

## **Appendix 6.1**

### **Fish Survey Report**



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environmental  
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project title **Fish Stock survey of the Tramore River  
for the Douglas Flood Relief Scheme**

client ARUP Consulting Engineers

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## **1. Introduction**

As part of the proposed Douglas Flood Relief Scheme, works are proposed on the Tramore River. A fish stock survey of the upper catchment was carried out in response to a request for the information from Inland Fisheries Ireland. The primary concern in relation to the upper catchment is the potential impact arising from works associated with the large Togher culvert. The information provided by this survey allows a more accurate assessment of the potential impacts on fish stocks to be made.

This report details the results of these surveys which were carried out in September 2014. The objectives of the study were to determine the following:

1. Presence/absence for all fish species including trout, lamprey and European eel within the overall catchment.
2. Assessment of the fish populations upstream of the Togher Culvert which may form a barrier to migration.
3. General overview of fish populations within the upper Tramore catchment.

As part of this scheme instream works are also likely to take place within the Ballybrack River in proximity to Douglas Village. An inspection of the area within which works are likely to take place, did not record any suitable habitat for juvenile lamprey and culverts downstream of the works area present an impassable barrier to migratory fish such as salmon. Following consultation with Inland Fisheries Ireland, who noted that the Ballybrack River supports a population of brown trout and eel, further stock surveys in this watercourse were not considered necessary.

## **2. Methodology**

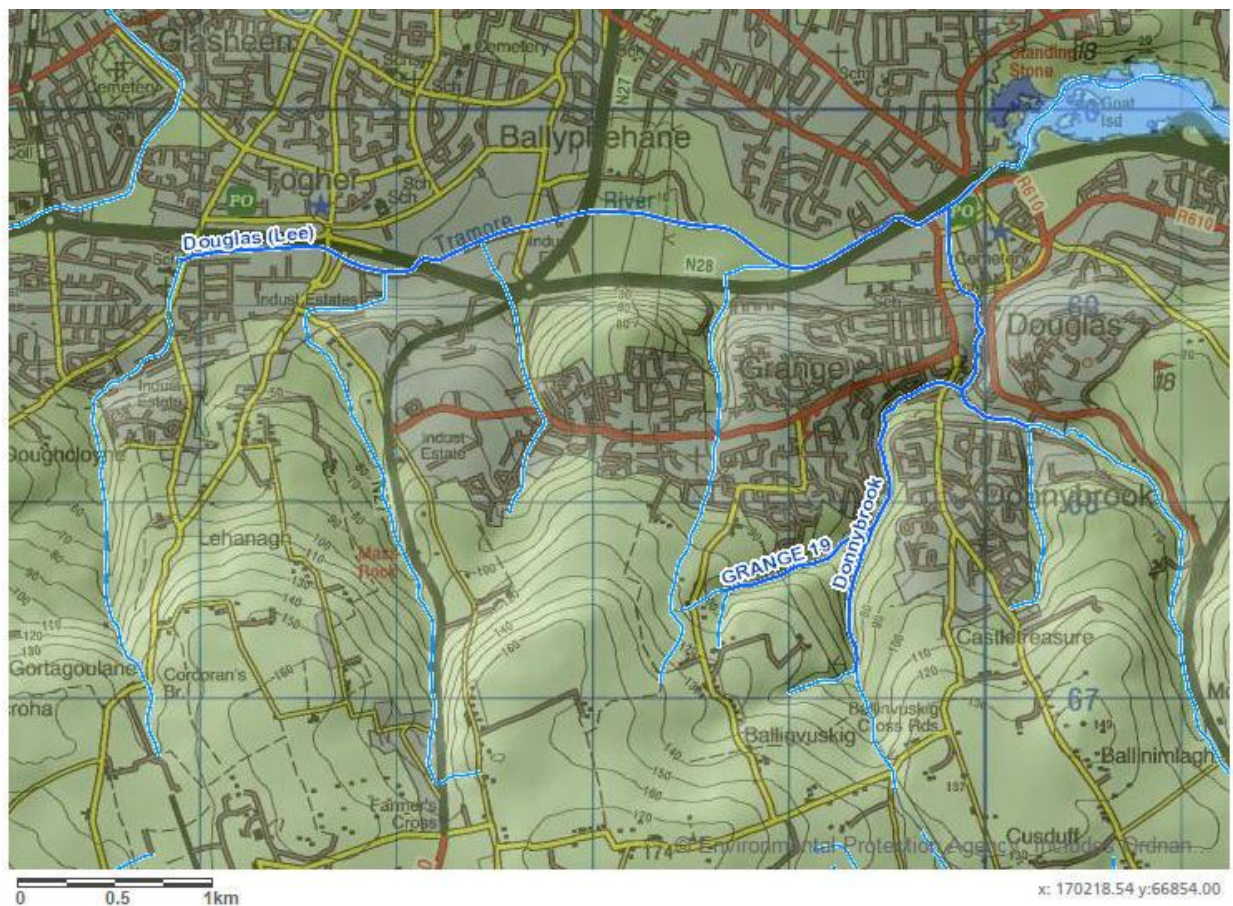
DixonBrosnan received a Section 14 licence from the Department of Communications, Energy & Natural Resources for an electro-fishing lamprey stock assessment. All bio security protocols as submitted to and agreed with the Department Communications, Energy & Natural Resources were followed during surveying. Surveys were carried out using a Safari Back Pack electrofishing unit.

Captured fish were held in a large bin of oxygenated water. After processing, fish were allowed to fully recover and were then returned to the water. Following consultation with Karen Delanty (Inland Fisheries Ireland) a 10 min., single pass at each stretch was utilised.

Surveying was carried by Carl Dixon M.Sc. Ecological Monitoring and Ian McDermott M.Sc. Ecological Monitoring on September 29, and September 30, 2014.

### 3. Overview of the Tramore River

The Tramore is a small river which discharges to Cork Harbour in Douglas. The main channel runs west to east with a low gradient and is joined by a number of tributaries flowing from higher agricultural grassland to the north. Due to its urban location, water quality issues have occurred in the past and are an ongoing concern. An overview of the catchment is shown below in **Figure 1**. The location of the Togher culvert is indicated in **Figure 2**.



**Fig. 1 Overview of the Tramore River catchment.**

### 4. Species of conservation value potentially occurring within the Tramore River.

#### 4.1 Salmon *Salmo salar*

It is considered improbable that salmon *salmo salar* (listed on Annex II of the Habitats Directive) would occur in the Tramore due to poor water quality, limited channel size, lack of holding pools, barriers to migration and lack of spawning habitat.

#### **4.2 Lamprey species**

Lamprey species are of high conservation value and three species occur in Ireland namely sea lamprey, *Petromyzon marinus*, river lamprey *Lampetra fluviatilis* and brook lamprey, *Lampetra planeri*. Lamprey are listed on Annex II of the EU Habitats Directive. The presence of migratory lamprey species (sea lamprey and river lamprey) is unlikely due to barriers to migration and lack of spawning habitat. Brook lamprey could potentially occur within suitable areas of habitat.

#### **4.3 European Eel**

Although not protected under the Habitats Directive, European eel (*Anguilla anguilla*) is a species very much under threat, with numbers in catastrophic decline. This is seen in the fisheries for yellow and silver eels, as well as in surveys of the number of glass eels that are returning to Europe. The decline can be tracked back to the early 1980s and considerable effort is now needed to reverse the situation. The habitats within the survey area are suitable for eel.

#### **4.4 Brown trout**

Brown trout are considered an important game fish in Irish rivers and lakes, but are not protected under European legislation. Notwithstanding water quality issues, brown trout are known to occur within the main channel of the Tramore River.

#### **4.5 Other species**

Conditions are unsuitable for other Annex II species (i.e. freshwater pearl mussel or crayfish) or Annex 1 habitats (i.e. Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation-maintain).

### **5. Results**

Surveys were carried out on the main channel of the Tramore River and on two tributaries which flow southward from higher ground to the north. The characteristics of the survey areas are detailed below in **Table 1** and results are included in **Table 2**. The survey sites are shown below on **Figure 2**. Photographs are included in **Appendix 1**.



Figure 2. Survey sites in relation to the Togher Culvert.

**Table 1. Characteristics of survey sites**

<b>Site 1</b>	<p>Upstream of the Togher culvert. The survey section is defined by a metal grill at the downstream end. At the upstream end, the river is piped and falls a considerable distance into a deep plunge pool. The drop from this pipe creates an additional barrier to fish movement. This section of the stream is heavily shaded and generally shallow with the exception of some small pools and the larger plunge pool which was approximately 1.5m in depth at the time of the survey. Upstream of this plunge pool the river flows through gardens and from there drops rapidly in size. No suitable habitat for juvenile lamprey was recorded within this section of the stream; however, some potential habitat for brown trout and eel was noted.</p>
<b>Site 2</b>	<p>Small stream which flows parallel to the N27 through agricultural land. Site 2 itself was heavily shaded with deep banks and a mixture of riffle and shallow pool habitat. Some potential eel and brown trout habitat was recorded.</p> <p>An examination of the stream found that flow in the stream is low and no potential sites with enough depth for an effective survey were located upstream of site 2. Due to low flows, the value of the upper sections of this stream for eels and brown trout and is minimal. Lamprey species are unlikely to occur.</p>
<b>Site 3</b>	<p>Located on the main channel of the Tramore River. Site 3 is dominated by riffle glide and is slightly deeper due to the presence of a weir. Cover from overhanging vegetation provides some cover for fish species and for trout in particular. Some suitable habitat for brown trout and eel was recorded. No habitat suitable for lamprey species was recorded.</p>
<b>Site 4</b>	<p>Site 4 is characterised by deep silt in places, slow flows and only small areas of suitable cover for trout. Some water quality impairment noted. Some suitable habitat for eel and lamprey was recorded</p>



**Table 2. Survey results**

<b>Location</b>	<b>Brown trout</b>	<b>Salmon</b>	<b>Eel</b>	<b>Brook Lamprey</b>	<b>Stickleback</b>
<b>Site 1</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>
<b>Site 2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>
<b>Site 3</b>	<b>12</b>	<b>0</b>	<b>21</b>	<b>0</b>	<b>&gt;25</b>
<b>Site 4</b>	<b>22</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>&gt;25</b>

## **6. Conclusions**

The Togher culvert, including the grill at its upstream end, creates a significant barrier to fish migration and no trout were recorded upstream of this culvert (Site 1). A pipe at the upstream end of Site 1 also creates a significant barrier to fish movement. A small number of eels were recorded in isolated pockets of deeper water including the plunge pool at the upstream end of the site.

Only two large eel were recorded at Site 2 and upstream of this site, the stream was generally too shallow to effectively survey. There are culverts in place downstream of Site 2 which probably prevent trout from accessing suitable habitat on this tributary.

The main channel of the Tramore River (Sites 3 and 4) was found to support trout, eel and stickleback. Eels were recorded in moderate numbers and high numbers of stickleback, which can provide food for other piscivorous species, were also recorded. Although water quality varies in this river, vegetative cover was the determining factor in relation to trout distribution. Moderate numbers were recorded where there was sufficient bankside cover; however long sections which were open and shallow were largely devoid of trout. Although areas of silt suitable for juvenile lamprey were noted, no lamprey was recorded during the survey.

**Appendix 1 - Photographs**



**Photo 1 Stream heavily shaded and shallow at Site 1**



**Photo 2. Plunge pool and pipe which forms a further barrier to fish movement at the upstream end of Site 1.**



**Photo 3. Main channel of Tramore at site 3 with high silt levels and patchy cover for fish**



**Photo 4. Site 2- shallow channel with large areas of bedrock. Heavily shaded.**