyonurus sp.</i>	C
<i>Heptagenia sp.</i>	C
<i>Rhithrogena sp.</i>	C
<i>Nemoura sp.</i>	
<i>Isoperla sp.</i>	
<b>Group B (Less Sensitive)</b>	
<i>Leuctra sp.</i>	
Sericostomatidae	
Limnephilidae	F
<b>Group C (Relatively Tolerant)</b>	
<i>Dugesia polymorpha</i>	
Nematomorpha	
Lumbricidae	F
Lumbriculidae	F
<i>Ancyclus sp.</i>	
<i>Potamopyrgus antipodarum</i>	
Hydrachnidae	
<i>Gammarus sp.</i>	
<i>Baetis rhodani</i>	C
<i>Hydropsyche sp.</i>	C
<i>Rhyacophila sp.</i>	
<i>Polycentropus sp.</i>	
Corixidae	
Dytiscidae	SS
<i>Elmis aenea</i>	
<i>Limnius volckmari</i>	F
<i>Tipula sp.</i>	
<i>Dicranota sp.</i>	SS
Simuliidae	
Ceratopogonidae	
Chironomidae (ex. <i>Chironomus</i> )	F
<b>Group D (Very Tolerant)</b>	
Enchytraeidae	SS
<i>Helobdella stagnalis</i>	
<i>Erpobdella sp.</i>	
<i>Radix balthica</i>	
<i>Asellus aquaticus</i>	
<b>Group E (Most Tolerant)</b>	
Tubificidae	
<b>Q-VALUE</b>	<b>4-5</b>



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## APPENDIX 3 MACROPHYTE RESULTS BY SITE (200m STRETCH)

SACFOR Scale Abundance

TAXON	Glyntown Br.
<b>Marchantiophyta</b>	
<i>Scapania sp.</i>	
<i>Chiloscyphus polyanthos</i>	R
<b>Bryophyta</b>	
<i>Fontinalis antipyretica</i>	O
<i>Hygroamblystegium fluviatile/tenax</i>	R
<i>Hygrohypnum sp.</i>	R
<i>Platyhypnidium riparioides</i>	
<b>Gramineae</b>	
<i>Agrostis stolonifera</i>	
<b>Lemnaceae</b>	
<i>Lemna minor</i>	
<b>Iridaceae</b>	
<i>Iris pseudacorus</i>	
<b>Callitrichaceae</b>	
<i>Callitriche spp.</i>	
<b>Labiatae</b>	
<i>Mentha aquatica</i>	
<b>Umbelliferae</b>	
<i>Apium nodiflorum</i>	O
<i>Oenanthe crocata</i>	R
<b>Cruciferae</b>	
<i>Nasturtium officinale</i>	O
<b>Ranunculaceae</b>	
<i>Ranunculus</i> subgenus <i>Batrachium</i> agg.	F



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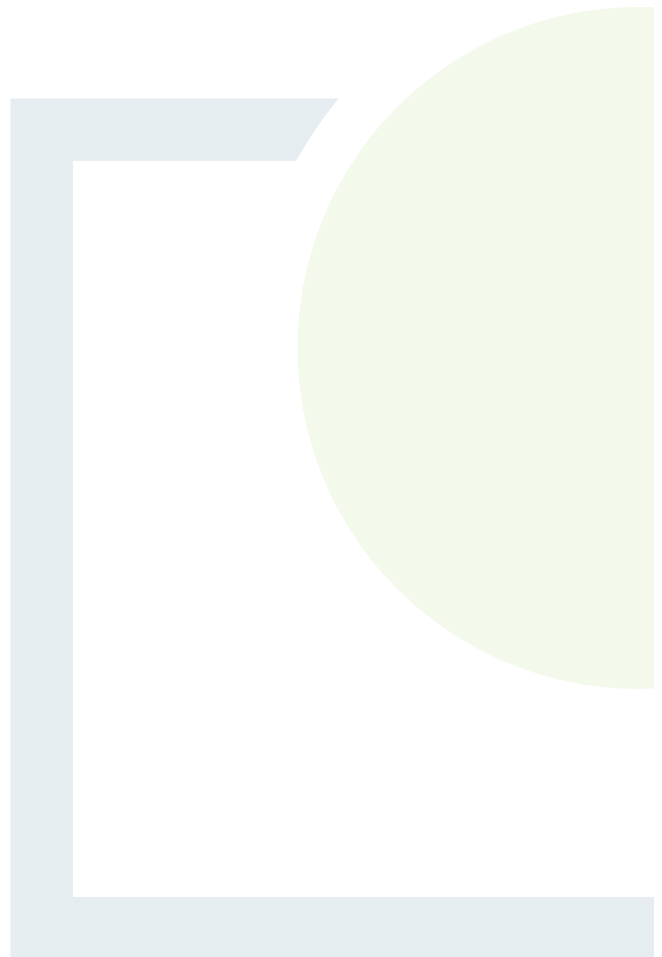


**FEHILY  
TIMONEY**

**CONSULTANTS IN ENGINEERING,  
ENVIRONMENTAL SCIENCE  
& PLANNING**

## **APPENDIX 3**

Invasive Species  
Management Plan





CONSULTANTS IN ENGINEERING,  
ENVIRONMENTAL SCIENCE &  
PLANNING

# ENGINEERING CONSULTANCY SERVICES FOR CORK CITY BRIDGES

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## INVASIVE SPECIES MANAGEMENT PLAN

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Prepared for: Cork City Council



Cork  
City Council  
Comhairle Cathrach Chorcaí

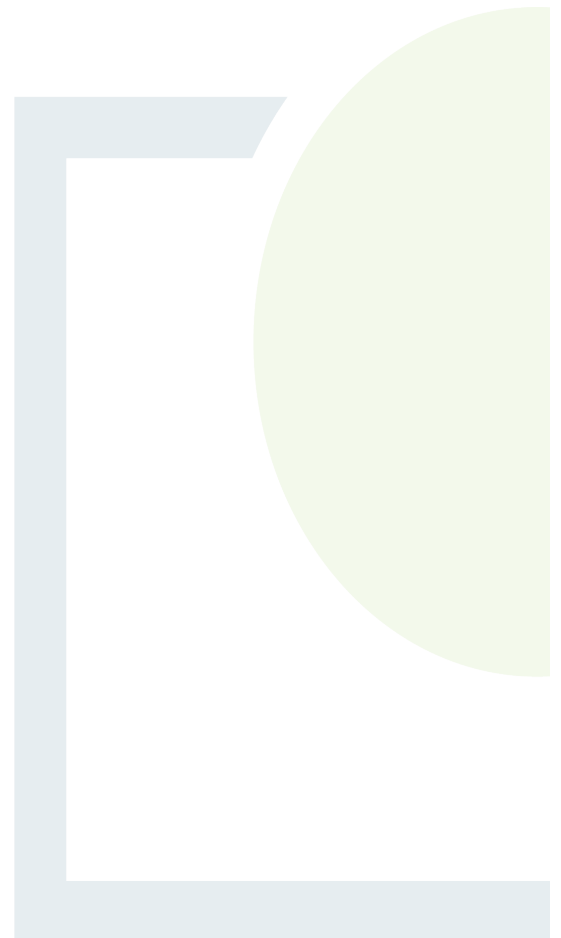
**Date:** October 2022

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CORK | DUBLIN | CARLOW

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## 1. INTRODUCTION

Cork City Council has commissioned Fehily Timoney & Company (FT) to prepare an Invasive Species Management Plan for the repair and rehabilitation works at the existing Glyntown Bridge, over the Butlerstown River, located 9km to the east of Cork City Centre. Fehily Timoney & Company (FT) has prepared this Invasive Species Management Plan (ISMP) to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021 (not to cause the spread of non-native invasive plant species listed in schedule III), and to ensure non-native invasive plant species not listed in schedule III are not spread to adjacent lands or Natura 2000 (European) sites. The report details a programme for the control, eradication and monitoring of invasive species in the area immediately surrounding Glyntown Bridge to account for the works footprint needed for the bridge rehabilitation.

A recent ecological walkover covering the habitat surrounding the bridge and stream was conducted on the 8<sup>th</sup> of November 2021. The following invasive plant species were identified: Japanese knotweed, cherry laurel, butterfly-bush and winter heliotrope.

In keeping with the third schedule of S.I. No. 477/2011 European Communities (Birds and Natural Habitats) Regulations 2011 to 2021, the overall aim of this management plan is to put in place systems to contain the spread of invasive species within the footprint needed to complete rehabilitation works of Glyntown Bridge, to control the invasive species from this area, and to ensure they are not spread off-site during the bridge repair and rehabilitation works.

This document provides background information on the non-native invasive species present, mapping of their location and their extent within the footprint of the remediation site. It provides sources of information including policy and guidelines to which cognisance has been paid, and the means of eradicating the species from site safely using prevention, containment, treatment, monitoring, follow up treatment, record keeping and appropriate disposal.

### 1.1 Legislative Context

In Ireland, the spread and propagation of species listed in the third schedule of S.I. No. 477/2011 European Communities (Birds and Natural Habitats) Regulations 2011 to 2021 is an offence. Under Regulation 49 (2) - Save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence. Under Regulation 50 it is an offence to transport a vector material listed in Part 3 of the Third Schedule except under licence; in the case of this project, it would apply to soil or spoil taken from places infested with Japanese Knotweed (*Fallopia japonica*).

In October 2017, Ireland's 3rd National Biodiversity Action Plan, for the period 2017-2021 was launched with 7 objectives supported by 119 targeted actions. The Plan sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and follows on from the work of the first and second National Biodiversity Action Plans.

Target 4.4 states that '*Harmful invasive alien species are controlled and there is reduced risk of introduction and/or spread of new species.*'



This is supported by 7 actions, those relevant to this management plan are:

4.4.2. Develop national and whole island plans to implement the EU Invasive Alien Species (IAS) Regulation and relevant sections of Ireland's EU (Birds and Natural Habitats) Regulations 2011 including: development and adoption of biosecurity plans in relevant state bodies; a Rapid Response Protocol for the island of Ireland; coordination and collation of invasive species surveillance and monitoring data; and work with Northern Ireland and UK authorities on invasive species of mutual concern.

4.4.3. Continue and enhance measures for eradication, where feasible, control and containment of invasive species

4.4.4. Encourage horticultural nurseries to produce native species, varieties and landraces from appropriate native sources for public and private sector plantings. Public bodies will endeavour to plant native species in order to reduce importation of non-native species, varieties and landraces.

4.4.6. Publish legislation to address required provisions under the EU Regulation on invasive alien species (No. 1143/2014) and on responsibilities and powers regarding invasive alien species, giving IFI responsibility for aquatic invasive species.

In the case of this project, it would apply to soil or spoil taken from places infested with cherry laurel, butterfly-bush and winter heliotrope.

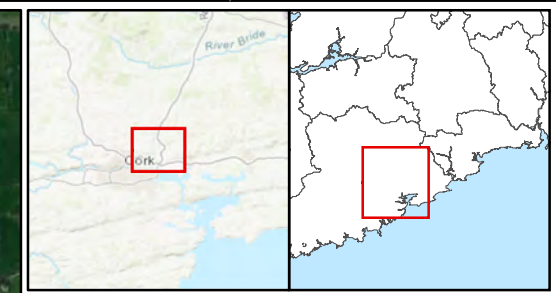
## 1.2 Site Description

Glyntown Bridge carries the L2998, East Cliff Road, over the Butlerstown River approximately 9km to the East of Cork City Centre. The year of construction is unknown, but the structure is a 3-span masonry arch bridge. Glyntown Bridge carries vehicular and pedestrian traffic in the busy Glanmire townland and is situated on the Butlerstown River approximately 50m east of the confluence of the Glashaboy River.

The site is located in an urban area, in the vicinity of commercial units, residential estates, sports fields and wooded parklands.

The riparian habitat on the northern bank is poor: the northern bank upstream of the bridge is walled, outside which is a laurel hedge. Donkeys have access to the northern bank between the bridge and the confluence of the two rivers, causing mild poaching of the ground. Downstream of the confluence, the habitat on the northern bank is primarily amenity grassland. The riparian habitat on the southern bank is much more natural, with a variety of species and growth forms.

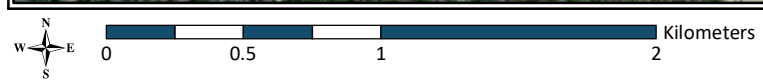
The habitat surrounding the bridge and stream is predominantly broadleaved woodland and hedgerows/treeline (Fossitt, 2000). Extending beyond these habitats, the surroundings included recolonising hardstanding areas, built land (roads and buildings) and amenity grassland.



**Legend**

 Site Location

<b>TITLE:</b>	Site Location		
<b>PROJECT:</b>	Engineering Consultancy Services for Bridges (Glyntown)		
<b>FIGURE NO:</b>	1-1		
<b>CLIENT:</b>	Cork City Council		
<b>SCALE:</b>	1:27500	<b>REVISION:</b>	0
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## 2. METHODOLOGY

### 2.1 Relevant Guidance

The methodology and guidance for this management plan has been devised in consideration of the following relevant guidance:

- NRA, (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads. Revision 1, December 2010. National Roads Authority.
- Property Care Association (2018). Practical Management of Invasive Non-Native Weeds in Britain and Ireland. Packard Publishing Ltd.
- Kelly, J., Maguire, C.M. and Cosgrove, P.J., Muir, R.A. (2015). Best Practice Management Guidelines Japanese Knotweed *Fallopia japonica*. Prepared for NIEA and NPWS as part of Invasive Species Ireland.
- Tu, M., (2009). Assessing and Managing Species within Protected Areas. Protected Area Quick Guide Series. Editor J., Ervin, Arlington, VA. The Nature Conservancy, 40 pp.
- Stokes et al., (2004). Invasive Species in Ireland. Unpublished report to Environment and Heritage Service and National Parks and Wildlife Service. Quercus, Queens University Belfast, Belfast.

### 2.2 Desktop Study

A desktop study was carried out to identify existing records of Invasive flora species both within and adjacent to Glyntown Bridge, habitat suitability of the adjacent area for the invasive species and nearby the Butlerstown River. This study allows the surveyor to narrow down the source of the species introduction and its likelihood of spreading. The following sources of information were used:

- Invasive Alien Species in Ireland. <https://invasives.ie/> accessed Aug 2022;
- Invasive Species Ireland website <http://invasivespeciesireland.com/> accessed Aug 2022;
- OSI Aerial photography and 1:50000 mapping;
- National Parks and Wildlife Service (NPWS) web mapping;
- National Biodiversity Data Centre (NBDC) web mapping, 2km grid square (W77H) accessed Aug 2022; and
- Environmental Protection Agency (EPA) web mapping.

### 2.3 Mapping

The habitats surrounding the bridge and stream were identified and classified, according to 'A Guide to Habitats in Ireland' (Fossitt, 2000) during a walkover survey undertaken by Fehily Timoney and Sweeney Consultancy on the 8<sup>th</sup> of November 2021. During this survey, invasive species were identified and mapped.



### 3. EXISTING ENVIRONMENT

#### 3.1 Desktop Records

Historical records of invasive species from the relevant national datasets were assessed through the National Biodiversity Data Centre (30/08/2022). A total of five invasive species were identified within the 2km grid square (W77H) in which Glyntown Bridge is located (listed in Table 3-1 below):

**Table 3-1: Invasive flora species previously recorded within the 2km grid squares of Glyntown Bridge**

Common name	Latin name	Year of last record	Risk <sup>1</sup>
Giant Hogweed	<i>Heracleum mantegazzianum</i>	30/05/2018	High; third schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021.
Giant Rhubarb	<i>Gunnera tinctora</i>	13/06/2020	Medium; third schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021.
Bohemian Knotweed	<i>F. x bohemica</i>	27/08/2014	High; third schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021.
Japanese Knotweed	<i>Fallopia japonica</i>	15/05/2018	High; third schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021.
Sycamore	<i>Acer pseudoplatanus</i>	28/08/2008	Medium; medium impact invasive species

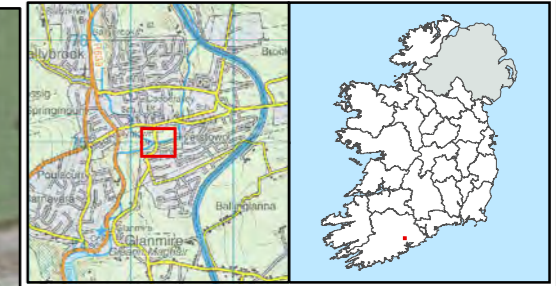
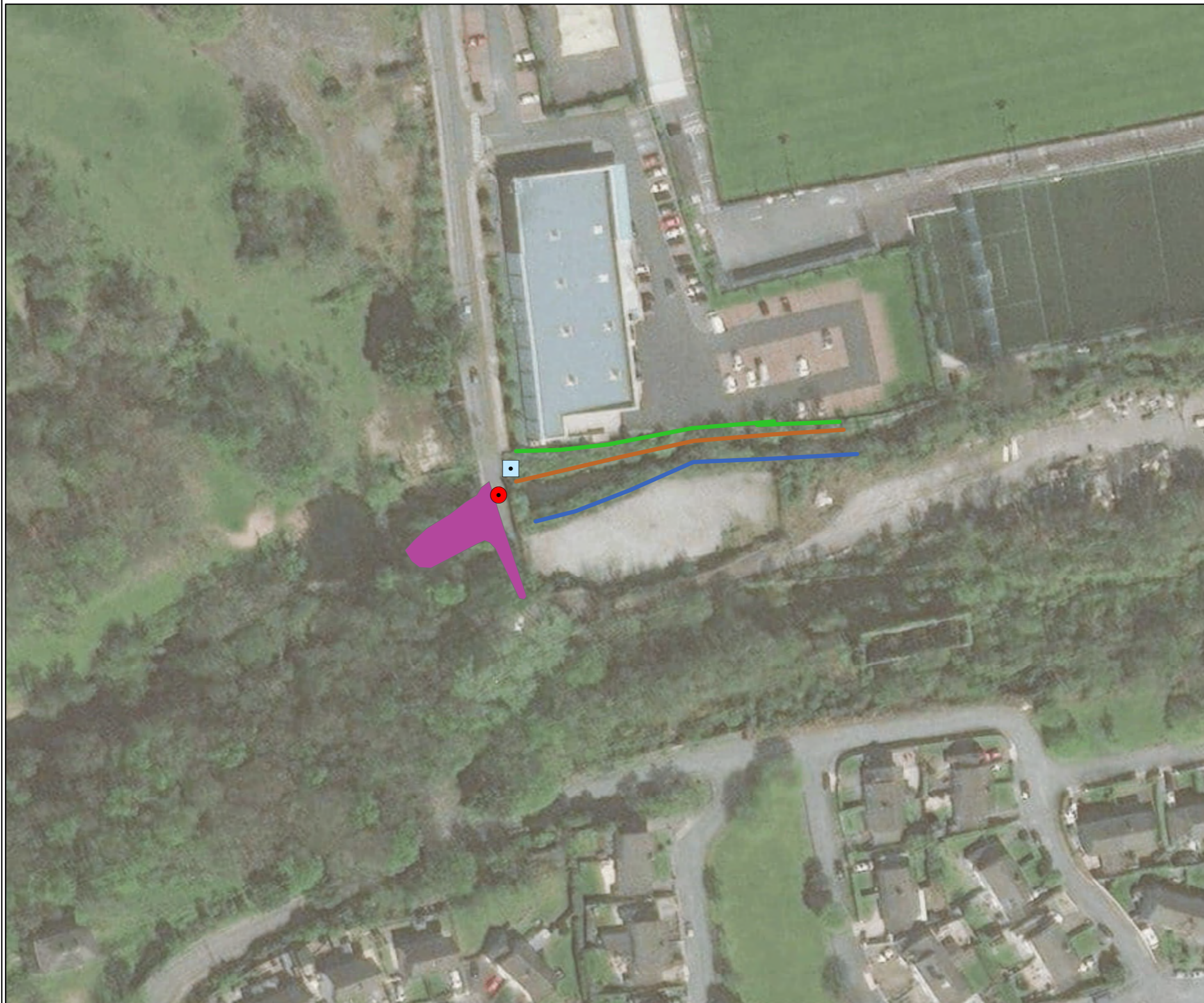
#### 3.2 Results of Field Survey

The following invasive species were recorded during a field survey undertaken by Fehily Timoney and Sweeney Consultancy on the 8<sup>th</sup> November 2021. They were detected in and adjacent to the footprint of the works (see Figure 3-1):

- Butterfly bush (*Buddleja davidii*);
- Cherry laurel (*Prunus laurocerasus*);
- Japanese Knotweed (*Fallopia japonica*);
- Winter Heliotrope (*Petasites fragrans*).

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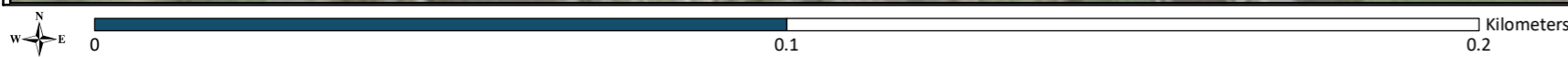
Kelly, J., O'Flynn, C., and Maguire, C. 2013. Risk analysis and prioritisation for invasive and non-native species in Ireland and Northern Ireland. A report prepared for the Northern Ireland Environment Agency and National Parks and Wildlife Service as part of Invasive Species Ireland.



**Legend**

- Site Location
- Japanese Knotweed
- Butterfly Bush
- Cherry Laurel
- Winter Heliotrope/Butterfly Bush
- Winter Heliotrope

<b>TITLE:</b>	
Invasive Species	
<b>PROJECT:</b>	
Engineering Consultancy Services for Bridges (Glyntown)	
<b>FIGURE NO:</b> 3.1	
<b>CLIENT:</b> Cork City Council	
<b>SCALE:</b> 1:1000	<b>REVISION:</b> 0
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## 4. INVASIVE SPECIES ACCOUNTS

The International Union for Conservation of Nature (IUCN) in their 'IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species' 2000 paper describes non-native invasive species (referred to as an invasive species) as:

*“an alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity”.*

The four invasive species listed below were recorded within the proposed works area for the bridge upgrade. Accounts of these species, summaries of their ecology, growth and management periods, and distribution are included below. The species in bold are included in the Third Schedule, the remaining are identified in Kelly, J., O'Flynn, C., and Maguire, C. 2013. *Risk analysis and prioritisation for invasive and non-native species in Ireland and Northern Ireland*. A report prepared for the Northern Ireland Environment Agency and National Parks and Wildlife Service as part of Invasive Species Ireland.

- Butterfly-bush (*Buddleija davidii*);
- Cherry Laurel (*Prunus laurocerus*);
- **Japanese Knotweed (*Fallopia japonica*)**;
- Winter Heliotrope (*Petasites fragrans*).

### 4.1 Butterfly Bush (*Buddleia davidii*)

#### 4.1.1 Species Ecology

The Butterfly-bush is a multi-stemmed shrub which can reach 4m in height. From June to September, the arching branches bear conical panicles of lilac flowers, which may occasionally be white, pink, red or purple. Leaves are long and serrated along the edges. In the winter, flower heads and seed capsules remain despite the plant being deciduous. Up to 3 million seeds are produced per plant and can remain dormant in the soil for many years.

Butterfly-bush is common throughout Ireland. It spreads through abundant seed dispersal by wind and draught behind vehicles. While being a valuable source of nectar, especially for butterflies, *Buddleia* can cause structural damage to buildings by rooting in cracks in masonry.



Source: [https://wordpress.org/openverse/image "Buddleja 174"](https://wordpress.org/openverse/image/Buddleja+174) by lilli2de (accessed August 2022)

**Plate 4-1: Butterfly Bush (*Buddleia davidii*).**

#### 4.1.2 Timeframe

Optimal time for treatment and/or movement of material would be outside of flowering and seed-bearing periods.

## 4.2 Cherry Laurel (*Prunus laurocerus*)

As Cherry Laurel is present outside of the footprint of the works area, treatment is not necessary. It is recommended that the area containing Cherry Laurel is cordoned off, observing a 1m buffer, to prevent disturbance and spread.

#### 4.2.1 Species Ecology

Cherry Laurel is an evergreen shrub that forms dense thickets of either a single stem or multiple stems (especially if it has been trimmed). It has thick 5-15cm long oblong-ovate leaves; glossy green on surface and pale underneath. Leaves are arranged alternately on short leaf stalks and leaf edges are toothed with pointed tips. Small white fragrant flowers are held in clusters (racemes) and flowers are comprised of five petals and many yellow stamens. The clustered fruits are purple/black and cherry like.





Source: <https://wordpress.org/openverse/image/> "Cherry Laurel" by edenpictures (accessed August 2022)

#### Plate 4-2: Cherry Laurel.

#### 4.2.2 Timeframe

Cherry Laurel can be cut down at any time of year; the herbicide glyphosate can also be applied throughout the year, however May to October inclusive is a sub-optimal period. Of principle concern when cutting and/or moving vegetation or surrounding soil is the movement of viable seeds. As such the optimal time for cutting is outside the flowering and fruiting period.

### 4.3 Japanese Knotweed (*Fallopia japonica*)

According to the Invasive Species Ireland Project who have carried out a risk assessment of Japanese Knotweed (*Fallopia japonica*), which is distributed throughout the island of Ireland, the species is “one of the highest risk (most unwanted) non-native invasive species in Ireland”. The species poses a risk to open and riparian areas where it spreads rapidly to form dense stands, excluding native vegetation and prohibiting regeneration. This process has been known to reduce diversity and alter semi-natural and locally important habitats for wildlife. Once stands become established, they are extremely persistent and difficult to remove. Japanese Knotweed can grow through weaknesses in both tarmac and concrete. Population clusters must be completely removed, under appropriate licencing, before site works or specific projects within the site can commence (ISI, 2018).

#### 4.3.1 Species Ecology

Although Japanese Knotweed plants flower, all flowers in Ireland and Britain are female, precluding the possibility of sexual reproduction. The means of spread is entirely through the movement of rhizomes or rhizome fragments in soil or cut stems. Japanese Knotweed has an extraordinary ability to spread vegetatively from crown, stem and rhizome (underground root) if disturbed. Even tiny amounts of cut stem, crown or rhizome can produce a new plant.

Controlling the spread of the species is therefore dependent on preventing the spread of the stem, crown or rhizome. Japanese Knotweed causes numerous impacts, both ecological and economic.



It is capable of outcompeting native plants and blocking commuting corridors of native mammals, and damaging buildings, tarmacadam and concrete. In waterways, it can block and reduce water flow, increasing the risk of flooding. In winter, when it dies back, it can leave riverbanks bare and open to erosion.

Red/purple shoots appear early in spring, which in some cases have an asparagus-like appearance but, as the canes grow, the leaves unfurl, and the plant takes its more characteristic appearance. The mature canes are like bamboo, being hollow, and have a characteristic pattern of purple speckles.

The leaves are shield-shaped with pointed tips and a flat base, arranged in a zig-zag formation. The plant can grow to over 3m in height. Flowering occurs in late summer/autumn (End July – typically August) and consists of small creamy white flowers. During the winter the leaves die back and reveal orange/brown woody erect stems. Rhizomes are bright orange inside and can extend to a depth of 3m and a width of 7m around the visible growth above ground.

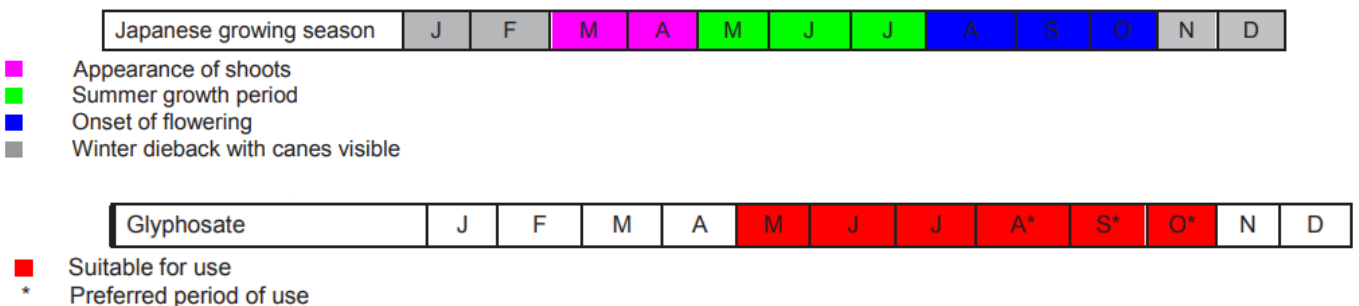


Source: "Expansion of Japanese Knotweed" by U. S. Fish and Wildlife Service (accessed: August 2022)

**Plate 4-3: Characteristics of Japanese Knotweed.**

4.3.2 Timeframe

Japanese Knotweed shoots typically appear between March and April. During this time energy stores from the root system are used to facilitate initial growth. The summer growth period commences in May and lasts until July, typical growth occurs during this time. Flowering begins in August and lasts until October. During this time the pale flowers can be seen.



**Figure 4-1: Japanese Knotweed Growth season summary (Kelly, et al., 2015).**



Figure 4-1 indicates the suitable period which glyphosate herbicide is used to remove Japanese Knotweed. It is suitable to use glyphosate herbicide on Knotweed between the months of May and October, with August, September and October being the preferred months of use.

#### 4.4 Winter Heliotrope (*Petasites fragrans*)

Winter Heliotrope (*Petasites fragrans*) is an invasive plant species, native to North Africa and the Mediterranean. It often forms dense carpets of kidney-shaped leaves, 20-50cm wide, and is not often confused with other species. Heliotrope prefers damp areas and embankments, both within waste ground areas and cultivated land. It can often be found along roadways and drains.

These deciduous plants produce large roundish leaves up to 30cm in diameter. These are downy underneath. Its pale pink flowers have a distinctive sweet smell and flower in December and January. Foliage forms a dense carpet with a height of approximately 30cm. Its rhizomatous root system allows vegetative spreading. Plate 4-4 displays some characteristic features of Winter Heliotrope. The Winter Heliotrope plants in Ireland are all clone males, originating from a single male, through fragmentation. These male plants are unable to produce seed and thus rely on root systems and fragmentation to spread. The species is thought to be widespread, but under recorded, in Ireland. Thought to have been introduced in the 1800s, first reported in pre-1866 records, it's believed that the species was originally either planted as winter ground cover or as a foodplant for bees (Reynolds, 2002).



Source: <https://wordpress.org/openverse/image/> "Petasites fragrans (Winter Heliotrope)" by Hugh Knott (accessed August 2022).

**Plate 4-4: Characteristic features of Winter Heliotrope**

##### 4.4.1 Timeframe

It can be dug up any time of the year when soil is suitably dry. Spraying with chemicals should be done in February-March or July-September.

#### 4.5 Recommended Measures



While it is extremely important and more efficient to contain invasive species at the point of infestation, care shall also be taken to ensure the management plan shall also be adhered to ensure that the species is not spread outside the works area.

Invasive Species Ireland (ISI) notes that invasive non-native species are the second greatest threat (after habitat destruction) to worldwide biodiversity. Invasive species negatively impact Ireland's native species; changing habitats and ultimately threatening ecosystems which impacts on biodiversity as well as economics as they are costly to eradicate.

Halting the spread of non-native invasive species can be achieved via prevention, containment, treatment, and eradication (ISI, 2012b).

#### 4.5.1 General Prevention of spread within the works footprint

Prevention of the spread of invasive species will be achieved by:

- The full implementation of the invasive species management plan (section 5) in conjunction with a competent and experienced Invasive Species Specialist Contractor.
- Supervision of control measures and treatment works by an appropriately qualified ecologist or invasive species specialist.
- Raising awareness of site workers via toolbox talks given by a suitably qualified person as part of site introduction; informing workers what to look out for and what procedure to follow if they observe an invasive species.
- Where invasive species have been physically removed and disturbed soil, this soil will be seeded or replanted (including 5cm deep mulch) with native plant species. This will prevent erosion of the riverbank and the easy colonisation of bare soil by invasive species in the area.
- Contaminated material originating from the site will be transported off site by an appropriately licensed waste contractor and disposed of properly at a suitably licenced facility.
- Signs should warn people working there that there is invasive species contamination.
- Ensure good personnel and equipment hygiene practices:
  - Remove the build-up of soil on equipment;
  - Keep equipment clean;
  - Do not move fouled equipment from one site to another.
- All vehicles exiting the site should be washed down with a pressure washer to prevent the transport of seeds, since this cannot be prevented comprehensively by any other measure.
- Wastewater from washing facilities will be stored securely and treated to prevent spread outside the site.
- Footwear and clothing of operatives working near invasive species should be checked for seeds, fruits, or other viable material before exiting the site.

#### 4.5.2 General Containment



Containment of invasive species will be achieved by:

- Japanese Knotweed and contaminated soil within the works area including the 7m buffer (where appropriate) from the footprint of the development will be excavated by a licensed specialist for the eradication of Japanese Knotweed. Cordoning off of the 7m buffer around Japanese Knotweed will occur if required. Japanese Knotweed's root structure rhizomes can extend up to 7 m in a lateral direction (but usually only up to 5 m), and 3m deep from the over ground parent plant.
- Cordoning off the area for other invasive species (Butterfly Bush, Cherry Laurel, Winter Heliotrope) shall include a buffer of up to 1m surrounding the area of infestation. This will prevent plants with underground rhizomes being transported to other sections of the riverbank and it will also prevent contact with plants which could result in the transport of seed, fruit or vegetation to other areas. No site works will occur within exclusion zones prior to the eradication of invasive species.
- No machinery or personnel shall be allowed within exclusion zones. Similarly, there shall be no storage of materials within or adjacent to exclusion zones.
- No soil or vegetation shall be removed from this area unless proper hygiene is observed and is transported via an appropriately licensed waste contractor to a suitably licenced facility for treatment.
- Informing all site staff through toolbox talks as part of site inductions.
- Any new sightings of invasive plant species shall be relayed to any workers entering site and the contractor for invasive species eradication. These areas shall follow the same protocol as the current infected area.

#### 4.5.3 Treatment and control options - Butterfly-bush (*Buddleia davidii*)

Since the primary mode of spread for this species is via the transport of seeds in wind, the potential for spread due to human activities is considered relatively less important than for the other invasive species present; Butterfly Bush would continue to disperse and spread on its own in the absence of human intervention, while for the other species present, transport by humans is a more important mechanism of spread.

Control measures should focus on preventing the transport of seed outside the area during works, and minimising disturbance of ripe seed-heads if clearance works are required to be carried out while ripe seed is present.

Due to the widespread presence of butterfly bush along the riverbank to the east of the stream crossing, exclusion zones surrounding plants are unlikely to be practical. As such, measures to prevent the accidental transport of seed outside the site should be focused on washing down of machinery exiting the works area and checking of clothing and footwear of operatives.

#### **Option 1: Physical control**

Since it is likely that vegetation clearance will be required prior to works, measures should be taken to minimise the potential for disturbance of seed.

These measures should focus on the removal of flower spikes from all plants present within the works area.

If treatment can be undertaken while plants are in flower, all flower-spikes should be removed by a licensed invasive species contractor and removed off site to a licensed facility or buried in the area.



If treatment must be undertaken after flowers have been fertilised, each flower spike should first have a bag placed over them before cutting to prevent seeds being dislodged and spread during the process. The bags containing seed-heads should then be removed off-site to a licensed facility. This should be undertaken by a licenced invasive species contractor.

Following removal of reproductive material, plants should be cut to the stump, and cut material either retained on-site and buried during re-grading works or transported off site to a licensed facility and monitored until the following growing season to ensure no re-growth occurs prior to disposal.

#### 4.5.1 Treatment and control options - Japanese Knotweed (*Fallopia japonica*)

Due to the size of the stand of the Japanese Knotweed (c. 1m<sup>2</sup>) and the proximity to the bridge, it is recommended that removal of the stand be undertaken instead of in-situ treatment. Care, however, must be taken so as not to allow the contaminated soil being removed to enter the watercourse.

The following site hygiene measures will be implemented during the proposed works:

- Fence off the infested areas prior to and during works where possible in order to avoid spreading seeds or plant fragments around or off-site.
- Site works will only be allowed within exclusion zones following the removal of Japanese Knotweed and contaminated soil.
- Clearly identify and mark out infested areas. Erect signs to inform Contractors of the risk.
- All staff shall be made aware of nature of threat via toolbox talks as part of site inductions.
- Avoid if possible, using machinery with tracks in infested areas.
- All machinery vehicles, equipment, footwear and clothing operating within area of infestation to be thoroughly checked and cleaned in appropriately contained area prior to leaving the area to protect against further spreading of Japanese Knotweed.
- Excavated soil to be removed to licensed facility on the day of extraction. No stockpiling of contaminated soil on-site.
- Soil imported to the site for infilling of embankments, contractor will gain documentation from suppliers stating that it is free from invasive species.
- Ensure all site users are aware of measures to be taken and alert them to the presence of the Invasive Species Management Plan.
- Erection of adequate site hygiene signage in relation to the management of non-native invasive material as appropriate.
- If operating within an area of known infestation all machinery, vehicles, equipment, footwear and clothing will be cleaned thoroughly (if necessary, using steam cleaners) in a contained area to avoid further contamination.



### ***Option 1: Moving Soil and Treated Japanese Knotweed Off-site***

Prior to excavation, herbicide treatment will take place and will be undertaken by a licensed invasive species contractor. Material (soil, vegetation, etc.) contaminated with Japanese Knotweed can only be transported offsite under the conditions of a relevant licence from the National Parks and Wildlife Service (NPWS). The material can only be removed to a prearranged EPA licenced waste transfer facility by the licenced haulier. Excavation for off-site disposal, great care needs to be taken to avoid excess waste and ensure the excavated Japanese Knotweed does not contaminate surplus soil that is currently free from infestation during excavations. When transporting soil infested with Japanese Knotweed, it is essential to carry out strict hygiene measures. If proper standards are not followed, this may lead to Japanese Knotweed spreading. Japanese Knotweed is a particular problem along transport corridors, where it interferes with the line of vision and can cause accidents.

Trucks which transport the material should only be filled up to a maximum of 20cm from the top. The void must be sealed with a well-secured membrane.

There must be enough membrane to seal the soil into a temporary cell for transporting. It is very important that the soil is contained to prevent any material being lost when it is moved. To contain the soil in the short-term, you can use a lower specification of membrane.

The final fate of Knotweed material transported off-site would be deep burial or incineration at an appropriately licensed facility.

#### **4.5.1 Treatment and control options - Winter Heliotrope (*Fallopia japonica*)**

##### ***Option 1: Physical Control***

Excavation of Winter Heliotrope can be completed at any time of the year when soils are suitably dry. All plant material, particularly the rhizomes, should be excavated and processed appropriately. Regular follow-up treatment should be completed to combat re-sprouting of the species (NRA, 2010).

Contaminated plant matter, soils, and other materials should be appropriately disposed of using a licenced facility and transport.

##### ***Option 2: Chemical Control***

A Glyphosate based chemical should be used after flowering in February to March, or in mid to late summer. Additional follow-up applications will be required. Foliar spraying, wiper applicator, or spot treatment of infestations should be completed within the appropriate time frames, after flowering (Typically February to March) (NRA, 2010).



## 5. MANAGEMENT PLAN

The management of any invasive species is achieved by the assessment and mapping of the invasive species, containment once found, continual monitoring and record keeping as well as the safe disposal of invasive species material. It is recommended that surveys be carried out periodically near the stream crossing to monitor the extent of invasive flora and the success of the eradication measures. These can be carried out by FT, or a contractor specialised in invasive flora eradication. Monitoring should continue at least two years after target invasive flora can no longer be detected to make sure successful eradication has been achieved. Liaison with land holders of adjacent sites may be necessary to effectively eradicate invasive species and prevent re-colonization. All invasive species which occur within the area utilized by people and machinery during the proposed bridge rehabilitation works must be eradicated within the works area before commencement of works.

### 5.1 Containment

For the efficient use of resources namely, financial, and physical effort, it is important to prevent the further spread of invasive species. Containment will be achieved via:

- Cordoning off the area of infestation to prevent further spread of seed or rhizome by people or machinery;
- Mark the cordoned off area with an information/warning sign;
- Toolbox talks to be carried out for all maintenance workers working near the stream crossing;
- Landholder to be informed of the location of the invasive species and the management plan;
- To help with monitoring of the infestation, the area is to be outlined where practical with spray paint;
- Ensure anyone treating the infestation is a suitably qualified trained professional who follows the management plan.
- The area around the stream crossing will be re-surveyed prior to treatment / remedial works to confirm the findings of the original survey.
- Follow up surveys will be carried out post-treatment to determine effectiveness of treatment and trigger further treatment if required.

### 5.2 Schedule

Please note that the schedule and treatment method may require amendment following any given site visit.





**Table 5-1: Schedule of Eradication of invasive species**

Year	Details of measures
1	<ul style="list-style-type: none"> <li>• A pre-treatment survey (to reconfirm the findings of the ISMP) will be undertaken during the growing season to mark out the extent of invasive species within the proposed works area at the stream crossing prior to any works commencing there.</li> <li>• Cordoning off the area of infestation (exclusion zone) – this shall include a buffer of up to 7m surrounding the area of infection for Japanese Knotweed to ensure that underground rhizomes shall not be transported to other areas. No site works, storage, or access allowable within these exclusion zones until Japanese Knotweed has been fully eradicated.</li> <li>• Other invasive species observed shall include a buffer of up to 1m surrounding the area of infestation. This will prevent plants with underground rhizomes being transported to other areas and it will also prevent contact with plants which could result in the transport of seed, fruit or vegetation.</li> <li>• Toolbox talks shall be given to all personnel accessing the site, informing them of the locations of the invasive species and instructing them not to enter these areas (unless they are licensed invasive species contractors).</li> <li>• Control of invasive species using one or more of the treatment options proposed in Section 4.5</li> <li>• Disposal of plant matter and soil off-site, should be completed through an appropriately licenced haulier and waste facility. Removal of a schedule 3 listed species such as Japanese Knotweed from the site will require a licence from NPWS.</li> <li>• Site to be monitored for signs of regrowth of all invasive species after the works have concluded.</li> </ul>
2	<ul style="list-style-type: none"> <li>• Following treatment, site to be monitored in the growing season following the works for signs of regrowth of invasive species, particularly Japanese Knotweed.</li> <li>• Monitoring of material collected during equipment washing for signs of growth during following growing season.</li> <li>• If any re-growth of Japanese Knotweed is observed a further Invasive Species Management Plan is to be prepared.</li> </ul>

### 5.3 Mapping, Evaluating and Record Keeping

During each treatment the following will take place before control treatments:

1. Check that the area of infestation is still cordoned off and a warning/information sign is still in place;
2. Photographs of the area(s) of invasive species infestation;
3. Map the extent via recording GPS coordinates and measure the length and width of infestation and plot on map;
4. Evaluate the status/condition of the infestation;
5. If the infestation has spread spray paint the extent of the new area (for comparison on next visit);
6. Make sure step 1-5 are recorded.

At the end of each site visit the recorded data should be compared with the findings of this report and where required the management plan should be updated. Preparation of a short report on the progress of treatment following treatment works, and any subsequent monitoring.



## 6. CONCLUSION

There is a legal obligation not to spread plants listed on the third schedule of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021; the relevant species at Glyntown Bridge, Co Cork, and therefore those of principal concern, is Japanese Knotweed (*Fallopia japonica*). Additionally, of concern for the invasive species management plan Winter Heliotrope and Butterfly Bush within the area adjacent to Glyntown Bridge, which will be disturbed during the proposed rehabilitation works on the bridge. Liaison with landholders of adjacent lands may be necessary to effectively control invasive species in the area and to prevent re-infestation.

Environmental best practice, and the need to prevent the spread of the other invasive species present on-site to Natura 2000 sites, dictates the need to take measures to prevent the spread of these species.

Various treatment and control measures are advocated for the invasive species present in the immediate area, with several options available in most cases.

It is recommended that a competent and experienced invasive species management Contractor is appointed to treat and control invasive species.

A dedicated invasive species survey is recommended to be undertaken by the appointed Contractor to confirm the findings of the previous survey.

All invasive species present will be required to be cordoned off prior to any treatment works, with exclusion zones in place as specified in section 5. Cherry Laurel is growing outside the footprint of the proposed works along the Lidl car park. The Cherry Laurel should be cordoned off towards the proposed works area.

A quarantine zone where equipment washing and inspection of clothing and footwear can be carried out should be established at the site entrance prior to treatment works and remain in operation until all vegetation has been removed or buried.

If works in infested areas are to take place then the growths of Japanese Knotweed present must be treated, excavated and disposed of or buried according to relevant legislation and under licence before any works can take place.

For the remainder of species, plant material, which is removed, should be taken off site to a licensed facility.

Treatment works should be supervised by an appropriately qualified ecologist or invasive species specialist.

Yearly monitoring for re-growth of invasive species is recommended in the growing season following works. If re-growth of invasive species, Japanese Knotweed in particular, is observed, a further invasive species management plan is to be prepared.



## 7. REFERENCES

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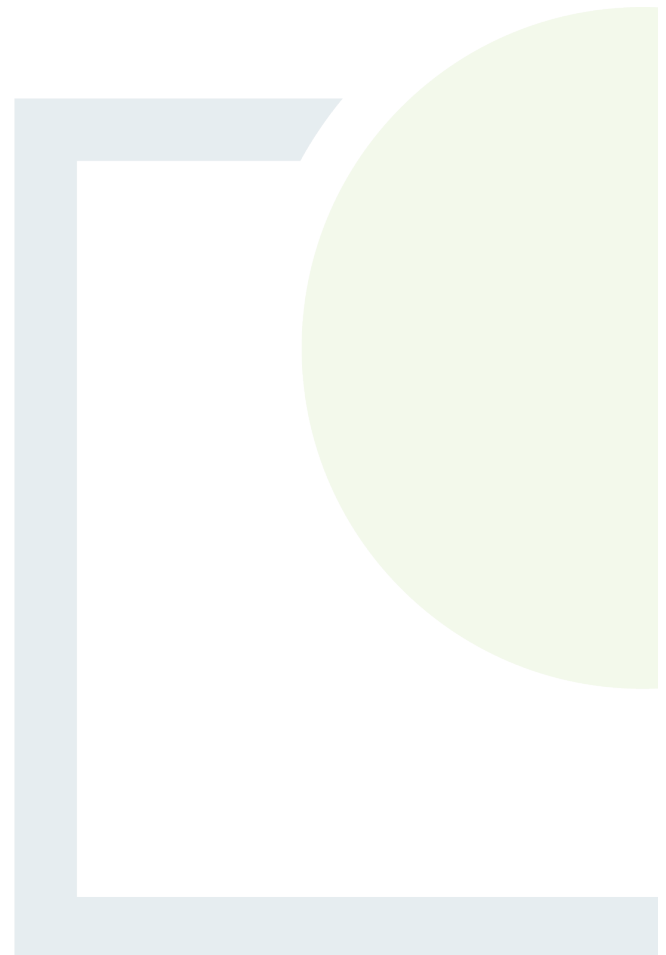
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CONSULTANTS IN ENGINEERING,  
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## APPENDIX 4

Bat Survey and Assessment



# Glyntown Bridge Repair Works

## Bat Survey and Assessment

Report prepared for Cork City Council

By Karen Banks MCIEEM

7<sup>th</sup> September 2022



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## Summary

<b>Site:</b>	<b>Glyntown Bridge, Cork</b>
<b>Structure:</b>	<b>Three span masonry arch bridge</b>
<b>Grid reference (ITM):</b>	<b>573203 575056</b>
<b>Bat species present:</b>	<b>None recorded</b>
<b>Roost location:</b>	<b>n/a</b>
<b>Bat access:</b>	<b>n/a</b>
<b>Proposed work:</b>	<b>Vegetation removal, parapet repair, spandrel wall repair, cutwater repair, repointing</b>
<b>Impact on bats:</b>	<b>No residual impacts</b>
<b>Birds present:</b>	<b>None</b>
<b>Nest location:</b>	<b>n/a</b>
<b>Impact on birds:</b>	<b>None</b>
<b>Other protected species present:</b>	<b>None noted</b>
<b>Habitats present:</b>	<b>Buildings and artificial surfaces (BL3), Lowland/depositing river (FW2) and riparian woodland (WN5)</b>
<b>Bat survey by:</b>	<b>Karen Banks, MCIEEM</b>

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## 1 Introduction

This report has been prepared by Karen Banks, Greenleaf Ecology, at the request of Cork City Council. Planning consent is being sought from An Bord Pleanála for works to Glyntown Bridge, Cork. A protected species survey of the bridge comprising a bat survey was carried out to accompany the planning application.

### 1.1 Site Location

The bridge is located on East Cliff Road in the townland of Riverstown, Cork (ITM Grid Reference 573203 575056).

The location of Glyntown Bridge is illustrated in Figure 1-1.

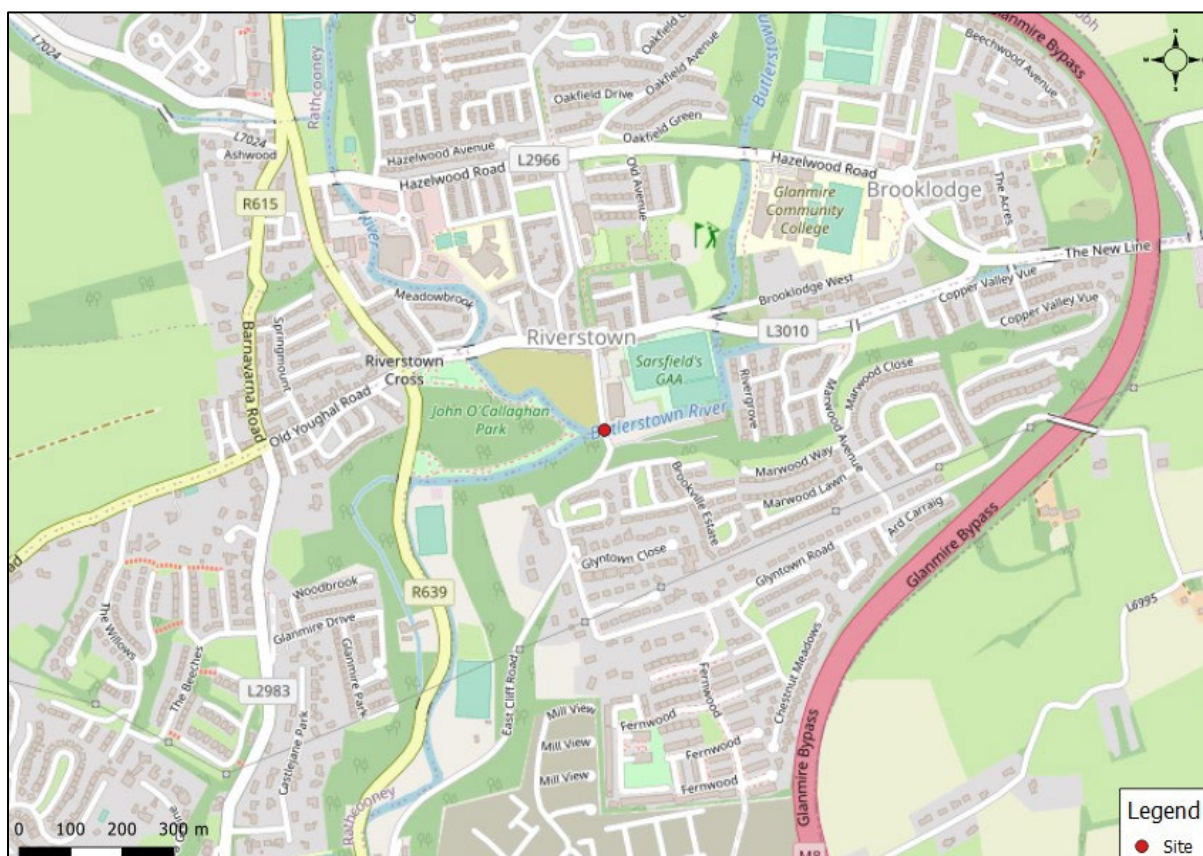


Figure 1-1: Site location

### 1.2 Bat Survey

This report presents the results of a bat survey undertaken by Karen Banks on 21<sup>st</sup> August 2022 during which the bridge was inspected. The bat species occurring on the site are described and the likely impact of the proposed repair works on the bats discussed, with recommendations for mitigation measures.

### 1.3 Project Description

The proposed works comprise of the following:

- Vegetation removal, to include removal of trees growing from the spandrel wall;
- Parapet masonry repair;
- Spandrel wall repair;
- Cutwater repair; and



- Repointing of the arch, pier and abutment.

## 2 Methodology

### 2.1 Desk Study

A pre-survey data search was conducted in order to collate existing information from Glyntown Bridge and its surrounding area on bat activity, roosts and landscape features that may be used by bats. The data search comprised the following information sources:

- Collation of known bat records from the National Bat Database held by the National Biodiversity Data Centre ([www.biodiversityireland.ie](http://www.biodiversityireland.ie)); and
- Review of Ordnance Survey mapping and aerial photography of Glyntown Bridge and its environs.

### 2.2 Field Survey

This bat survey and assessment was undertaken in accordance with the following guidelines:-

- Bat Conservation Ireland, (2010). Guidance notes for Planners, Engineers, Architects, and Developers;
- Billington, G.E. and G.M. Norman (1997). A Report on the Survey and Conservation of Bat Roosts in Bridges in Cumbria. Kendal, English Nature.
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- NRA (2006). Guidelines for the Treatment of Bats During the Construction of National Road Schemes.

### 2.3 Surveyor Information

The survey was undertaken by Karen Banks, MCIEEM.

Karen is an ecologist with 16 years' experience in the field of ecological assessment. Karen is an experienced and skilled bat surveyor, first gaining a scientific licence to disturb bats from Natural England, UK in 2008. Karen is trained in bat handling and capture methods and currently holds a bat disturbance licence granted by the NPWS. Karen has undertaken bat survey and assessment for numerous projects, including bridge repair and replacement works, domestic dwelling repair and demolition works, wind farm developments and large-scale infrastructure projects such as flood relief schemes, road developments and pipeline schemes.

### 2.4 Bat Roost Survey

**Visual Inspection:** A visual inspection of the bridge was undertaken during the hours of daylight by bat worker Ms Karen Banks. The bridge structure, including undersides or arches, parapets, wing walls, spandrel walls, cut-waters, abutments/piers etc., was searched for signs of bat roosting, including for example;

- Bat droppings: these accumulate under established roosting and access locations.
- Feeding remains: discarded insects parts such as moth wings under feeding perches.
- Bat corpses or skeletons.
- Fur oil/grease staining: natural oils in bats' fur rubs onto regularly used surfaces.
- Urine staining.
- Scratch marks: from bats movements in and out of perching/roosting locations.

- Lack of spider webs in holes and crevices: may indicate bats passing.
- Characteristic smells of bats may sometimes (rarely) be detectable
- Pupae of bat parasites such as *Nycteribia kolenatii* may (rarely) be present

Surveys involved examination of crevices with a strong, narrow-beamed torch, and an endoscope if necessary/beneficial. Close-focusing binoculars were used to inspect crevices that were not accessible.

*Assessment of Bat Roost Potential:* Even in a bridge that is sometimes used by bats, once-off surveys will not necessarily reveal the bridge as a bat roost. This is because occupation of roosts in bridges may be very transient, and bat signs may fall and wash away in the river or fade over time. Therefore, a precautionary approach should be taken; one-off surveys may prove presence of a roost but cannot prove absence of a roost.

A simple way of assessing whether a bridge is likely to host bat roosts, at least during some part of the year, is that developed by Billington and Norman (1997). It uses four grades, as described below, to describe the presence, or likely presence of bats.

- Grade 0 = no potential for bats. These are bridges where there are no opportunities for bats to roost in cracks/crevices or under dense ivy cover. Reinforced concrete slab bridges and masonry bridges that have been well-pointed or concreted often fall under this category.
- Grade 1 = crevices possibly of use to bats. These are bridges that have a relatively low number of crevices that bats could potentially use, but which may be sub-optimal due to exposure to weather or light, for example. The possibility that bats could use these crevices cannot be entirely ruled out, but roosting is considered to be quite unlikely.
- Grade 2 = ideal crevices but no bats. There are substantial cracks/crevices with suitable dimensions (usually at least 15cm deep), which are dark, dry and sheltered, and as such offer good roosting opportunities. While no physical evidence for bats is confirmed, it is considered likely that bats could use crevices in the bridge.
- Grade 3 = evidence of bats. Bats themselves are observed in the bridge, or evidence such as bat droppings or other field signs are observed.

## 2.5 Emergence roost survey

*Dusk activity survey:* A dusk survey of Glyntown Bridge was undertaken on 21<sup>st</sup> August 2022 in order to watch and listen for bats exiting/ entering bat roosts to determine the presence or absence of bats at the time of survey. The dusk emergence survey commenced approximately 15 minutes before sunset and ended approximately 60 minutes after sunset. The weather at dusk was 14°C, Beaufort Force 2 with no rain.

An Anabat Walkabout detector was utilised for the survey, which records bat echolocation calls directly on to an internal SD memory card. Each time a bat is detected, an individual time-stamped (date and time to the second) file is recorded. Data were then downloaded and all recordings were analysed using the Anabat Insight software programme, version 2.0.1.

### 3 Results

#### 3.1 Existing Bat Data

The review of existing records of bat species in the area of the site indicates that six of the ten known Irish species of bat have been recorded within a 4km radius of the site; namely pipistrelle species, soprano pipistrelle, Leisler's, brown long-eared and natterer's bat. Of these species, soprano pipistrelle and Leisler's bat have been recorded roosting within a 4km radius of the site as detailed in Table 3-1 below. The records were obtained from the National Bat Database held by the National Biodiversity Data Centre (NBDC) ([www.biodiversityireland.ie](http://www.biodiversityireland.ie)).

Table 3-1: Bat Records on the NBDC database from within a 4km radius of the site

Common Name	Scientific Name	Present	Date of Last Record	Location of Known Roost (to 1km OS Grid Square Resolution)
<b>Pipistrelle spp.</b>	<i>Pipistrellus pipistrellus sensu lato</i>	√	31/12/2011	None
<b>Soprano Pipistrelle</b>	<i>Pipistrellus pygmaeus</i>	√	31/12/2011	W7372, W7171
<b>Nathusius's Pipistrelle</b>	<i>Pipistrellus nathusii</i>			
<b>Leisler's Bat</b>	<i>Nyctalus leisleri</i>	√	31/12/2011	W7372
<b>Brown Long-eared Bat</b>	<i>Plecotus auritus</i>	√	09/06/2005	None
<b>Daubenton's Bat</b>	<i>Myotis daubentonii</i>	√	26/08/2014	None
<b>Whiskered Bat</b>	<i>Myotis mystacinus</i>			
<b>Natterer's Bat</b>	<i>Myotis nattereri</i>	√	09/06/2005	None
<b>Lesser Horseshoe Bat</b>	<i>Rhinolophus hipposideros</i>			
<b>Brandt's Bat</b>	<i>Myotis brandtii</i>			

The bridge is part of a landscape considered to be of moderate to high suitability for bats in general; and is of high suitability for soprano pipistrelle, common pipistrelle, brown long-eared, Leisler's, whiskered and natterer's bat<sup>1</sup> (Table 3-2).

Table 3-2: Landscape Suitability Index for Bats at Glyntown Bridge

Species	Suitability Index
<b>All Bats</b>	35.56
<i>Pipistrellus pygmaeus</i>	50
<i>Plecotus auritus</i>	51
<i>Pipistrellus pipistrellus</i>	48
<i>Rhinolophus hipposideros</i>	0
<i>Nyctalus leisleri</i>	49
<i>Myotis mystacinus</i>	43
<i>Myotis daubentonii</i>	30
<i>Pipistrellus nathusii</i>	10
<i>Myotis nattereri</i>	39

<sup>1</sup> Lundy et al., 2011 and [www.biodiversityireland.ie](http://www.biodiversityireland.ie) Landscape Model layer.

## 3.2 Habitats

Glyntown Bridge is situated in a landscape comprising built land (Fossitt code BL3), amenity grassland (GA2) and broadleaved woodland (WN). The bridge spans the Butlerstown River (EPA name Butlerstown 19), which is a 4<sup>th</sup> order river that is lined by riparian woodland. The Butlerstown River flows into the Glashaboy River c.43m downstream of the bridge. The riparian woodland and river provide suitable foraging and commuting areas for bats and connectivity to other suitable foraging areas in the wider landscape.

The structure is a three span masonry arch bridge (Plate 3-1).

*Plate 3-1: Glyntown Bridge*



## 3.3 Results of Bat Survey

### 3.3.1 Roost Inspection

The masonry arch bridge supported several gaps between the stonework of the spandrel wall (Plate 3-2), however, the gaps were shallow and would be exposed to wind and rain. The bridge arches have been pointed (Plate 3-3) and any remaining crevices are shallow or low down and therefore subject to flooding.

In accordance with Billington and Norman (1997), Glyntown Bridge is categorised as Grade 1 as it supports a relatively low number of crevices that bats could potentially use, but which would be sub-optimal due to exposure to weather or light. The possibility that bats could use these crevices cannot be entirely ruled out, but roosting is considered to be unlikely.

Plate 3-2: Gaps between stonework on spandrel wall



Plate 3-3: Pointed bridge arches



### 3.3.2 Emergence Survey

No emergent bats or bat roosts were identified during the emergence roost survey of the bridge.

Two species of bat were recorded during the dusk activity survey: soprano pipistrelle (*Pipistrellus pygmaeus*) and Leisler's bat (*Nyctalus leisleri*). Soprano pipistrelle was recorded flying over the bridge from an easterly direction early in the evening (c.17 minutes after sunset) and foraged in the vicinity of the bridge for the duration of the survey. A single Leisler's bat was recorded commuting overhead c.20 minutes after sunset.

### 3.4 Significance of Structure for Bats

The bridge supports features that could be used by bats, however roosting is unlikely. No evidence of roosting bats was recorded during the roost inspection and activity survey undertaken on 21<sup>st</sup> August 2022. There is vegetative cover adjacent to the bridge and the surrounding landscape is of moderate to high suitability for foraging and commuting bats. However, a relatively low amount of bat activity was recorded during the dusk survey undertaken on 21<sup>st</sup> August 2022.

## 4 Legislative Context

All Irish bats are protected under the Wildlife Act 1976 (as amended). Also, the EC Directive on The Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992), seeks to protect rare species, including bats, and their habitats, and requires that appropriate monitoring of populations be undertaken. Across Europe they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions<sup>2</sup>.

All bats are listed in the EU Habitats Directive (92/43/EC) under Annex IV which includes animal and plant species of community interest in need of strict protection and the lesser horseshoe bat is further listed under Annex II of the same Directive which includes animal and plant species of community interest whose conservation requires the designation of special areas of conservation.

Local Planning Authorities are required to give consideration to nature conservation interests under the guidance of the SEA Directive 2001/42/EC. This Directive states that the protected status afforded to bats means that planning authorities must consider their presence in order to reduce the impact of developments through mitigation measures.

Destruction, alteration or evacuation of a known bat roost is a notifiable action under current legislation and a derogation licence has to be obtained from the National Parks and Wildlife Service (NPWS) before works can commence.

In addition, it should be noted that any works interfering with bats and especially their roosts, including for instance, the installation of lighting in the vicinity of the latter, may only be carried out under a licence granted by the Minister under Regulation 54 to derogate from Regulation 51 of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended (which transposed the EU Habitats Directive into Irish law). The details with regards to appropriate assessments, the strict parameters within which derogation licences may be issued and the procedures by which and the order in relation to the planning and development regulations such licences should be obtained, are set out in Circular Letter NPWS 2/07 "*Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997<sup>3</sup> - strict protection of certain species/applications for derogation licences*" issued on behalf of the Minister of the Environment, Heritage and Local Government on the 16<sup>th</sup> of May 2007.

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<sup>2</sup> Aughney, T., Kelleher, C., & Mullen, D. (2008): Bat Survey Guidelines, Traditional Farm Buildings Scheme. Heritage Council, Kilkenny

<sup>3</sup> The 1997 Regulations and their amendments were revised and consolidated in the European Communities (Birds and Natural Habitats) Regulations 2011. There has been no amendment to Circular Letter NPWS 2/07 to date.

## 5 Potential Impacts

Planning consent is being sought from An Bord Pleanála for works to Glyntown Bridge to include vegetation removal, parapet masonry repair, spandrel wall repair, cutwater repair and repointing. There was no evidence of bats roosting within the bridge, therefore it is unlikely that the proposed work will impact on local bat populations.



## 6 Recommendations and Mitigation

There was no evidence of bats roosting within Glyntown Bridge, Riverstown, Cork. The structure supported a relatively low number of potential roosting sites in gaps between the stonework of the spandrel walls. These gaps may potentially be used by bats, but are exposed to rain, wind and light and are therefore unlikely to support roosting bats. No evidence of roosting bats was recorded within Glyntown Bridge and no bats were recorded emerging from or entering the bridge.

Planning consent is being sought from An Bord Pleanála for repair works to Glyntown Bridge. As the proposed work is unlikely to have an impact upon bats (see **Section 5**) no restrictions with respect to bats are considered necessary.

However, it is recommended that:

As a precautionary measure, the bridge will be subject to a roost survey prior to commencement of development to determine the presence or absence of bats. In the event that no evidence of bat usage is found during the inspection, development can commence. Should bats be found, development will be delayed and a derogation license will be required from NPWS wildlife licencing section.

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## Appendix A: Description of Irish bat species

Ireland has ten known bat species from two distinct families. Each is briefly described below. For a more comprehensive overview see Roche *et al* (2014). The conservation status of each species is derived from NPWS (2019).

### **Vespertilionidae:**

#### **Common pipistrelle (*Pipistrellus pipistrellus*)**

This species was only recently separated from its sibling, the soprano or brown pipistrelle *P. pygmaeus*, which is detailed below (Barratt et al, 1997). The common pipistrelle's echolocation calls peak at 45 kHz. The species forages along linear landscape features such as hedgerows and treelines as well as within woodland. The conservation status of this species is Favourable.

#### **Soprano pipistrelle (*Pipistrellus pygmaeus*)**

The soprano pipistrelle's echolocation calls peak at 55 kHz, which distinguishes it readily from the common pipistrelle on detector. The pipistrelles are the smallest and most often seen of our bats, flying at head height and taking small prey such as midges and small moths. Summer roost sites are usually in buildings but tree holes and heavy ivy are also used. Roost numbers can exceed 1,500 animals in mid-summer. The conservation status of this species is Favourable.

#### **Nathusius' pipistrelle (*Pipistrellus nathusii*)**

Nathusius' pipistrelle is a recent addition to the Irish fauna and has mainly been recorded from the north-east of the island in Counties Antrim and Down (Richardson, 2000) and also in Fermanagh, Longford and Cavan. It has also been recorded in Counties Cork and Kerry (Kelleher, 2005). However, the known resident population is enhanced in the autumn months by an influx of animals from Scandinavian countries. The conservation status of this species is Favourable.

#### **Leisler's bat (*Nyctalus leisleri*)**

This species is Ireland's largest bat, with a wingspan of up to 320mm; it is also the third most common bat, preferring to roost in buildings, although it is sometimes found in trees and bat boxes. It is the earliest bat to emerge in the evening, flying fast and high with occasional steep dives to ground level, feeding on moths, caddis-flies and beetles. The echolocation calls are sometimes audible to the human ear being around 15 kHz at their lowest. The audible chatter from their roost on hot summer days is sometimes an aid to location. The conservation status of this species is Favourable.

#### **Brown long-eared bat (*Plecotus auritus*)**

This species of bat is a 'gleaner', hunting amongst the foliage of trees and shrubs, and hovering briefly to pick a moth or spider off a leaf, which it then takes to a sheltered perch to consume. They often land on the ground to capture their prey. Using its nose to emit its echolocation, the long-eared bat 'whispers' its calls so that the insects, upon which it preys, cannot hear its approach (and hence, it needs oversize ears to hear the returning echoes). As this is a whispering species, it is extremely difficult to monitor in the field as it is seldom heard on a bat detector. Furthermore, keeping within the foliage, as it does, it is easily overlooked. It prefers to roost in old buildings. The conservation status of this species is Favourable.

### **Natterer's bat (*Myotis nattereri*)**

This species has a slow to medium flight, usually over trees but sometimes over water. It usually follows hedges and treelines to its feeding sites, consuming flies, moths, caddis-flies and spiders. Known roosts are usually in old stone buildings but they have been found in trees and bat boxes. The Natterer's bat is one of our least studied species and further work is required to establish its status in Ireland. The conservation status of this species is Favourable.

### **Daubenton's bat (*Myotis daubentonii*)**

This bat species prefers feeding close to the surface of smooth water, either over rivers, canals, ponds, lakes or reservoirs but it can also be found foraging in woodlands. Flying at 15 kilometres per hour, it gaffs insects with its over-sized feet as they emerge from the surface of the water - feeding on caddis flies, moths, mosquitoes, midges etc. It is often found roosting beneath bridges or in tunnels and also makes use of hollows in trees. The conservation status of this species is Favourable.

### **Whiskered bat (*Myotis mystacinus*)**

This species, although widely distributed, has been rarely recorded in Ireland. It is often found in woodland, frequently near water. Flying high, near the canopy, it maintains a steady beat and sometimes glides as it hunts. It also gleans spiders from the foliage of trees. Whiskered bats prefer to roost in buildings, under slates, lead flashing or exposed beneath the ridge beam within attics. However, they also use cracks and holes in trees and sometimes bat boxes. The conservation status of this species is Favourable.

### **Brandt's bat (*Myotis brandtii*)**

According to NPWS (2013), whiskered and Brandt's bats are cryptic species and can only be told apart using DNA techniques. Brandt's bat has been confirmed only once from Ireland; a single specimen found in 2003 in Wicklow (Mullen, 2006). Following this discovery, an intensive re-survey, involving DNA testing, was undertaken of all known whiskered bat roosts in Ireland, by the Centre for Irish Bat Research. Woodland mist-netting was also conducted for the species. Despite the extensive survey-work, no further Brandt's bats were identified. The most recent Red Data List for Irish Mammals (Marnell *et al.* 2009) lists Brandt's bat as data deficient. There is no evidence of any roosts for this species in the country and at present the single record for the species is considered an anomaly. Boston *et al.* (2010) concluded that "M. brandtii .... cannot currently be considered a resident species. This species is now considered a vagrant to the country and consequently, a detailed assessment has not been carried out.

## **Rhinolophidae:**

### **Lesser horseshoe bat (*Rhinolophus hipposideros*)**

This species is the only representative of the Rhinolophidae or horseshoe bat family in Ireland. It differs from our other species in both habits and looks, having a unique nose leaf with which it projects its echolocation calls. It is also quite small and, at rest, wraps its wings around its body. Lesser horseshoe bats feed close to the ground, gleaning their prey from branches and stones. It often carries its prey to a perch to consume, leaving the remains beneath as an indication of its presence. The echolocation call of this species is of constant frequency and, on a heterodyne bat detector, sounds like a melodious warble. The species is confined to six counties along the Atlantic seaboard: Mayo, Galway, Clare, Limerick, Kerry and Cork. The current Irish national population is estimated at 12,500 animals. This species is listed on Annex II of the EC Habitats Directive and 41 Special Areas of

Conservation have been designated in Ireland for its protection. Where it occurs, it is often found roosting within farm buildings. The conservation status of this species is Inadequate.



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