

Appropriate Assessment Screening Report

Tower Pedestrian Scheme

Bawnafinny

Tower

Cork

Report prepared for Cork City Council

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1 Introduction

Greenleaf Ecology was commissioned by Cork City Council to prepare an Appropriate Assessment Screening Report (AASR) for the proposed Tower Pedestrian Scheme, Bawnafinny, Tower, Co. Cork (hereafter referred to as the proposed development).

This report comprises information in support of screening for AA to be undertaken by the competent authority for the purposes of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora as transposed by the Planning and Development Act (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) as amended.

The location of the proposed development is illustrated in Figure 1-1.

Figure 1-1: Site Location



1.1 Legislative Context for Appropriate Assessment

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as “The Habitats Directive”, provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000.

The Habitats Directive has been transposed into Irish law by Part XAB of the Planning and Development Act (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011) as amended. In the context of the Proposed Development, the governing legislation is Part XAB of the Planning and Development Act (as amended).

Articles 6(3) of the Habitats Directive set out the decision-making tests for plans and projects likely to adversely affect the integrity of European sites (Annex 1.1). Article 6(3) establishes the requirement for AA:

Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan

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or project only after having ascertained that it will not adversely affect the integrity of the site concerned
and, if appropriate, after having obtained the opinion of the general public.*

Natura 2000 sites are defined under the Habitats Directive (Article 3) as a coherent European ecological network of special areas of conservation, composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, shall enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range. In Ireland, these sites are designated as European sites and include Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC, as codified by 2009/147/EC) for birds and Special Areas of Conservation (SACs), established under the Habitats Directive 92/43/EEC for habitats and species.

The competent authority is obliged to consider, in view of best scientific knowledge, whether the proposed works are likely to have a significant effect either individually or in combination with other plans and projects. If screening determines that there is likely to be significant effects on a European site, then AA must be carried out for the proposed works at Tower, including the compilation of a Natura Impact Statement (NIS) to inform the decision making by the Competent Authority.

1.2 Statement of Competence

This AA Screening was carried out by Karen Banks, MCIEEM. Karen is an ecologist with Greenleaf Ecology and has 19 years' experience in the field of ecological assessment. Karen has extensive experience in the production of reports to inform AA screenings and Natura Impact Statements including those for transport infrastructure, small to large scale housing and mixed-use developments, flood alleviation schemes, solar farms and wind farms.

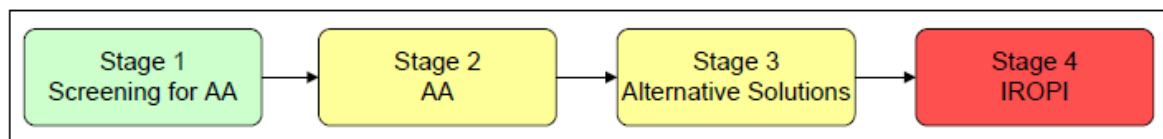
2 Methodology

2.1 Stages of Appropriate Assessment

The Department of the Environment, Heritage and Local Government guidelines (DELHG, 2009, rev. 2010) outlines the European Commission's methodological guidance (EC, 2002) promoting a four-stage process to complete the AA and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

The four stages are summarised diagrammatically in Figure 2-1. Stages 1-2 deal with the main requirements for assessment under Article 6(3) of the Habitats Directive, and Regulation 42 of the European Communities (Birds and Natural Habitats) Regulations. Stage 3 may be part of the Article 6(3) Assessment or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Figure 2-1: Four stages of Appropriate Assessment



Stage 1 - Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

- i. whether a plan or project (in this instance the proposed project) is directly connected to or necessary for the management of the European sites, and
- ii. whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on the European sites in view of their conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). This report fulfils the information necessary to enable the competent authority to screen the proposal for the requirement to prepare an AA.

This report forms Stage 1 of the AA process and sets out the following information:

- Description of the proposed works;
- Characteristics of the proximal European sites; and
- Assessment of significance of the proposed works on the European sites in question.

The methodology followed in relation to this assessment has had regard to the following guidance and legislation:

- European Union Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 92/43/EEC;
- Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities (DOEHLG 2009, rev 2010);
- The Planning and Development Act, 2000 (as amended);
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2018);
- European Commission Notice Brussels C (2021) 6913 final 'Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC' (EC, 2021);

- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission 2013;
- The European Union (Environmental Impact Assessment and Habitats) Regulations 2011; and
- The European Communities (Birds and Natural Habitats) Regulations, S.I. No. 477 of 2011 (as amended).

2.2 Information consulted for this report

The Screening assessment had regard to the following sources of data and information:

- Information on the location, nature and design of the proposed project;
- Department of Housing, Planning, and Local Government – online land use mapping [Home - My Plan](#);
- Department of Housing, Planning, and Local Government- EIA Portal [gov.ie - EIA Portal \(www.gov.ie\)](#);
- Environmental Protection Agency (EPA) – Water Quality and Water Framework Directive data [EPA Maps](#);
- Geological Survey of Ireland – Geology, soils and Hydrogeology [www.gsi.ie](#);
- National Parks and Wildlife Service – online European site network information, including site conservation objectives [www.npws.ie](#);
- National Parks and Wildlife Service – Information on the status of EU protected habitats in Ireland (NPWS 2019a, 2019b);
- National Biodiversity Data Centre – [www.biodiversityireland.ie](#);
- Ordnance Survey of Ireland – Mapping and Aerial photography [www.osi.ie](#);
- Site survey, undertaken on 25th and 26th May 2025 by Mayfly Ecology; [and](#)
- Site survey, undertaken between February and October 2025 by Ms K. Banks (see Section 3.2).

2.3 Screening Protocol

The sequence of events when completing the AA Screening process is provided below:

- Ascertain whether the plan or project is necessary for the management of the European site;
- Description of the plan or project and its potential impact;
- Definition of the likely zone of influence for the proposed works;
- Identification of the European sites that are situated (in their entirety or partially or downstream) within the likely zone of influence of the proposed works;
- Identification of the most up-to-date QIs and SCIs for each European site within the zone of influence;
- Identification of the environmental conditions that maintain the QIs/SCIs at the desired target of Favourable Conservation Status;
- Identification of the threats/impacts of the proposed works – actual or potential that could negatively impact the environmental conditions of the QIs/SCIs within the European sites;
- Highlighting the activities of the proposed works that could give rise to significant negative impacts; and
- Identification of other plans or projects, for which in-combination impacts would likely have significant effects.

2.3.1 Screening Determination

The proposed development is one to which Part XAB of the Planning and Development Act, 2000 as amended applies. In accordance with Part XAB of the Planning Acts as amended, and Section 177U thereof:

“(5) The competent authority shall determine that an appropriate assessment of a draft Land use plan or a proposed development, as the case may be, is not required if it can be excluded, on the basis of objective information, that the draft Land use plan or proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site”.

2.3.2 Zone of Influence

In accordance with EC (2021) *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*, identification of the European sites that may be affected should be done by taking into consideration all aspects of the plan or project that could have potential effects on any European sites located within the zone of influence of the plan or project. This should take into account all of the designating features (species, habitat types) that are significantly present on the sites and their conservation objectives.

In particular, it should identify:

- Any European sites geographically overlapping with any of the actions or aspects of the plan or project in any of its phases, or adjacent to them;
- Any European sites within the likely zone of influence of the plan or project. Natura 2000 sites located in the surroundings of the plan or project (or at some distance) that could still be indirectly affected by aspects of the project, including as regards the use of natural resources (e.g. water) and various types of waste, discharge or emissions of substances or energy;
- European sites in the surroundings of the plan or project (or at some distance) which host fauna that can move to the project area and then suffer mortality or other impacts (e.g. loss of feeding areas, reduction of home range);
- European sites whose connectivity or ecological continuity can be affected by the plan or project.
- The range of European sites to be assessed, i.e. the zone in which impacts from the plan or project may arise, will depend on the nature of the plan or project and the distance at which effects may occur.

2.3.3 Likely Significant Effects

The threshold for a likely significant effect is treated in the screening exercise as being above a *de minimis* level¹. The opinion of the Advocate General in CJEU case C-258/11 outlines:

“the requirement that the effect in question be ‘significant’ exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on a European site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill.”

In this report, therefore, ‘relevant’ European sites are those within the potential zone of influence of the construction and / or operation of the proposed development, and to which likely significant effect pathways were identified through the source-pathway-receptor model.

¹ *Sweetman v. An Bord Pleanála* (Court of Justice of the EU, case C-285/11). A de minimis effect is a level of risk that is too small to be concerned with when considering ecological requirements of an Annex I habitat or a population of Annex II species present on a European site necessary to ensure their favourable conservation condition. If low level effects on habitats or individuals of species are judged to be in this order of magnitude and that judgment has been made in the absence of reasonable scientific doubt, then those effects are not considered to be likely significant effects.

3 Project and Site Description

3.1 Project Description

The project will involve footpath improvements along a circa 800m section of Bawnafinny Road extending eastwards from the eastern side of Tower Village, the provision of several raised-table crossing points, junction improvements including enhanced pedestrian crossing facilities, improved road signage and road markings, and the construction of a new pedestrian bridge over the River Shournagh adjacent to the existing Tower Bridge. Associated works will include bridge foundations and supports, drainage measures, landscaping, temporary traffic management, site compounds and all ancillary works necessary to facilitate construction.

3.2 Existing Environment

The site is located at Tower village to the north-west of Cork City and is primarily along Bawnafinny Road, with works to deliver a new pedestrian bridge over the River Shournagh on the eastern side of the village.

An Aquatic Ecology Survey of the proposed crossing location over the River Shournagh was conducted in May 2025 by Mayfly Ecology, as described in Section 3.2.1.

3.2.1 Aquatic Ecology

3.2.1.1 Desktop Study

The Shournagh River is part of the Lee, Cork Harbour and Youghal Bay catchment, Hydrometric Area 19. To facilitate monitoring and reporting the EPA divide rivers into smaller units called waterbodies. In the case of the Shournagh it is divided into four waterbodies. The stretch of the Shournagh River upstream of Tower Bridge is within the Shournagh_030 waterbody and the stretch downstream of Tower Bridge, to the west of the proposed site is within the Shournagh_040 waterbody.

The Shournagh_030 has been assigned Good WFD status (2019-2024) and the Shournagh_040 has been assigned Moderate WFD status. These waterbodies are Blue Dot meaning they have a High WFD status objective. Blue dot waters which meet their objective have a diverse community of aquatic flora and fauna supporting species sensitive to pollution. The Shournagh_030 and Shournagh_040 waterbodies are failing to meet this objective and are therefore classed as being “At risk”. Significant issues and pressures are assigned to at risk waterbodies and the significant issues identified in the Shournagh_030 waterbody are nutrients with urban runoff and urban wastewater as the significant pressures; the significant issues identified in the Shournagh_040 waterbody are nutrients with urban runoff, agriculture and domestic wastewater treatment systems². As a result, the Shournagh_030 (and all the other waterbodies in this river) is designated as an Area for Action (AFA) -Restoration.

Table 3-1: WFD status 2019-2024 for all waterbodies within the Shournagh.

Waterbody name	WFD Code	WFD Status (2019-2024)	WFD Risk (3 rd cycle)	High Status Objective	AFA in 3 rd cycle
Shournagh_010	IE_SW_19S010100	Good	Not at Risk	No	Yes
Shournagh_020	IE_SW_19S010200	High	Not at Risk	Yes	Yes
Shournagh_030	IE_SW_19S010300	Good	At Risk	Yes	Yes
Shournagh_040	IE_SW_19S010500	Moderate	At Risk	Yes	Yes

Biological quality on the Shournagh_030 is monitored by the EPA using macroinvertebrates and a Q-value rating assigned. The biological monitoring station is located at Tower Bridge to the north-west of the proposed site (station code 19S010300). The station here was last monitored in 2024 and a Q4 was assigned indicating Good biological quality. In previous monitoring years from 2011 to 2023 the station

² [19 Lee, Cork Harbour and Youghal Bay Catchment Summary WFD Cycle 3.pdf](#)

Appropriate Assessment Screening Report- Tower Pedestrian Scheme, Bawnafinny, Tower, Co. Cork was achieving Q4-5 (High biological quality) and therefore the 2024 results represent a decline in biological quality. Figure 3-1 below summaries the Q-values for all stations in the Shournagh since monitoring by the EPA began.

SHOURNAGH																		Date Report Generated: 05/06/2025
Date Surveyed (last survey year only): 01/07/24, 28/06/24																		19S01
Biological Quality Rating (Q Values)																		
Station Code	1976	1981	1986	1990	1994	1997	1999	2002	2005	2008	2011	2014	2017	2019	2020	2023	2024	
RS19S010050					4													Shournagh_010
RS19S010070				4														
RS19S010100		5	4-5	4-5	4	4-5	4	4	4	4-5	3-4	4	4		4	4		Shournagh_020
RS19S010200		5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5		4-5	4-5		Shournagh_030
RS19S010280				4														Shournagh_040
RS19S010300		5	4-5	4	4-5	4	3-4	3-4	3-4	4	4-5	4-5	4-5		4-5	4-5	4	
RS19S010400	4-5	5	4	4-5														
RS19S010500					4-5	4-5	4-5	4-5	4	4	4-5	4-5	4	4-5	4-5	4	4	
Most Recent Assessment:																		
In 2024, Station 19S010300 was found to have declined to Good Ecological Condition from the High Ecological Condition recorded here from 2011 to 2023. Station 19S010500 was found to remain in Good Ecological condition recorded in 2023.																		

Figure 3-1: Summary of Q-values for all EPA biological monitoring stations on the Shournagh River since monitoring began in 1976. The station codes are listed with the most upstream station first and then moves downstream along the river e.g., 19S010050 is the uppermost station while station 19S010500 is the lower most station just before the Lee confluence. Image is extracted from EPA River Survey Quality Report.

The overlying soils are generally well draining acid brown earth and brown podzolics over old red sandstone, sandstone, conglomerate and mudstone geology. The underlying groundwater body is the Ballinhassig East groundwater body (IE_SW_G_004) which is currently at Good WFD Status (2016-2024) and considered “Not at Risk” of failing WFD objectives (3rd cycle). Groundwater flow directions are expected to approximately follow the local surface water catchments. Baseflow to rivers and streams is likely to be relatively low (GSI 2004). Groundwater vulnerability is classed as being high meaning groundwater here has natural characteristics that make it highly vulnerable to contamination by human activities. Sections along the lower reaches are classed as being extremely vulnerable.

Records of Protected Aquatic Species and Habitats within the Shournagh River

A summary of the aquatic protected species and habitats that were identified within the Shournagh during the desktop study is given below in Table 3-2.

The Shournagh and lower section of the River Lee which it discharges into is not located within a freshwater pearl mussel (FWPM) (*Margaritifera margaritifera*) sensitive area. No publicly available records for FWPM in the Shournagh were identified. As part of the Lower Lee (Cork City) Drainage Scheme a review of FWPM records was conducted in grid square W67. This square encompasses the lower reaches of the Shournagh and Lee downstream. It was concluded that “According to the NPWS rare and protected species database there are historical (1903) records for Freshwater Pearl Mussel (*Margaritifera margaritifera*) from the 10km Grid Squares W67. Post 1987 records are for dead shells only.” (Ryan Hanley, 2016).

As part of the National Barriers Programme IFI have assessed instream structures on the Shournagh River. There are no barriers mapped from Tower Bridge downstream to the confluence with the River Lee. Downstream in the River Lee there are two weirs (near the waterworks) marked as barriers.

However, European eel, *Lampetra* sp. (brook or river) and Atlantic salmon have all been recorded upstream of these weirs at Lee Fields (IFI, 2010; Kelly et al., 2014). It is therefore assumed that should suitable habitat be available, migratory fish species have the potential to occur within the Shournagh in the environs of the proposed site. One exception is sea lamprey. This species is known to spawn within the River Lee downstream of Inniscarra (Kurtz & Costello, 1999) but exact location is not stated. They have been observed spawning in the Lee below the Lee Fields Weir (R. Macklin pers. obs. within Ryan Hanley 2016). It is unknown if sea lamprey can make it past this weir.

Table 3-2: Summary of desktop review for aquatic protected species and protected habitats within the Shournagh.

Species/Habitat	Designation ²	Records
Lamprey: Brook lamprey (<i>Lampetra planeri</i>), River lamprey (<i>Lampetra fluviatilis</i>) Sea lamprey (<i>Petromyzon marinus</i>)	Annex II & V of the EU Habitats Directive (92/43/EEC).	Juvenile lamprey (brook or river) have been identified throughout most of the Shournagh river with higher densities in the lower reaches near the Tower bridge (IFI, 2011). The exact location of the sample site is not available in the report. IFI do not conduct WFD fish monitoring within the Shournagh however they do monitor the Martin at Bawnafinny bridge which is 1.5km upstream of Tower bridge. <i>Lampetra</i> sp. have been detected at this site in 2008, 2011 but were absent in 2018. The species of lamprey was not specified and is either river or brook (Matson et al., 2019). In one review paper it is noted that brook lamprey are present within the Martin but no further detail is given (Kurtz & Costello, 1999). Brook and river lamprey have the potential to occur in the Shournagh.
Fish: Atlantic salmon	European Communities (Quality of Salmonid Waters) Regulations (S.I. 293/1988) Annex II & V of the EU Habitats Directive (92/43/EEC)	The River Shournagh is not a designated salmonid river however the section of the River Lee which the Shournagh discharges to is designated. The Shournagh is potentially an important tributary supporting spawning and juvenile salmon. In 2023 under IFIs salmonid monitoring programme a survey for salmon fry (juveniles just emerging from gravels) was conducted in the Shournagh 240m downstream of Tower bridge. This site yielded good numbers of fry and had the highest numbers compared to upstream sites (Holmes et al., 2025). This indicates the lower reaches of the Shournagh has good salmonid spawning habitat. IFI do not conduct WFD fish monitoring within the Shournagh however they monitor the Martin at Bawnafinny bridge which is 1.5km upstream of Tower bridge. Salmon have been detected at this site in all sample years (2008, 2011 & 2018) and was the most abundant species in 2008 and 2011. The site holds High fish ecological quality (Matson et al., 2019).
Fish: Brown and sea trout (<i>Salmo trutta</i>), Three-spined stickleback (<i>Gasterosteus aculeatus</i>), stone loach (<i>Barbatula barbatula</i>)		IFI do not conduct WFD fish monitoring within the Shournagh however they monitor the Martin at Bawnafinny stickleback and stone loach were present in the last three survey years, 2008, 2011, 2018. Brown trout was the most abundant species in 2018 (Matson et al., 2019). Anecdotal information from fishing websites note that sea trout can occasionally enter the Shournagh.
Fish: European eel (<i>Anguilla anguilla</i>)	IUCN Red listed as critically endangered	IFI do not conduct WFD fish monitoring within the Shournagh however they do monitor the Martin at

	endangered species	Bawnafinny bridge which is 1.5km upstream of Tower bridge. European eel were present in the 2008 and 2011 survey but absent in 2018 (Matson et al., 2019).
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3.2.1.2 Field Survey Results

The results of the freshwater ecology survey are summarised below. For full details of the Aquatic Ecology Survey Results, please refer to Appendix A.

- Good biological quality (Q4) was assigned to the Shournagh River. This result shows a continuation in the decline from High biological quality observed by the EPA in 2024. The Shournagh is not achieving its High WFD status objective.
- The Shournagh is not within a freshwater pearl mussel sensitive area and no records of pearl mussels were identified from publicly available data. No mapped Annex I aquatic habitats were identified in the Shournagh. No records of protected aquatic plants listed with the Flora Protection Order or the IUCN red list as critically endangered, endangered, vulnerable or near threatened plants.
- Otters are very active in the Shournagh with evidence of spraints, prints, slide and holts all identified within 150m up and downstream of the proposed bridge crossing. While one holt appears to be active with an accumulation of spraints further survey is required to confirm. Further survey is also required to confirm if the second holt is active and if there is a holt within the scrub area that could not be accessed.
- Good habitat supporting lamprey, salmonids and eel is present within the Shournagh. Potential salmonid/lamprey spawning habitat and lamprey nursery habitat was identified in close proximity to the proposed bridge crossing.
- Kingfisher/sand martin nests were identified just outside the survey area (155m downstream) but were not active. No other nests were identified however there were areas which have suitable habitat for kingfisher and grey wagtail nesting.
- No invasive aquatic or riparian plants listed on the Third schedule of the EC (Birds and Natural Habitats) Regulations 2011 (S.I.477/2011) were identified. The only invasive species of note was a stand of cherry laurel (*Prunus laurocerasus*) beside Tower Bridge on the right bank. This is not a Third Schedule species but listed as having a risk of high impact.

3.3 Description of European Sites

This stage of the screening for AA process describes European sites within the likely zone of influence of the proposed development. The methodology for establishing the likely zone of influence is described in Section 2.3.2.

Connectivity between the proposed development and European sites has been reviewed. Connectivity is identified via the potential source-pathway-receptor model which identifies the potential impact pathways such as land, air, hydrological, hydrogeological pathways etc. which may support direct or indirect connectivity of the proposed development to European sites and/or their qualifying features.

In view of the location and characteristics of the proposed development (i.e. pedestrian and active travel improvements, see Section 3.1) and the source, pathway and receptors of potential impacts, a 15km radius is considered an appropriate zone of influence to screen all likely significant effects that might impact upon the European sites. Establishment of the likely zone of influence is in line with EC (2021) *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. However, review of mapping indicates that Great Island Channel SAC is located 17.5km to the east of the site at nearest. While Great Island

Channel SAC is located outside of a 15km radius from the site, this SAC is hydrologically connected to the proposed development and will therefore be included in the assessment of likely significant effects as a precautionary measure.

The European sites located within the likely zone of influence of the proposed development are outlined in Table 3-3 and Figure 3-2. There are 2 European sites located within the likely zone of influence of the proposed development:

1. Cork Harbour SPA (Site Code: 004030).
2. Great Island Channel SAC (Site Code: 001058).

Source – pathway – receptor dynamics were assessed for the above detailed European site located within the likely zone of influence of the proposed development and it was determined that there is remote hydrological connectivity between the proposed development and Cork Harbour SPA and Great Island Channel SAC.

Figure 3-2: European sites within the likely zone of influence of the proposed development



Table 3-3: European sites within the likely zone of influence of the proposed development

Site Name and Code	Qualifying Interests	Distance from Proposed Development (km) ³	Connectivity
Cork Harbour SPA (004030)	Bird Species: Little grebe (<i>Tachybaptus ruficollis</i>) [wintering] Great crested Grebe (<i>Podiceps cristatus</i>) [wintering] Cormorant (<i>Phalacrocorax carbo</i>) [wintering] Grey heron (<i>Ardea cinerea</i>) [wintering] Shelduck (<i>Tadorna tadorna</i>) [wintering] Wigeon (<i>Anas penelope</i>) [wintering] Teal (<i>Anas crecca</i>) [wintering] Pintail (<i>Anas acuta</i>) [wintering] Shoveler (<i>Anas clypeata</i>) [wintering] Red-breasted Merganser (<i>Mergus serrator</i>) [wintering]	11.8km	There is remote hydrological connectivity via the Shournagh River. The Shournagh River flows into Cork Harbour SPA c.17.0km downstream. There is no connectivity via ground water or any other pathway.

³ Straight line distance from site boundary

		Oystercatcher (<i>Haematopus ostralegus</i>) [wintering] Golden Plover (<i>Pluvialis apricaria</i>) [wintering] Grey Plover (<i>Pluvialis squatarola</i>) [wintering] Lapwing (<i>Vanellus vanellus</i>) [wintering] Dunlin (<i>Calidris alpina</i>) [wintering] Black-tailed Godwit (<i>Limosa limosa</i>) [wintering] Bar-tailed Godwit (<i>Limosa lapponica</i>) [wintering] Curlew (<i>Numenius arquata</i>) [wintering] Redshank (<i>Tringa totanus</i>) [wintering] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [wintering] Common Gull (<i>Larus canus</i>) [wintering] Lesser Black-backed Gull (<i>Larus fuscus</i>) [wintering] Common Tern (<i>Sterna hirundo</i>) [breeding] Wetlands		
Great Channel (001058)	Island SAC	Annex I Habitats Mudflats and sandflats not covered by seawater at low tide (1140) Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) (1330)	17.5km	There is remote hydrological connectivity via the Shournagh River. The Shournagh River flows into Cork Harbour and, potentially, this SAC c.21.9km downstream. There is no connectivity via ground water or any other pathway.

3.3.1 Conservation Objectives of European Sites

The integrity of a European site (referred to in Article 6.3 of the EU Habitats Directive) involves its constitutive characteristics and ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the habitats and species for which the site has been designated and the site's conservation objectives (EC, 2018).

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status areas designated as SAC and SPA. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The qualifying features for each site have been obtained through a review of the conservation objectives available from the NPWS ([Protected Sites in Ireland | National Parks & Wildlife Service \(npws.ie\)](https://www.npws.ie)).

Site specific conservation objectives are available for the European site located within the likely zone of influence of the proposed development; these were accessed in August 2026. For brevity, the site-specific CO's are summarised thus:

- *To maintain or restore the favourable conservation condition of Annex I habitats and Annex II species for which the SAC has been selected; and*
- *To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA.*

4 Screening Assessment Criteria

4.1 Management of European Sites

Appropriate Assessment is not required where the proposed development is connected with, or necessary to, the management of any European site. In this case, the proposed development is not directly connected with or necessary to the management of any European site(s).

4.2 Likely Direct, Indirect or Secondary Impacts of the Project on the European Sites

The proposed development is located outside the boundary of any European site; therefore, no direct impacts will occur through land take or fragmentation of habitats.

Cork Harbour SPA is of special conservation interest for wetlands and waterbirds. The proposed site is located on built land (a local road), with a pedestrian bridge crossing over the Shournagh River, adjacent to the existing road bridge (Tower Bridge). In view of the habitats present at the proposed site and the regular disturbance present at this location from road traffic and pedestrians, the proposed site would not be favoured by the Qualifying Interests of Cork Harbour SPA. No SCI species for Cork Harbour SPA were observed at the proposed site and its environs during site surveys. Further, the proposed site is set back from Cork Harbour SPA by a distance of c.11.8km at nearest. In view of these factors, it is considered that any disturbance/ displacement or ex-situ impacts to the qualifying interests of Cork Harbour SPA as a result of the proposed development is extremely unlikely. The qualifying interests of Great Island Channel are habitats, not species, therefore ex-situ disturbance impacts are not relevant to this European Site.

The proposed development includes, *inter alia*, the construction of a pedestrian bridge over the Shournagh River. The Shournagh River flows into the River Lee, then Cork Harbour SPA c.17.0km downstream of the proposed bridge location and Great Island Channel c.21.9km downstream. The proposed pedestrian bridge is a single span prefabricated steel structure that will not require any instream works, but will require piling to facilitate construction of two abutments and two piers directly adjacent to the river plus construction of two earthen embankments at each abutment location to facilitate the construction of abutment bankseats. Ground disturbance during the construction phase could lead to suspended solids runoff into the Shournagh River which, as detailed above, eventually discharges into Cork Harbour SPA and, potentially in turn, Great Island Channel SAC. Standard pollution control measures shall be employed during the construction phase to prevent sediment or pollutants from leaving the construction site and entering the water system. The pollution control measures that will be employed during the construction phase are standard practices that would be required for any development in order to protect local receiving waters, irrespective of any potential hydrological connection to European sites. Further, in the event that standard pollution control and surface water treatment measures were not implemented or failed, the potential for likely significant effects on the qualifying interests for Cork Harbour SPA and Great Island Channel SAC can be excluded given the distant hydrological connection, the nature, scale and the location of the proposed development (i.e. a single span bridge with no requirement for instream works) and the volume of water separating the proposed site from Cork Harbour SPA (the proposed site is a total of c.17.0km upstream of Cork Harbour SPA and c.21.9km upstream of Great Island Channel SAC).

In view of these factors, no potential for likely significant effects on water quality within Cork Harbour SPA and Great Island Channel SAC during the construction phase of the proposed development has been identified. No potential for significant adverse effects on European sites during the operational phase has been identified.

4.2.1 Cumulative Impacts with Other Plans and Projects in the Area

As part of the screening for an AA, in addition to the proposed development, other relevant projects and plans in the region must also be considered at this stage and assessed in the context of potential for in-combination effects. These plans and projects are outlined and assessed in Table 4-1 below.

It is concluded that there will be no negative in-combination effects between the proposed development and plans or project in the area.

Table 4-1: Other Projects and Plans that could result in potential cumulative impacts

Plan / Programme/Policy	Key Objectives/Policies/Proposals	Potential for In-combination Effects and Mitigation
Cork City Development Plan 2022-2028	The Cork City Development Plan includes Objective 6.23: To protect and enhance designated sites and areas of natural heritage and biodiversity and the habitats, flora and fauna for which it is designated, and to protect, enhance and conserve designated species.	The policies and objectives of the Cork City Development Plan 2022-2028 ensure that local planning applications comply with proper planning and sustainability and with the requirements of relevant EU Directives and environmental considerations, there is no potential for in-combination effects on European Sites.
Water Action Management Plan 2024	The Water Action Plan includes targeted measures for all water bodies, with the objective of either protecting water bodies at good or high status or restoring water bodies to at least good status. Where further specific measures are needed in addition to those set in this plan, integrated catchment planning approaches will be used to identify and decide on further specific measures for each water body. This will be reported in 46 Catchment Management Work Plans. These will be used to locate measures within each catchment. The list of water bodies and their associated status, significant pressures/issues and targeted measures, which are to be included in the Catchment Management Work Plans, will include targets for the third-cycle, along with Key Performance Indicators to monitor progress and outcomes.	The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination effects with the proposed development.
Inland Fisheries Ireland Corporate Plan 2021 -2025 The Inland Fisheries Act 2010.	To place the inland fisheries resource in the best sustainable position possible for the benefit of future generations. To protect, manage and conserve Ireland's inland fisheries and sea angling resources and to maximise their sustainability and natural biodiversity. ▪ To sustainably develop and improve fish habitats. ▪ To protect, maintain and enhance Ireland's wild fish populations.	The implementation and compliance with key environmental issues and objectives of this corporate plan will result in positive on-combination effects to European sites. The implementation of this corporate plan will have a positive impact for biodiversity of inland fisheries and ecosystems. It will not contribute to in-combination

	▪ To actively engage with stakeholders in the continued stewardship of our shared resource. ▪ To play a leadership role in achieving our climate action and biodiversity goals. ▪ To value our people and support their development and performance. ▪ To foster a culture of value for money and evaluation of performance in a measurable, transparent and accountable manner. ▪ Harness the power of innovation to continue to deliver a modern fisheries service.	or cumulative impacts with the proposed development.
Hydro LRD (CCC Ref: 2544173)	Planning Permission for a Large-Scale Residential Development (LRD) of 100 no. residential units comprising 63 no. dwelling houses, 23 no. apartment units and 14 no. apartment/duplex units, a creche facility and all ancillary site development works at lands associated with the Former St. Ann's Hydropathic Establishment, St. Ann's Hill, Kilnamucky, Tower, Blarney, Cork.	The AASR prepared development found that there is potential that the conservation objectives of Cork Harbour SPA may be impacted by surface water runoff during construction and operation and likely significant effects from surface water emissions cannot be excluded in the absence of mitigation. Mitigation measures are set out in Section 7 of the NIS and they ensure that any effects on the conservation objectives of Cork Harbour SPA will be avoided during the proposed development such that there will be no risk of adverse effects on the integrity of this European site. The NIS concluded that the construction and operation of the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects. No potential for in-combination effects with the proposed development has been identified.
Ringwood LRD (Ref: 2443031)	Permission for a Large-Scale Residential Development (LRD) at this site at Ringwood, Shean Upper, Blarney, Cork. The proposed development will consist of a largescale residential development (LRD), representing Phase 1 of the development in the Blarney East / Ringwood Expansion Area.	The AASR completed for the development concluded that the proposed development will not, either individually or in combination with other plans or projects, give rise to impacts which would constitute significant effects on the Great Island Channel SAC or Cork Harbour SPA, in view of its/their conservation objectives.

		Therefore, it is the recommendation of the authors of this report that Cork City Council, as the competent authority, may determine that Appropriate Assessment is not required in respect of the proposed development at Ringwood. Should any aspect of the design or construction methodology for the proposed development be materially changed, a new AA Screening Report would be required. No potential for in-combination effects with the proposed development has been identified.
Local Planning Applications⁴	Local developments ⁵ in the zone of influence of the proposed development that may contribute to potential cumulative or in-combination effects on European sites include domestic dwelling developments (Ref: 2544263, 2341960, 2140404, 2140110), small scale agricultural developments (2240890) and a small scale solar development (2241082).	No potential for significant adverse in combination effects on European sites has been identified.

4.3 Screening Assessment

Table 4-2 identifies the potential direct, indirect and secondary impacts of the proposed development on European Sites within the likely zone of influence.

Table 4-2: Potential Significant Effects on European Sites from the Proposed Development

Site Name and Code	Direct Impacts	Indirect / Secondary Impacts	Resource Requirements	Emissions (Disposal to land, Water or Air)	Excavation Requirements
Cork Harbour SPA (004030)	No impact on QI	No impact on QI	No impact on QI	No impact on QI	No impact on QI
Great Island Channel SAC (001058)	No impact on QI	No impact on QI	No impact on QI	No impact on QI	No impact on QI

4.4 Likely Changes to the European Site(s)

The likely changes that could arise from the proposed development, have been examined in the context of a number of factors that could have a significant effect on the relevant European Sites (Table 4-3).

⁴ The Local Planning Applications included in this potential in-combination impacts assessment support the following criteria: planning applications granted within the past five years that may contribute to potential cumulative impacts on European sites of concern.

⁵ [Cork City Planning Applications & Enforcement Register](#) (accessed 23/07/2026)

Table 4-3: Likely Changes to European Sites

Site Name and Code	Reduction of Habitat Area	Disturbance to Key Species	Habitat or Species fragmentation	Reduction in Species Density	Changes in Key Indicators of Conservation Value (Water Quality, etc.)	Climate Change
Cork Harbour SPA (004030)	None	None	None	None	None	None
Great Island Channel SAC (001058)	None	None	None	None	None	None

4.4.1 Elements of the Project where the Impacts are Likely to be Significant

No elements of the proposed development are likely to cause significant effects to the relevant European sites.

5 Conclusion

This AA screening report was completed with due regard to relevant European Commission guidance, national guidance and case law.

The potential impacts of the proposed development have been considered in the context of the European sites potentially affected, their qualifying interests or special conservation interests, and their conservation objectives.

Through an assessment of the source-pathway-receptor model, which considered the zone of influence of effects from the proposed development and the potential in-combination effects with other plans or projects, the following are the main conclusions:

- The proposed Tower Pedestrian Scheme, Bawnafinny, Tower, Co. Cork, either alone or in-combination with other plans and/or projects, does not have the potential to significantly affect any European site, in light of their conservation objectives. Therefore, a Stage 2 Appropriate Assessment is deemed not to be required.

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Appendix A Aquatic Ecology Survey



Tower Pedestrian Bridge

Freshwater Ecology Survey

13th June 2025

Version 01

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Figure 4-1: Map displaying the location of key ecological features noted during the survey. For further detail for each target note please see Table A-3 in the Appendix 23

List of acronyms and terminology used.

Acronym/ term	Definition
AFA	Area for Action
Blue dot	The Water Framework Directive has several objectives. One is to prevent deterioration of the status of all surface waters. This means that waterbodies that are High Status should not decline to Good Status or worse. The EPA have identified the waters in Ireland that should have a high status objective, and these are more commonly known as Blue Dots. The term High status objective and Blue Dot are synonymous
BoCCI	Birds of Conservation Concern Ireland.
D/S	Downstream
EPA	Environmental Protection Agency
European site	Special Areas of Conservation (SAC) and Special Protection Areas (SPA) are sites of European importance which have been designated under European legislation. Collectively they are referred to as European sites. SACs were designated under the Habitats Directive for habitats and species (but not including bird species). The Birds Directive protects all wild birds and their nests, eggs and habitats within the European Union. SPAs are classified under the Birds Directive to protect birds that are rare or vulnerable in Europe as well as all migratory birds that are regular visitors.
FWPM	Freshwater pearl mussel
GSI	Geological Survey Ireland
GWB	Groundwater body
IFI	Inland Fisheries Ireland
LAWPRO	Local Authority Waters Programme
Left bank/ right bank	If standing in the water facing downstream the bank to the left is referred to as the left bank. Abbreviation LB and RB are used
NBDC	National Biodiversity Data Centre
NPWS	National Parks and Wildlife Service
Otter terminology	Couche – otter need access to safe resting places. A couche is an above ground resting place such as amongst reeds, grass or scrub with a well-worn path (slide) into the water. Holt - an underground otter resting location. Otters rarely dig their own hole but make use of existing features such as a hollow amongst bankside tree roots, gaps amongst rocks/boulders or burrows formed by other mammals. Otter will even use man-made structures such as gaps under road bridges. Slide - a well-worn path down a riverbank that otter regularly use to access the water. Spraint - Otter use their poo or spraint to mark their territory. This is usually on a prominent feature such as instream boulders or bridge sills.
Riparian zone	An area of vegetation which acts as the interface between terrestrial and river ecosystems. These zones are important in providing bank stability, flood attenuation, habitats for range of species and water quality management but also as green spaces for people.
River birds	This is a term used to describe birds that are strongly associated with rivers and streams. In this report the term mainly refers to dipper, grey wagtail and kingfisher.
Third Schedule Invasive Species	This is a list of invasive species appearing on the third schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 [S.I.477/2011]. The regulations prohibit the planting, dispersal or allowing to disperse or spread or causing to grow of any plant listed within the third schedule.
U/S	Upstream
WFD	Water Framework Directive
WWTP	Waste Water Treatment Plant

1. INTRODUCTION

1.1. Background

To facilitate access for a residential development in Tower, Co. Cork, O'Callaghan Properties have proposed a pedestrian bridge over the River Shournagh just upstream of the existing Tower road bridge. Mayfly Ecology was contracted to undertake a freshwater ecology survey of the River Shournagh at the proposed crossing location. The aim of the survey was to understand the current water quality and identify any ecological sensitives which will need to be considered during the design and planning process.

The freshwater survey included a: characterisation of the general river habitat, macroinvertebrate kick sample, fisheries habitat assessment, walkover survey for signs of nesting river birds (e.g., kingfisher, dipper), walkover survey for signs of otter activity, and a survey for invasive aquatic or riparian plant species.

1.2. Site Location and Description

The River Shournagh rises north-west of Cork City in the Foothills of the Boggeragh Mountains and is a tributary of the River Lee. The main channel is approximately 25km in length and it is joined by many smaller tributaries, the Rathcoola being the largest. It flows in a south-easterly direction toward Tower and Blarney and the River Martin joins the Shournagh on the outskirts of Tower.

Coniferous forestry characterises the headwaters of the Shournagh but very quickly agricultural pasture becomes the dominant land use along most of the river. Dairy is the main agricultural activity within the Shournagh catchment and it has the highest stocking rate in the country (LAWPRO, 2022). Housing is scattered along the length of the river and Tower is the main village (and largest urbanised area) which the river flows through. In the lower reaches, the Blarney Road (R579) hugs the course of the river until the Shournagh meets the River Lee behind the Anglers Rest Pub.

In the upper reaches of the Shournagh there is a WWTP at Courtbrack which outfalls to the river. Effluent undergoes tertiary treatment and the WWTP is designed to service a population equivalent of 250. Further downstream Blarney WWTP discharges to the Shournagh approximately 712m upstream of Tower Bridge. Effluent also undergoes tertiary treatment and designed to service a population equivalent of 13000. This WWTP also has a storm water overflow which discharges to the river. **Figure 1-1** shows an aerial image of the River Shournagh and the approximate proposed bridge crossing.



Figure 1-1: Aerial imagery highlighting the Shournagh River and the approximate location of the proposed bridge crossing.

2. METHODOLOGY

2.1. Desktop Review

A desktop review was completed to gather **baseline water quality and ecological information** for the Shournagh.

The review also included a search of records for **protected aquatic species which are listed on Annex II** of the EU Habitats Directive (92/43/EEC) such as; Atlantic salmon (*Salmo salar*), river lamprey (*Lampetra fluviatilis*), brook lamprey (*Lampetra planeri*), sea lamprey (*Petromyzon marinus*), freshwater pearl mussel (*Margaritifera margaritifera* & *Margaritifera durrovensis*) and white-clawed crayfish (*Austropotamobius pallipes*) as applicable.

Records for any **other fish species were also noted**. For example, European eel (*Anguilla anguilla*) is not listed on Annex II of the Habitats Directive but numbers of juvenile eel reaching coastlines of Europe have undergone significant declines and it has now been classed as critically endangered on the IUCN Red List of Threatened Species (Pike et al., 2020). Records of **river birds** (e.g., dipper/kingfisher/grey wagtail) which are closely linked with aquatic environments were included in the review.

The desktop review included a search for **any aquatic habitats listed on Annex I** of the Habitats Directive such as water courses of plain to montane levels with the *Ranunculion fluitantis*; and *Callitriche-Batrachion* vegetation or aquatic mosses. It also included a search of any aquatic plants under the Flora Protection Order (S.I 235, 2022) and any **invasive species** listed under the Third schedule of the EC (Birds and Natural Habitats) Regulations 2011 (S.I.477/2011).

The review included a search of current Water Framework Directive (**WFD**) **status** and summary of Environmental Protection Agencies (EPA) **biological monitoring** results (as available). The catchment characterisation process is led by the EPA and identifies waterbodies at risk and the associated impacts. This process has been completed as part of the 3rd Cycle River Basin Management Plan (RBMP 2022-2027). The relevant characterisation report was reviewed, and results are summarised in this report.

An Area for Action (AFA) is an area that has been selected for focused attention with local authorities, public bodies, and stakeholders working together in collaboration to help achieve water quality protection or improvement. An AFA is divided into three categories and can be selected as an area for 1) restoration, 2) protection or 3) catchment projects. A review was undertaken to assess if the Shournagh falls under an AFA.

The following mapping resources were consulted to conduct the desktop review.

- EPA online mapping tools (<https://gis.epa.ie/EPAMaps>) and (<https://www.catchments.ie/maps/>) for water body information and mapping;
- EPA catchment characterisation report (EPA, 2024) Available online (<https://catchments.ie/wp-content/files/catchmentassessments/19%20Lee,%20Cork%20Harbour%20and%20Youghal%20Bay%20Catchment%20Summary%20WFD%20Cycle%203.pdf>) ;
- Inland Fisheries Ireland (IFI) online mapping tool (<https://opendata-figis.hub.arcgis.com/>) ;
- National Parks and Wildlife (NPWS) website for Conservation Objectives, Site Synopsis and any other relevant reporting for European sites (<https://www.npws.ie/protected-sites>);
- NPWS online mapping and data resources for latest European site boundaries and relevant species/habitat mapping (<https://www.npws.ie/maps-and-data>);
- NPWS published report regarding conservation status of habitats and species in Ireland protected under the Habitats Directive (NPWS 2019a, 2019b and 2019c);
- National Biodiversity Data Centre (NBDC) online mapping tool for distribution records of protected species or invasive species (<https://maps.biodiversityireland.ie/Map>);
- Any local surveys of flora, fauna and habitat available using the Heritage Councils mapping website (<https://experience.arcgis.com/experience/4caa2648489044e08a656bd2ad5a512a/page/Viewer/>).

2.2. Field Survey

The freshwater ecology survey was conducted within the Shournagh River on the 25th and 26th of May 2025. A 150m section of river was walked up and downstream of the proposed bridge crossing and the following surveys were undertaken:

- General habitat survey
- Biological quality survey -Macroinvertebrates
- Fisheries Habitat Assessment
- River bird walkover survey
- Otter walkover survey
- Aquatic or riparian invasive plants

For the macroinvertebrate survey a kick sample was taken just upstream of the existing Tower Bridge at 51.92283, -8.60258. For all other surveys the full 150m up and downstream of the proposed bridge crossing was surveyed.

2.2.1. General River Habitat Characteristics

The general river habitat characteristics were recorded broadly following those listed within the Environment Agency's *'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual'* (EA, 2003) and *Northern Ireland Environment Agency's 'River Hydromorphology Assessment Technique (RHAT) Training Manual'* (NIEA, 2014). Characteristics recorded included:

- Substrate type, degree of overlying sediment and note of sediment generated when substrate disturbed.
- Flow conditions and velocity.
- Riparian zone structure which includes a list of the dominant bankside vegetation and degree of shading along the river.
- Macrophytes and macroalgae present within the river.
- General hydromorphological characteristics including: river depth, width, bank height, signs of erosion or modification, and barriers to connectivity.

In addition, handheld probes were used to record physiochemical parameters insitu. Probes used included Oxygaurd Handy Polaris and Hanna Combo which were calibrated before use.

- Dissolved oxygen (% and mg/l).
- pH (pH unit).
- Temperature (°c).
- Conductivity (µS/cm).

2.2.2. Biological quality – Macroinvertebrate survey

A kick sampled was conducted using a two-minute (or longer may be required in certain substrate conditions) kick sampling method with a standard hand net (0.5 mm mesh). The survey technique adhered to ISO Standard 10870:2012 and CEN FprEN 16150:2011 for kick sampling and utilised the EPAs standard protocol. Stone washing (1 minute) was also undertaken to ensure collection of species which cling to rock surfaces. The collected sample was tipped into a white tray and macroinvertebrates identified in the field to the lowest taxonomic level possible.

Q-values were assigned as per EPA published guidance (McGarrigle *et al.*, 2002, Toner *et al.*, 2005) with the surveyor taking into account river typology, seasonality and habitat conditions as per EPA guidance. The information collected during the general river habitat characteristic survey was used to inform Q-value assignment. The Q-value is based on macroinvertebrate sensitivity to pollution with Group A taxa being the most sensitive and Group E taxa being the most tolerant.

Group A – Sensitive
 Group B – Less sensitive
 Group C – Tolerant
 Group D – Very tolerant
 Group E – Most tolerant

The Q-value mainly reflects the effects of organic pollution (i.e., deoxygenation and eutrophication) but where a toxic effect is apparent or suspected the suffix '0' is added to the biotic index (e.g., Q1/0, 2/0 or 3/0). An asterisk after the Q value (e.g., Q3*) indicates heavy siltation of the substratum.

The macroinvertebrate survey for this report was conducted in late May. The Q-value is usually applied in summer/autumn when anthropogenic pressures are greatest on macroinvertebrates due to lower flows and higher temperature. Richness and the number of sensitive taxa tend to be higher in winter and therefore seasonality was considered when the Q-value was calculated.

Table 2-1: Relationship between the Q-value and water quality (Table adapted from EPA river quality survey reports).

Q-value	Biological Quality ¹	Pollution Status	Condition
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2, Q1	Bad	Seriously polluted	Unsatisfactory

2.2.3. Fisheries Habitat Assessment

A fisheries habitat assessment was conducted to assess the likely suitability of a stretch of river to support salmonids (e.g., Atlantic salmon, brown trout) and lamprey (brook/ river or sea lamprey).

These species have specific habitat requirements at various stages of their lifecycles such as spawning, juvenile/nursery and adult stages. The habitat assessment is conducted to assess the likely suitability of a stretch of river to support the species in question for each life stage.

A 150m stretch of river was surveyed upstream and downstream of the proposed bridge crossing and a rating applied based on a five-point scale **1= Bad, 2= Poor, 3 = Moderate, 4= Good** and **5 =Excellent** for each life stage. This rating is broadly based on the Life Cycle Unit approach developed for salmonids (Kennedy 1984, O'Connor & Kennedy 2002) however it has been modified to incorporate other species. The rating broadly follows elements of methodology for fisheries assessment used in published reports (Conservation Services 2004, O'Grady 2006) when characterising habitats.

The rating was calculated following consideration of the information collected from the general river habitat survey and published information on habitat requirements for the species in question (Bjorn & Reiser, 1991;

¹ The Q-value has been developed for rivers only. It does not equate to WFD Status however, in Ireland it is often the driving element in status assignment. It is the most common biological index that is used to calculate Ecological Status for rivers. The other biological indicator used in rivers is fish and monitored by Inland Fisheries Ireland.

Reynolds, 1998; O'Connor & Kennedy, 2002; Peay, 2002; Hendry & Cragg-Hine, 2003; Holdich 2003; Maitland 2003; Peay, 2003; King & Linnane 2004; O'Grady 2006; Reynolds *et al.*, 2010; Rooney *et al.*, 2013; Johnson *et al.*, 2015).

A significant physical man-made barrier(s) such as a dam, weir or culvert may prevent migratory species from accessing the section or pose a barrier for the free movement of non-migratory species between sections. Where such artificial barriers exist, the habitat is scored and the barrier noted e.g., lamprey spawning habitat assessed is good but a dam prevents access therefore a score of 4^(barrier) is assigned. This will highlight the potential habitat available should barriers be removed in the future. Isolated populations of non-migratory species (e.g., brook lamprey, brown trout) may be present but at risk due to low genetic diversity. Or barriers may only be passable in certain flow conditions. It is beyond the project scope to fully assess any barriers. Natural barriers such as waterfalls should be noted as a natural limiting factor.

2.2.4. River Birds

The survey also noted any birds strongly associated with river environments such as dipper (*Cinclus cinclus*), grey wagtail (*Motacilla cinerea*) and kingfisher (*Alcedo atthis*). These three birds are referred to as river birds in this report. Any other birds identified were also noted. This was a single walkover survey only and focused on visual confirmation or identification of any potential nesting locations e.g., dippers / grey wagtails often nest under bridges while kingfisher breed in tunnels dug into steep riverbanks with soft sandy material. Any confirmed or potential nesting habitat for these birds is highlighted and further survey may be required prior to construction and inform mitigation.

2.2.5. Otter Survey

A walkover survey for otter was conducted up and downstream of the proposed bridge crossing. This survey broadly followed an adapted version of the standard otter survey methodology described within Lenton *et al.* (1980) and National Otter Surveys of Ireland conducted by NPWS (Bailey & Rocheford 2006, Reid *et al.*, 2013). The survey method was modified to focus on detecting otter activity along the Shournagh River and riparian zone within the zone of influence of the proposed bridge crossing. Therefore in lieu of surveying a 600m stretch from an accessible point (usually a bridge) the survey area covered a 150m stretch up and downstream of the proposed bridge crossing as per TII (formally NRA) guidance on disturbance distances for national road schemes (NRA 2008). In addition, both banks of the river were searched as opposed to the standard otter survey which targets only one bank. The existing Tower Bridge was included in the survey and all bridge sills were examined as bridges are favoured places for otter to spraint.

The detection of spraint, gland secretions, prints, couches, slides and holts were used to determine otter activity taking the ecology of otter into account (Chanin, 2003). Any of these field signs were noted and GPS co-ordinates taken. This was a preliminary otter survey and confirmation of whether a holt is active may not be possible. Further survey may be required prior to construction to confirm activity and inform mitigation.

2.2.6. Invasive Species

Any invasive aquatic or riparian plants listed on the Third schedule of the EC (Birds and Natural Habitats) Regulations 2011 (S.I.477/2011) were noted. The survey aimed to identify invasive species only and map general locations. Full mapping of the extent of infestations was not conducted.

2.3. Constraints

Rainfall prior to an otter survey can wash away spraints or tracks greatly reducing the chances of detecting signs of otter. For this survey, the weather was dry, sunny and these conditions were a continuation of a long

period of sunny weather with no rainfall. The survey focused on the river and riparian margins. Private lands such as the Muskery Golf Club were not surveyed. Some dense scrub areas were inaccessible to conduct the otter survey, please see otter survey for further details.

2.4. Biosecurity

For all freshwater ecological surveys, the surveyor employs strict biosecurity methodology. The surveyor is familiar with invasive plant and animal species that occur in Ireland and before any site is visited a review of any aquatic or terrestrial invasive species records is conducted using the National Biodiversity Data Centres (NBDC) online mapping tool to assist in biosecurity planning. Should any invasive plant species be identified on site during the survey disturbance of the area is avoided.

The surveyor employs the Check – Clean – Dry protocol as recommended by Inland Fisheries Ireland. Before leaving the sampling site all equipment (waders, nets, buckets, trays etc) are checked and any visible debris removed. Equipment is then cleaned using a solution approved for use near water and recommended dosage (Milton or Virkon® Aquatic). All equipment is then stored and allowed to dry thoroughly before reuse. The surveyor holds a second set of clean gear if required.

The surveyor is aware of the current outbreak of crayfish plague (*Aphanomyces astaci*) which is easily spread on contaminated equipment. A review of crayfish records and the latest report on the status of crayfish plague consulted prior to sampling to inform biosecurity protocols. Any signs of crayfish plague will be reported immediately to relevant authorities.

3. DESKTOP REVIEW RESULTS

3.1. Existing Water Quality

The Shournagh River is part of the Lee, Cork Harbour and Youghal Bay catchment, Hydrometric Area 19. To facilitate monitoring and reporting the EPA divide rivers into smaller units called waterbodies. In the case of the Shournagh it is divided into four waterbodies. The proposed bridge crossing and the 150m section of river surveyed upstream of Tower Bridge is within the Shournagh_030 waterbody. The 150m section surveyed downstream of Tower Bridge is within the Shournagh_040 waterbody.

The Shournagh_030 has been assigned **Moderate WFD status** (2016-2021) with elevated levels of nitrate and orthophosphate driving the status. This waterbody is a **Blue Dot** meaning it has a High WFD status objective. Blue dot waters which meet their objective have a diverse community of aquatic flora and fauna supporting species sensitive to pollution. The Shournagh_030 is failing to meet this objective and is therefore classed as being **“At risk”**. Significant issues and pressures are assigned to at risk waterbodies and the significant issue identified in this waterbody is nutrients with urban runoff and urban wastewater as the significant pressures (EPA, 2024). As a result, the Shournagh_030 (and all the other waterbodies in this river) is designated as an **Area for Action -Restoration**.

Table 3-1: WFD status 2016-2021 for all waterbodies within the Shournagh. Text in bold highlights the waterbody where the new bridge proposes to cross.

Waterbody name	WFD Code	WFD Status (2016-2021)	WFD Risk (3 rd cycle)	High Status Objective	AFA in 3 rd cycle
Shournagh_010	IE_SW_19S010100	Good	Not at Risk	No	Yes
Shournagh_020	IE_SW_19S010200	High	Not at Risk	Yes	Yes
Shournagh_030	IE_SW_19S010300	Moderate	At Risk	Yes	Yes
Shournagh_040	IE_SW_19S010500	Good	At Risk	Yes	Yes

Biological quality on the Shournagh_030 is monitored by the EPA using macroinvertebrates and a Q-value rating assigned. The biological monitoring station is located at Tower Bridge adjacent to the new proposed bridge crossing (station code 19S010300). The station here was last monitored in 2024 and a **Q4** was assigned indicating **Good biological quality**. In previous monitoring years from 2011 to 2023 the station was achieving Q4-5 (High biological quality) and therefore the 2024 results represent a decline in biological quality. **Figure 3-1** below summaries the Q-values for all stations in the Shournagh since monitoring by the EPA began.

Date Report Generated: 05/06/2025

SHOURNAGH**19S01**

Date Surveyed (last survey year only): 01/07/24, 28/06/24

Biological Quality Rating (Q Values)

Station Code	1976	1981	1986	1990	1994	1997	1999	2002	2005	2008	2011	2014	2017	2019	2020	2023	2024
RS19S010050					4												
RS19S010070				4													
RS19S010100		5	4-5	4-5	4	4-5	4	4	4	4-5	3-4	4	4		4	4	
RS19S010200		5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5		4-5	4-5	
RS19S010280				4													
RS19S010300		5	4-5	4	4-5	4	3-4	3-4	3-4	4	4-5	4-5	4-5		4-5	4-5	4
RS19S010400	4-5	5	4	4-5													
RS19S010500					4-5	4-5	4-5	4-5	4	4	4-5	4-5	4	4-5	4-5	4	4

Shournagh_010

Shournagh_020

Shournagh_030

Shournagh_040

Most Recent Assessment:

In 2024, Station 19S010300 was found to have declined to Good Ecological Condition from the High Ecological Condition recorded here from 2011 to 2023. Station 19S010500 was found to remain in Good Ecological condition recorded in 2023.

Figure 3-1: Summary of Q-values for all EPA biological monitoring stations on the Shournagh River since monitoring began in 1976. The station codes are listed with the most upstream station first and then moves downstream along the river e.g., 19S010050 is the uppermost station while station 19S010500 is the lower most station just before the Lee confluence. Image is extracted from EPA River Survey Quality Report.

The overlying soils are generally well draining acid brown earth and brown podzolics over old red sandstone, sandstone, conglomerate and mudstone geology. The underlying groundwater body is the Ballinhassig East groundwater body (IE_SW_G_004) which is currently at Good WFD Status (2016-2024) and considered “Not at Risk” of failing WFD objectives (3rd cycle). Groundwater flow directions are expected to approximately follow the local surface water catchments. Baseflow to rivers and streams is likely to be relatively low (GSI 2004). Groundwater vulnerability is classed as being high meaning groundwater here has natural characteristics that make it highly vulnerable to contamination by human activities. Sections along the lower reaches are classed as being extremely vulnerable.

3.2. Records of Protected Aquatic Species and Habitats

A summary of the protected species, protected habitats and Third Schedule invasive species that were identified within the Shournagh is given below in **Table 3-2**. This search focused on species and habitats associated with aquatic environments only. The desktop search was for publicly available records online.

The Shournagh River is not located within or adjacent to any European site (Special Area of Conservation or Special Protection Area). The closest protected site is Shournagh Valley pNHA and details are provided in the **Table 3-2** below. No mapped Annex I aquatic habitats were identified in the Shournagh. No records of protected aquatic plants listed with the Flora Protection Order or the IUCN red list as critically endangered, endangered, vulnerable or near threatened plants.

In terms of the freshwater pearl mussel (*Margaritifera margaritifera*) the Shournagh and lower section of the River Lee which it discharges into is not located within a freshwater pearl mussel (FWPM) sensitive area. No publicly available records for FWPM in the Shournagh were identified. As part of the Lower Lee (Cork City) Drainage Scheme a review of FWPM records was conducted in grid square W67. This square encompasses the lower reaches of the Shournagh and Lee downstream. It was concluded that “According to the NPWS rare and protected species database there are historical (1903) records for Freshwater Pearl Mussel (*Margaritifera*

margaritifera) from the 10km Grid Squares W67. Post 1987 records are for dead shells only.” (Ryan Hanley, 2016).

As part of the National Barriers Programme IFI have assessed instream structures on the Shournagh River. There are no barriers mapped from Tower Bridge downstream to the confluence with the River Lee. Downstream in the River Lee there are two weirs (near the waterworks) marked as barriers. However, European eel, *Lampetra* sp. (brook or river) and Atlantic salmon have all been recorded upstream of these weirs at Lee Fields (IFI, 2010; Kelly et al., 2014). It is therefore assumed that should suitable habitat be available, migratory fish species have the potential to occur within the Shournagh at the proposed project site.

One exception is sea lamprey. This species is known to spawn within the River Lee downstream of Inniscarra (Kurtz & Costello, 1999) but exact location is not state. They have been observed spawning in the Lee below the Lee Fields Weir (R. Macklin pers. obs. within Ryan Hanley 2016). It is unknown if sea lamprey can make it past this weir.

Table 3-2: Summary of desktop review for protected specie, protected habitats and Third Schedule invasive species within the Shournagh.

Species/Habitat	Designation ²	Records
Proposed Natural Heritage Areas	Shournagh Valley pNHA 00103	This pNHA is split into separate sites along the Shournagh River. The closest sites are Coolatanavally/Codatanavally (1.5km downstream) of the proposed bridge crossing and Cloghphilip Wood (2.5km upstream). The following is noted in the site synopsis for this pNHA. “At Coolatanavally, a golf course has been built and the grass is mown right up to the river bank and some areas of scrub woodland have also been bulldozed. The remaining woodland here is of an open structure with beech and ash being the dominant species. Cloghphilip Wood comprises of wet woodland and an old estate mixed woodland. It contains large fully grown oaks forming important part of the valleys woodland” (NPWS, 2009a). The terrestrial Annex I habitat - Old oak woodland (91A0) is mapped in this area. “In general dippers and grey wagtail are noted to feed along and around the river channel, with willow warbler and redpoll finches on the higher reaches of the river. Replanting with conifers or non-native broadleaves is a major threat and the spread of non-native species such as sycamore, may also be detrimental” (NPWS, 2009a).
	Lee Valley pNHA 00094	This pNHA is also split into separate sites across the lower reaches of the River Lee. There is a hydrological connection from the proposed crossing to one of these sites 6.5km downstream. Habitats within the pNHA consist of: wet broadleaved woodland, wet grassland communities where riverbank is frequently flooded, dry broadleaved woodland and unimproved dry grassland (NPWS, 2009b).
Otter (<i>Lutra lutra</i>)	-Annex II & IV of the EU Habitats	There are a number of records of otter along most of the River Shournagh with the exception of the uppermost headwaters. The

²Annex I – habitat types whose conservation requires the designation of Special Areas of Conservation.

Annex II – animal or plant species whose conservation requires the designation of Special Areas of Conservation.

Annex IV – animal or plant species in need of strict protection

Annex V – animal or plant species whose taking in the wild and exploitation may be subject to management measures.

Species/Habitat	Designation ²	Records
	Directive (92/43/EEC) -Irish Wildlife Act (1976 as amended)	closest to the proposed crossing are historical records approximately 3.5km downstream at Healys Bridge (NBDC 1980, grid square W6073) and 5km upstream (NBDC 1980, grid square W5677). The most recent record along the Shournagh is from 7.6km upstream at Foxes Bridge (NBDC 2017, grid square W5579).
Dipper (<i>Cinclus cinclus</i>)	None	Record of dipper feeding at Gardens Bridge 1.3km downstream of the proposed bridge crossing (NBDC 2023, W5873). The site synopsis for the Shournagh Valley pNHA notes that dippers are present in the pNHA but location is not defined (NPWS, 2009).
Grey wagtail (<i>Motacilla cinerea</i>)	-Red listed in Birds of Conservation Concern in Ireland (2020-2026)	There are a number of grey wagtail records along the Shournagh. The closest is in a 2km grid square which encompasses the proposed bridge crossing (NBDC records in 2007 to 2011 Bird Atlas Dataset, grid square W57X). The site synopsis for the Shournagh Valley pNHA notes that grey wagtail are present in the pNHA but location is not defined (NPWS, 2009).
Kingfisher (<i>Alcedo atthis</i>)	-Annex II of the EU Habitats Directive (92/43/EEC) -Amber listed in Birds of Conservation Concern in Ireland (2020-2026)	Records of Kingfisher are confined to the lower reaches of the Shournagh at the confluence with the Lee. There is “possible breeding” evidence of kingfisher 3.5km downstream (NBDC records in 2007 to 2011 Bird Atlas Dataset, grid square W67B).
Lamprey: Brook lamprey (<i>Lampetra planeri</i>), River lamprey (<i>Lampetra fluviatilis</i>) Sea lamprey (<i>Petromyzon marinus</i>)	Annex II & V of the EU Habitats Directive (92/43/EEC).	Juvenile lamprey (brook or river) have been identified throughout most of the Shournagh river with higher densities in the lower reaches near the proposed bridge crossing (IFI, 2011). The exact location of the sample site is not available in the report. IFI do not conduct WFD fish monitoring within the Shournagh however they do monitor the Martin at Bawnafinny bridge which is 1.5km upstream of the proposed bridge crossing. <i>Lampetra</i> sp. have been detected at this site in 2008, 2011 but absent in 2018. The species of lamprey was not specified and is either river or brook (Matson et al., 2019). In one review paper it is noted that brook lamprey are present within the Martin but no further detail is given (Kurtz & Costello, 1999). Brook and river lamprey have the potential to occur in the Shournagh.
Amphibians: Common frog (<i>Rana temporaria</i>) Smooth newt (<i>Lissotriton vulgaris</i>)		Common frog record in a bog pool near Bawnafinny Bridge beside the Martin River 1.6km upstream the proposed bridge (NBDC 1997, grid square W600755). Smooth newt record in a drain along the upper reaches of the Shournagh 15km upstream of the Shournagh (NBDC 2010, grid square W518843)
Fish: Atlantic salmon	-European Communities (Quality of Salmonid Waters) Regulations (S.I. 293/1988)	The River Shournagh is not a designated salmonid river however the section of the River Lee which the Shournagh discharges to is designated. The Shournagh is potentially an important tributary supporting spawning and juvenile salmon. In 2023 under IFIs salmonid monitoring programme a survey for salmon fry (juveniles just emerging from gravels) was conducted in the Shournagh 240m downstream of the proposed bridge. This

Species/Habitat	Designation ²	Records
	-Annex II & V of the EU Habitats Directive (92/43/EEC)	site yielded good numbers of fry and had the highest numbers compared to upstream sites (Holmes et al., 2025). This indicates the lower reaches of the Shournagh has good salmonid spawning habitat. IFI do not conduct WFD fish monitoring within the Shournagh however they monitor the Martin at Bawnafinny bridge which is 1.5km upstream of the proposed bridge crossing. Salmon have been detected at this site in all sample years (2008, 2011 & 2018) and was the most abundant species in 2008 and 2011. The site holds High fish ecological quality (Matson et al., 2019).
Fish: Brown and sea trout (<i>Salmo trutta</i>), Three-spined stickleback (<i>Gasterosteus aculeatus</i>), stone loach (<i>Barbatula barbatula</i>)		IFI do not conduct WFD fish monitoring within the Shournagh however they monitor the Martin at Bawnafinny bridge which is 1.5km upstream of the proposed bridge crossing. Brown trout, three-spined stickleback and stone loach were present in the last three survey years, 2008, 2011, 2018. Brown trout was the most abundant species in 2018 (Matson et al., 2019). Anecdotal information from fishing websites note that sea trout can occasionally enter the Shournagh.
Fish: European eel (<i>Anguilla anguilla</i>)	-IUCN Red listed as a critically endangered species	IFI do not conduct WFD fish monitoring within the Shournagh however they do monitor the Martin at Bawnafinny bridge which is 1.5km upstream of the proposed bridge crossing. European eel were present in the 2008 and 2011 survey but absent in 2018 (Matson et al., 2019).
Aquatic / riparian Invasive species	- Third schedule of the Birds & Natural Habitats Regs (S.I 477/2011)	No records for Third Schedule invasive species within the proposed bridge crossing area. There are however several invasive species recorded close by. Many of these are in the River Martin / Blarney Castle estate which is connected to the Shournagh and therefore have the potential to spread to the Shournagh. Water fern (<i>Azolla filiculoides</i>) in Blarney Castle estate 1.9km upstream of the proposed bridge crossing, it is unclear if the record is within the River Martin or pond areas in the castle grounds (NBDC record 2003, grid square W6075) Japanese knotweed (<i>Reynoutria japonica</i>) / hybrid (<i>F x bohemica</i>) at the Shournagh confluence with the River Lee 5km downstream of the proposed bridge crossing, (NBDC record 2014,2015, grid square W6071). Numerous records along the Martin with the closest in Blarney 3.6km upstream (NBDC 2015, W613761) American skunk cabbage (<i>Lysichiton americanus</i>) in wet ground at Blarney Castle estate, Giant rhubarb is noted here in the record comments. The River Martin is adjacent and connected the proposed bridge crossing over the Shournagh 1.9km downstream (NBDC 2019, grid square W6075). Giant rhubarb (<i>Gunnera tinctoria</i>) at burnt mill footbridge 3.1km upstream of the proposed bridge crossing (NBDC 2015, W582766). Rhododendron (<i>Rhododendron ponticum</i>) within Blarney Castle Woods. The River Martin is adjacent and connected to the

Species/Habitat	Designation ²	Records
		proposed bridge crossing over the Shournagh 1.9km downstream (NBDC 2006, W602751). Least duckweed (<i>Lemna minuta</i>) in the Martin at Bawnafinny Bridge (NBDC 2005, Grid reference W598755) and in Blarney Lake (NBDC 2006, W6074). Both waterbodies are connected to the Shournagh 1.5km – 3km downstream. Road kill records of American mink (<i>Mustela vison</i>) close to the Shournagh and Martin rivers (NBDC 2011 & 2006, grid reference W5380 & W599750 respectively). Mink can be associated with river habitats and have a local impact on waterbirds, fish and crayfish.

4. FRESHWATER ECOLOGY SURVEY RESULTS

The following section summarises the results of the freshwater ecology survey. For a full list of macroinvertebrates and abundances as well a summary of the general habitat characteristics and target notes please see **Appendix A**. A map highlighted the main ecological sensitivities identified is present below in **Figure 4-1**

4.1. General River Habitat Characteristics

The habitat conditions are similar throughout the entire reach surveyed up and downstream of the proposed crossing.

The Shournagh is a moderate sized river (11m wet width) with steep vertical banks (0.8 to 1.5m height). The channel is straight with the river much lower than the surrounding lands. Given these characteristics the reach surveyed appears to have been embanked or resectioned historically. Water depth varies with deep pools and shallower areas present (0.15m -0.55m depth). Water levels were low with a long dry period preceding the survey and a cobble/gravel bar was exposed along the left bank directly upstream of Tower Bridge. Moderate bank erosion was evident in sections with undercutting particularly where riparian trees were absent. It is clear the river can rise quite high and run fast during flood conditions as there are little natural features (boulders / meanders) to slow flow.

The flow habitat is dominated by glide with frequent pools but riffles are not common. The river substrate is dominated by cobble and gravels with only 1% of the substrate made up of larger boulders. Slight siltation of the substrate was present with 3-5% overlying silt and when it was disturbed a moderate plume of silt was generated indicating some siltation within the interstices.

Downstream of Tower Bridge a narrow treeline consisting of alder (*Alnus glutinosa*), sycamore (*Acer pseudoplatanus*) and willow (*Salix* sp.) overhanging both banks providing shade and allochthonous inputs of material supporting the rivers ecosystem. The Muskerry Golf Course borders the right bank while rough pasture, scrub habitat is present on the left bank. Upstream of Tower Bridge this treeline is confined to the left bank and leads into a mixed woodland area and scrub. The right bank is largely open with meadow habitat along the bank leading into a wet willow woodland. The woodland, wet willow woodland, scrub and pasture habitat along the banks form excellent wide riparian zones supporting river habitats and species. Ramsons (*Allium ursinum*) and were abundant under the trees along the banks with bluebells (*Hyacinthoides non-scripta*) interspersed.

Water crowfoot (*Ranunculus penicillatus* var. *penicillatus*) was the most common aquatic vegetation present instream with 5 -20% coverage across the surveyed area. St. Winifrid's moss liverwort (*Chiloscyphus polyanthos*), greater water-moss (*Fontinalis antipyretica*) red algae (*Lemania* sp.) and encrusting algae (*Hildenbrandia* sp.) were also present. A small amount of filamentous green algae was present (*Vaucheria* sp. and *Cladophora* sp.). Along the river margins, hemlock water-dropwort (*Oenanthe crocata*) dominated with some reed canary grass (*Phalaris arundinacea*) and branched bur-reed (*Sparganium erectum*) also growing.

Upstream of Tower Bridge there are two large pipes continuously discharging a steady flow of clear water. No WWTP or industry outfalls are mapped here, and it appears to be a diverted stream. A review of historic mapping however shows no streams. There was an old mill race and sluice system from the Shournagh and potentially this is a relic of this system or drainage for the old Blarney railway line. The outfall has resulted in an area of erosion around the pipes and a silty backwater has formed.

In general, the water colour within the Shournagh was slightly discoloured (grey) and this was more prevalent upstream of Tower Bridge. The discolouration continued upstream of the aforementioned outfall and

therefore can't be attributed to the outfall. A foul smell was also noted on the day of survey. The discoloured water and foul smell indicate an input of untreated wastewater.

Dissolved oxygen, pH conductivity and temperature readings were as expected, no significant readings of note were recorded.



Plate 4-1: Shournagh upstream of Tower Bridge



Plate 4-2: Shournagh downstream of Tower Bridge



Plate 4-3: Discoloured grey water observed instream



Plate 4-4: Example of bank undercutting with dense water crowfoot in the foreground.



Plate 4-5: Typical substrate within the Shournagh.



Plate 4-6: Ramsons and bluebells growing along the banks.

4.2. Biological Quality - Macroinvertebrates

The macroinvertebrate kick sample showed a diverse community with 22 taxa recorded. Five pollution sensitive taxa (Group A) were present however two of these (*Chloroperlidae* and *Heptagenia* sp.) were only single specimens and therefore not counted toward the Q-value calculation.

One Group A taxon was common in the sample, and this was the flattened mayfly (*Rhithrogena* sp.). The other Group A taxa were present in low numbers (*Isoperla grammatica* and *Ecdyonurus* sp.)

Although a number of Group A taxa were present, only one was common. The sample appeared a little unbalance with numerous *S. ignita* and Simuliidae both tolerant taxa (Group C). One tolerant (Group D) and one very tolerant (Group E) taxon were present in low numbers (*Asellus aquaticus* and Tubificinae). A **Q4** was assigned indicating **Good biological quality** but the site **is close to being a Q4-5**. This is an interesting result given the known high nutrient inputs into this river and grey water observed on the day.

4.3. Fisheries Habitat Assessment

Overall, the habitat conditions were similar across both sections surveyed up and downstream of the proposed crossing. Brown trout were observed feeding instream in both sections and a brown trout parr was caught in the macroinvertebrate kick sample.

4.3.1. Section A- Downstream of the proposed bridge

A rating of **4(Good) for all salmonid life stages** was assigned to this section. Here the river is straight with glide/pool habitat and limited riffles. Little boulder habitat (1%) is available for cover however overhanging trees, deep pools, aquatic vegetation (water crowfoot, liverwort, and moss), tree roots and some woody debris are present to provide cover for both adult and juvenile fish. A continuous treeline along both banks with overhanging trees provides shade and helps to regulate water temperatures.

Good spawning substrate for salmonids is available with cobbles and gravels dominating the stream substrate. There was however slight siltation (5%) overlying this substrate. Although riffle habitat is limited, where present they are likely important for salmonid spawning, of note is 150m downstream and directly downstream of Tower Bridge. The macroinvertebrate survey assigned a Q4 to the Shournagh indicating biological quality is supportive of salmonids.

For lamprey **4(Good) supporting habitat for all lamprey life stages**. Sandy/silty backwater margins were common along both banks however most didn't not contain very deep silts <15cm. Given the straight nature of the channel here silt accumulations are likely unstable in high velocity flows preventing the build-up of deep silts. Although most of the silt depths are sub-optimal given how common the shallow silty margins are along the stream together the habitats form important juvenile lamprey habitat. Of note was a deep silty area on the right bank 50 to 100m downstream and silty backwaters along both banks directly downstream of Tower Bridge. Small cobbles and gravels supporting river and brook spawning were present however very shallow water which brook lamprey tend to spawn was present but limited. Given the habitats European eel are likely to be present.



Plate 4-7: Typical habitat downstream of the proposed bridge crossing with overhanging trees on both banks and a riffle just visible at the Tower Bridge.



Plate 4-8: Instream aquatic vegetation (water crowfoot) which juvenile fish utilise for cover



Plate 4-9: Typical cobble/gravel substrate within the Shournagh



Plate 4-10: An example of a silty backwater area suitable for juvenile lamprey.

4.3.2. Section B – Upstream of the proposed bridge

A rating of **4(Good) for all salmonid life stages** was assigned. Similar to downstream this section is also straight with glide/pool habitat and limited riffle. Little boulder habitat (1%) is available for cover however, overhanging trees, deep pools, aquatic vegetation (water crowfoot, liverwort and moss), tree roots and some woody debris are present to provide cover for both adult and juvenile fish. A continuous treeline with trees overhanging the river is present on the left bank only. Although only present on one bank the overhanging trees stretch across to the mid channel providing shade which helps to regulate water temperatures.

Good spawning substrate for salmonids is available with cobbles and gravels dominating the stream substrate. There was however slight siltation (3%) overlying this substrate. Although riffle habitat is limited, where present they are likely important for salmonid spawning. For example, there is a small riffle area present below a pool directly upstream of Tower Bridge. Beside this riffle was an exposed cobble/gravel bar but it is likely inundated with water in higher flows given the lack of vegetation on this bar. This would increase the size of the riffle area and potentially forms an important spawning habitat for salmonids or lamprey. Other important riffle areas are present 50m and 100m upstream.

The macroinvertebrate survey assigned a Q4 to the Shournagh indicating biological quality is supportive of salmonids. Discoloured water (grey) was more obvious in this section as well as a foul odour. This would indicate a discharge untreated wastewater which would be of concern for water quality and fish.

For lamprey **4(Good) supporting habitat for all lamprey life stages**. Sandy/silty backwater margins were common along both banks however most didn't not contain very deep silts <15cm. Given the straight nature of the channel here silt accumulations are likely unstable in high velocity flows preventing the build-up of deep silts. Although most of the silt depths are sub-optimal given how common the shallow silty margins are along the stream together the habitats form important juvenile lamprey habitat. One area was of note is backwater area with sandy/silts on the right bank just upstream of Tower Bridge. This backwater area has been created as a result of the discharge from the two pipes here which have eroded the bank and potentially forms an important lamprey nursery habitat. Small cobbles and gravels supporting river and brook spawning are present and unlike downstream conditions there were more areas of shallow water present which brook lamprey tend to spawn in. Given the habitats European eel are likely to be present.



Plate 4-11: Typical habitat upstream of the proposed crossing with overhanging trees on one side of the bank.



Plate 4-12: Brown trout parr caught during the macroinvertebrate kick sample (and returned to river).



Plate 4-13: In the background the exposed gravel bar is visible just upstream of Tower Bridge. This may form important spawning habitat in higher flows. In the foreground a backwater area is visible by the outfall which may be important juvenile lamprey habitat.



Plate 4-14: Typical cobble/gravel substrate upstream of the proposed bridge crossing

4.4. Invasive Species

No Third Schedule invasive species were identified instream or along the riverbanks on the day of survey. The only invasive species identified of note was cherry laurel (*Prunus laurocerasus*), this is not a Third Schedule

species but listed as having a risk of high impact. A small stand was confined to the right bank beside the bridge (see map in **Figure 4-1**). It consisted of young trees by the bridge wall and a small mature dense stand.



Plate 4-15: Young Cherry laurel plants growing by the bridge wall beside the road.



Plate 4-16: Section of the more mature Cherry laurel stand along the right bank.

4.5. River Birds

Potential kingfisher or sand martin nests were identified just outside the survey area approximately 155m downstream of the proposed bridge. A number of holes (5-6cm) in diameter were present in a section of exposed vertical riverbank. No bird activity was observed, and it appears part of the bank has collapsed and nests abandoned. One hole had been excavated by a mammal with claw marks and sediment pile present. Rabbit was excluded given the steepness of the bank, large claw marks, lack of rabbit trails and droppings. Potentially the nest had been disturbed by a fox/mink taking advantage of the low water levels. Bird feathers were found nearby on the opposite bank along the mammal trail but the bird species could not be identified.

No other kingfisher/sandmartin nesting sites were located within the survey area however two areas were identified which would be suitable for kingfisher nests (see map in **Figure 4-1**) although these sites are sub-optimal with dense vegetation overhanging the bank. With abundant overhanging branches for kingfisher to perch as well as good food resources the habitat is suitable for kingfisher.

An old stone wall (approximately 70m upstream proposed bridge crossing) was identified along the riverbank under overhanging vegetation which may be suitable habitat for grey wagtail or dipper nesting. Shallow areas with cobbles are present with good biological quality which would all provide dipper/grey wagtail with good food resources. Grey wagtail was observed next to Tower Bridge on the day of survey.



Plate 4-17: Unoccupied kingfisher or sandmartin nests in the riverbank. The yellow circle highlights the nest which had been disturbed by a mammal.



Plate 4-18: Old stone wall along riverbank which dipper or grey wagtail may utilize hollows for nesting.

4.6. Otter Survey

Signs of otter activity (spraint, prints, slides, holts, trails) were noted within 150m up and downstream of the proposed bridge. The survey indicated that otters are present with the survey area. **Table 4-1** below summarises the location and details of the features observed, see map in **Figure 4-1** for a map of these features

A narrow treeline exists along the steep riverbanks and a well-defined mammal trail runs behind these trees acting as a corridor along the river with evidence of both fox and otter using this trail. There are limited prominent features instream for otters to mark their territory (sprainting) and so they are using the mammal trail where it rises behind riparian trees as features for sprainting.

Two mammal trails along the right bank were observed running into the Muskerry Golf Club. The golf course was not surveyed but it does contain scrub habitat which otter may utilise. One trail also led into a dense patch of bramble/nettle scrub bordering the golf course and the bridge just by an ESB pole. This area was fenced off and views into the scrub were not possible. Spraint was found nearby on the bridge and the presence of an otter holt in the scrub cannot be excluded.

Where sprainting was observed there were accumulations indicating that these are regular sprainting areas and otters are active. Two holts were observed along the left bank and one had an accumulation of spraint at the entrance.

Table 4-1: Details of otter activity observed within the Shournagh.

Target Note	Feature	Coordinates (Lat/Long)	Bank	Note
TN2	Holt	51.92235, -8.60324	Left	Accumulation of dried spraint at holt entrance with fish bones. Well-worn trail here with slide into river at sycamore tree.
TN3	Spraint	51.92244, -8.60313	Left	Accumulation of dried spraints with fish bones at alder tree
TN4	Print	51.92214, -8.60358	Left	In mud coming from the water and leading to well-worn trail behind the trees
TN5	Spraint	51.92278, -8.60294	Right	On boulder, accumulation of spraints some very dry others dry and still black/brown. All with fish bones.
TN6	Spraint	51.92277, -8.60291	Bridge arch	On the d/s end of bridge sill, 1st arch from right bank. Dry and broken up with fish bones

Target Note	Feature	Coordinates (Lat/Long)	Bank	Note
TN7	Holt	51.92303, -8.60179	Left	Hollow tucked under overhanging bank and vegetation at least 30cm depth into bank with a drop into a pool area. No sprainting. Mammal prints along bank edge but too obscured to identify the species.
TN8	Spraint	51.92316, -8.60122	Left	Well-worn mammal trail behind riparian trees. Here there was a semi-dry spraint with fish bones behind sycamore.
TN9	Slide	51.92316, -8.60122	Left	Slide into river beside spraints at TN8.
TN22	Potential holt	51.92270, -8.60299	Right	Trail from river up bank to the ESB pole and leads into the golf course and a scrub area beside the bridge. This scrub area is fenced off and was too dense to gain views into it. Otter spraint was found nearby on the bridge sill and the presence of a holt in the scrub area cannot be excluded. It is recommended to conduct a trail camera survey to confirm otter activity in this area.



Plate 4-19: Otter holt (TN2) with accumulation of spraint at entrance.



Plate 4-20: Otter spraint (TN3) deposited on mammal trail behind a tree.



Plate 4-21: Otter spraint (TN5) on one of the only boulder features in the survey area.



Plate 4-22: Otter spraint (TN6) on bridge sill.



Plate 4-23: Otter holt (TN7) tucked into the bank with overhanging vegetation.



Plate 4-24: Otter spraint (TN8) found along mammal trail behind sycamore tree.



Figure 4-1: Map displaying the location of key ecological features noted during the survey. For further detail for each target note please see Table A-3 in the Appendix

5. SUMMARY

- Good biological quality (Q4) was assigned to the Shournagh River. This result shows a continuation in the decline from High biological quality observed by the EPA in 2024. The Shournagh is not achieving its High WFD status objective.
- The Shournagh is not within a freshwater pearl mussel sensitive area and no records of pearl mussels were identified from publicly available data. No mapped Annex I aquatic habitats were identified in the Shournagh. No records of protected aquatic plants listed with the Flora Protection Order or the IUCN red list as critically endangered, endangered, vulnerable or near threatened plants.
- Otters are very active in the Shournagh with evidence of spraints, prints, slide and holts all identified within 150m up and downstream of the proposed bridge crossing. While one holt appears to be active with an accumulation of spraints further survey is required to confirm. Further survey is also required to confirm if the second holt is active and if there is a holt within the scrub area that could not be accessed.
- Good habitat supporting lamprey, salmonids and eel is present within the Shournagh. Potential salmonid/lamprey spawning habitat and lamprey nursery habitat was identified in close proximity to the proposed bridge crossing.
- Kingfisher/sandmartin nests were identified just outside the survey area (155m downstream) but were not active. No other nests were identified however there were areas which have suitable habitat for kingfisher and grey wagtail nesting.
- No invasive aquatic or riparian plants listed on the Third schedule of the EC (Birds and Natural Habitats) Regulations 2011 (S.I.477/2011) were identified. The only invasive species of note was a stand of cherry laurel (*Prunus laurocerasus*) beside Tower Bridge on the right bank. This is not a Third Schedule species but listed as having a risk of high impact.

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APPENDIX A

SUMMARY OF MARCOINVERTEBRATE & GENERAL SURVEY INFORMATION

Table A-1: List of macroinvertebrates identified in the kick sample on the Shournagh River

Macroinvertebrate	Group	Pollution tolerance	Abundance
<i>Rhithrogena</i> sp.	A	Sensitive	Common
<i>Isoperla grammatica</i>	A	Sensitive	Few
<i>Ecdyonurus</i> sp.	A	Sensitive	Few
Chloroperlidae	A	Sensitive	Single
<i>Heptagenia</i> sp.	A	Sensitive	Single
Glossosomatidae	B	Less sensitive	Common
<i>Alainites muticus</i>	B	Less sensitive	Few
<i>Leuctra</i> sp.	B	Less sensitive	Few
Odontoceridae	B	Less sensitive	Few
Lepidostomatidae	B	Less sensitive	Few
<i>Serratella ignita</i>	C	Tolerant	Numerous
Simuliidae	C	Tolerant	Numerous
<i>Rhyacophila dorsalis</i>	C	Tolerant	Common
<i>Baetis rhodani/atlanticus</i>	C	Tolerant	Common
Hydropsychidae	C	Tolerant	Few
Chironomidae	C	Tolerant	Few
<i>Gammarus duebeni</i>	C	Tolerant	Few
<i>Limnius volckmari</i>	C	Tolerant	Few
<i>Hydracarina</i> sp.	C	Tolerant	Few
Caenidae	C	Tolerant	Few
<i>Asellus aquaticus</i>	D	Very tolerant	Few
Tubificinae	E	Most tolerant	Few
Taxon Richness (including singles)			22
Q-value			Q4 (upper boundary)

Table A- 2: Summary of general habitat characteristics for the Shournagh River 150m downstream to 150m upstream of the proposed bridge crossing.

Shournagh River	
Bank height (m)	0.8 – 1.5m
Wet width (m)	11
Bankfull width (m)	12
Depth (m)	0.15 -0.55
Substrate (%)	Boulder: 1 Cobble: 40 Coarse gravel: 25 Fine gravel: 22 Sand: 10 Silt: 3 -5
Substrate Siltation	Low with moderate plume when kicked
Shading	Moderate
River habitat (%)	Riffle: 5 Glide: 65 Pool: 30
Physico-chem	DO: 108% / 11.4 mg/l Temp: 12.9°C Conductivity: 256µS/cm pH: 7.96
Q-value	Q4 (upper boundary)
Macrophytes	<i>Ranunculus penicillatus</i> var. <i>penicillatus</i> 5 -20% <i>Chiloscyphus polyanthos</i> 1% <i>Fontinalis antipyretica</i> 5% <i>Lemania</i> sp. 2% <i>Hidenbrandia</i> sp. 1% <i>Vaucheria</i> sp. 1% <i>Cladophora</i> sp. 1% <i>Oenanthe crocata</i> dominating margins <i>Phalaris arundinacea</i> <1% <i>Sparganium erectum</i> <1%
Note	• Embanked or resectioned historically • Discoloured water with foul odour
Other species noted	• Brown trout (parr and adults) • Grey wagtail • Grey heron • Goldcrest • Long-tailed tit • Blackbird • Chiff chaff • Wren • Beautiful demoiselle

Table A- 3: Target notes for reach surveyed as part the freshwater ecology survey of the River Shournagh.

Target note (TN)	Feature	Species	Coordinates (Lat/Long)	Location	Notes
TN1	Print	Mammal	51.92204, -8.60373	Left bank	Faint print along muddy edge leading into a well-worn trail. Potentially fox
TN2	Holt	Otter	51.92235, -8.60324	Left bank	Accumulation of dried spraint at holt entrance with fish bones. Well-worn trail here with slide into river at sycamore tree.
TN3	Spraint	Otter	51.92244, -8.60313	Left bank	Accumulation of dried spraints with fish bones at alder tree
TN4	Print	Otter	51.92214, -8.60358	Left bank	In mud coming from the water and leading to well-worn trail behind the trees
TN5	Spraint	Otter	51.92278, -8.60294	Right bank	On boulder, accumulation of spraints some very dry others dry and still black/brown. All with fish bones
TN6	Spraint	Otter	51.92277, -8.60291	Bridge	On the d/s end of bridge sill, 1st arch from right bank. Dry and broken up with fish bones
TN7	Holt	Otter	51.92303, -8.60179	Left bank	Hollow tucked under overhanging bank and vegetation at least 30cm depth into bank with a drop into a pool area. No sprainting. Mammal track along bank edge but too obscured to tell the species
TN8	Spraint	Otter	51.92316, -8.60122	Left bank	Well-worn mammal trail behind riparian trees. Here there was a semi dry spraint with fish bones behind sycamore and slide into the river
TN9	Slide	Otter	51.92318, -8.6012	Left bank	Slide into river beside spraints
TN10	Nest	Kingfisher/sandmartin	51.92186, -8.60404	Right bank	5-6cm diameter holes in exposed section of vertical bank. 1 nest raided by large mammal with claw marks in vertical bank. No bird activity.
TN11	Print	Fox	51.92227, -8.60342	Left bank	Prints along bank edge leading up bank to well-worn trail and remain of a dead bird.
TN12	Trail	Mammal	51.92253, -8.60322	Right bank	Trail from river up to golf course, brash dumped here and could also be used by people from golf course.
TN13	-	Ramsons	51.92257, -8.6031	Left bank	
TN14	Invasive species	Cherry laurel	51.92296, -8.60296	Right bank	
TN15	Invasive species	Cherry laurel	51.92307, -8.60282	Right bank	
TN16	Invasive species	Cherry laurel	51.92302, -8.60271	Right bank	
TN17	Potential nesting habitat	Kingfisher	51.923, -8.60202	Left bank	Exposed vertical bank face with vegetation overhanging the top. No nesting holes visible but potential suitable habitat.
TN18	Scat	Fox	51.92312, -8.60145	Left bank	Along a mammal trail behind riparian tree, feathers on ground here too.
TN19	Potential nesting habitat	Grey wagtail	51.92311, -8.60149	Left bank	Old stone wall with crevices. No activity observed but potential nesting habitat here. Close to water level though.

Target note (TN)	Feature	Species	Coordinates (Lat/Long)	Location	Notes
TN20	Potential nesting habitat	Kingfisher	51.92357, -8.60008	Right bank	Exposed bank with overhanging grass, 0.8m above water level, not ideal and levels may rise higher. No hollows observed
TN21	Trail	Mammal	51.9227, -8.60299	Right bank	Trail from river up bank to the ESB pole and leads into the golf course and a scrub area. Scrub too dense to search, can't exclude presence of holt
TN22	Potential holt	Otter	51.92278, -8.60302	Right bank	Scrub too dense here to search, trail (TN21) leads into scrub area and otter spraint (TN5) close by. Cannot exclude presence of otter holt without further survey
TN23	Trail	Mammal	-	Left and Right bank	Mammal trail runs along both banks up and downstream of the proposed crossing