Office of Public Works (OPW)

Appropriate Assessment for Fisheries Enhancement works on the River Boyne, at Trim, Co. Meath

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<u>Appendices</u>

Executive Summary

The Office of Public Works (OPW) proposes to conduct in-stream works on the River Boyne at in Trim, County Meath. The works are for the introduction of repair of two stone and gravel paired deflectors and the placement of large stone boulders immediately upstream of the repaired deflectors to prevent fragmentation of the deflectors due to the force of the river flow. There are four sets of paired defectors in situ and overtime the flow of the river has eroded and displaced the material in the first pair of deflectors and reduced their required effect. The repair of these two deflectors will divert the water to the centre of the river channel, thus creating pools and slower moving water for fish fry nearer the riverbank.

The River Boyne is a Special Area of Conservation (SAC) and a Special Protected Area for birdlife. The River Boyne is protected under Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC. As per the Inland Fisheries Ireland document 'Guidance Notes for Natura Impact Statements (NIS) in the Vicinity of Watercourses', issued in 2021 - "Plans or projects in, connected to, or within 15 kilometres of, an SAC/SPA requires initial screening for Appropriate Assessment (AA). If the assessment cannot be screened out explicitly then the proponent of the plan or project will be required to submit a Natura Impact Statement (NIS)."

The proposed in-stream works on the River Boyne were subject to an Appropriate Assessment Screening in order to determine whether the works alone, in-combination with other plans or projects, in the view of best scientific knowledge and in the view of conservation objectives, will adversely affect the integrity of Natura 2000 sites. This Appropriate Assessment screening concluded that works could potentially impact on the qualifying interests or special conservation interests of the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA without the effective implementation of mitigation measures to control environmental risks posed by these works.

A Natura Impact Statement (NIS) was therefore required for the proposed works.
This NIS has been included within this Appropriate Assessment report and concluded that following the implementation of the mitigation measures detailed in section 7 of this Appropriate Assessment , no significant adverse effects on Natura 2000 protected sites will occur as a result of the in-stream works on the River Boyne at Trim.

Background to the author:

A site visit and other supporting work for the completion of this AA Screening and NIS report was conducted by David Kelly BSc. MSc. of KD Environmental Ltd. This report was also prepared by David. David holds a BSC (Hons) in Environmental Science and an MSc (Hons) in Environmental Protection. He has been working in the field of environmental protection for over twenty years and is a Director with KD Environmental Ltd.
David is a recognised Environmental Specialist with Inland Fisheries Ireland and has performed Appropriate Assessments for many IFI projects throughout Ireland in recent years.

1.0 Introduction

The Office of Public Works (OPW) commissioned KD Environmental Ltd. to complete an Appropriate Assessment Screening Report for the proposed fisheries improvement works on the River Boyne at Trim, County Meath. The project is to be carried out by the Office of Public Works (OPW). The OPW will communicate with representatives of Inland Fisheries Ireland (IFI) and the National Parks and Wildlife Services (NPWS) before and after the completion of this project. It is planned to conduct these works in September 2022. The river enhancement works on the Boyne C1 peg 51800-52000 as undertaken by the OPW in conjunction with Inland Fisheries Ireland (IFI) in 2012 – 2014, are in need of repair. Since 2014, the flow of the river has displaced and eroded some of the material in the first set of paired deflectors and they have become less effective at diverting the water through the centre of the river channel – see figure 1 below;

Figure 1: Paired deflectors in-situ on the River Boyne at Trim

The works involve the repair of the first set of paired deflectors in the River Boyne at Trim. Several limestone boulders in excess of one tonne weight will be sourced and brought onto site. Size and shape of boulders will determine the number required but it is estimated to be six boulders on each side. These will be placed at the upstream of the first pair of deflectors as they are facing the full force of the river and will help to prevent the erosion of the defectors.

The proposed works are within the River Boyne and River Blackwater Special Area of Conservation (SAC) and the River Boyne and River Blackwater Special Protection Area (SPA), both of these sites are protected under Article 6(3) and Article 6(4) of the EU Habitats Directive. In order to comply with this legislation, the in-stream works on the

River Boyne are subject to Appropriate Assessment screening. Following Appropriate Assessment Screening, if it is concluded that effective control measures must be incorporated into work practices to ensure that the works do not result in detrimental effects on Natura 2000 protected sites, a Natura Impact Statement (Stage 2 Appropriate Assessment) will be required for this project in order to comply with comply with the Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC).

A visit to the site was conducted by David Kelly BSc. MSc. on 1st July 2022. David met with Mr. Fergal Kelly and with Mr. Robert Duncan, engineers with the OPW.

The purpose of this site visit was;

- to review the proposed works,
- to identify and classify the habitats present at the site
- to survey the proposed work site for evidence of annex species such as otter
- to identify other environmental impacts that may be caused by proposed works.

The weather on the day was mixed with light rain showers and wind speeds less than 25KpH. There was a slight south west breeze and the temperature range was approx. 14-16°C. Cloud cover was approximately 80%.

This Appropriate Assessment Screening has been prepared in accordance with Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC (Assessment of Plans and projects significantly affecting Natura 2000 Sites) and in accordance with the following guidance documents;

- Inland Fisheries Ireland Guidance Notes for AA screenings in the vicinity of watercourses in accordance with the requirements of Article 6(3) and Article 6(4) of the EU Habitats Directive

- Department of the Environment, Heritage and Local Government, (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities.

- European Commission (2002) Management of Plans and Projects significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications for the European Communities, Luxembourg.

- Managing Natura 2000 sites; the provisions of Article 6 of the habitats Directive 92/43/EEC (EC Environment Directorate General 2000; hereafter referred to as MN2000).

2.0 Background to Appropriate Assessments and Approach Taken

An Appropriate Assessment (AA) is required under the Habitats Directive 92/43/EEC, Article 6(3) and Article 6(4) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites. Such assessments are required where it is identified that a proposed plan or project could have significant impact on a Natura 2000 site.

The Department of the Environment Heritage and Local Government guidelines (DOELHG, 2009 & 2010) provides guidance in accordance with the Assessment of plans and projects significantly affecting Natura 2000 sites Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. These guidelines promote a four-stage process to complete the Appropriate Assessments and outline 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 below.

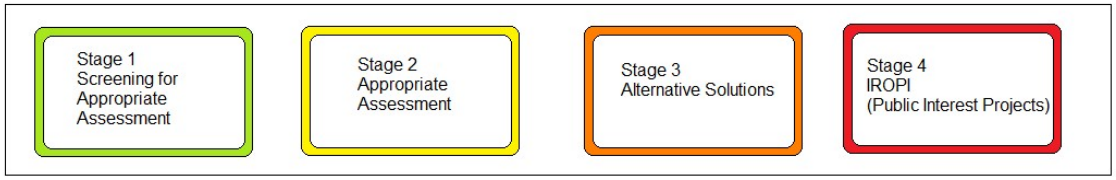

Figure 2: Appropriate Assessment stages

If following Appropriate Assessment Screening, it is concluded that works have the potential to result in adverse impacts on Natura 2000 sites and to cause environmental effects which 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.

3.0 Description and Location of Proposed Works

Works Location

Figure 3 below details the works location on the River Boyne in Trim. The site location is on the West side of Trim town, off Watergate St., Townparks North, Trim Co. Meath as indicated by the red box on the map.

River Basin:	Boyne
Scheme:	Boyne
Channel:	Main Channel
From Chainage:	51800-52000

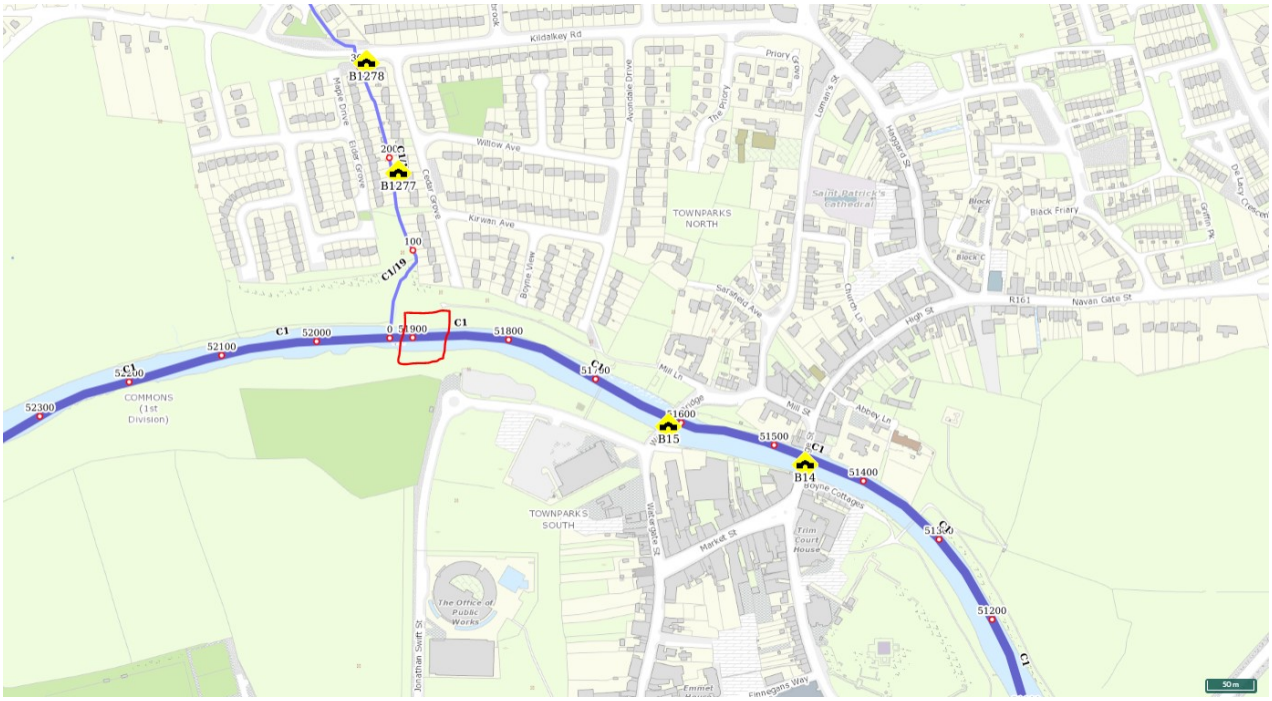

Figure 3: Works Location Map on the River Boyne in Trim

Site Access

Site access will be via the entrance to the adjacent Kayak centre immediate opposite the works. The riverbank here is low and the tracking machine can drive directly onto the paired defector on the near side.

Works Duration

It is estimated that the works will be completed over three working days in September 2022. Works will be completed by OPW staff.

Works Supervision

All works will be conducted and supervised by the Office of Public Works with communication between the OPW and Inland Fisheries Ireland representatives. Site inspections during the completion of the works will also be conducted by OPW engineers..

Works Description

A method statement for the works is included as Appendix 1 of this report.
A summary of the works is provided below.

1) With a 25 tonne excavator, track onto the deflectors to place boulders as instructed by the supervisor. All grease, oils, lubricants and fuelling procedures to comply with OPW environmental procedures and criteria, as per "Environmental Guidance: Drainage Maintenance & Construction" handbook EP 17.

2) All machinery and plant must be thoroughly inspected for faults and leaks prior to entering the water at the start of each work day.

3) Biosecurity measures to disinfect mobile plant, equipment and clothing must be adhered to in order to prevent the spread of aquatic invasive species and diseases. Biosecurity will be required for all equipment and machinery entering the watercourse (and its margins) pre and post works.

    - All PPE, equipment and machines entering the water will be power-washed before entry to the site and sprayed with a 1% virion aquatic solution following the IFI method for disinfection of equipment.
    - Visually inspect all equipment that has come into contact with the water for evidence of attached plant or animal material, or adherent mud or debris. This should be done before leaving the site.
    - Remove any attached or adherent material (vegetation and debris) before leaving the site of operation.
    - Ensure that all water is drained from any live wells and other water retaining compartments, tanks and other equipment before transportation elsewhere.
    - Disinfectant will be applied to the undercarriage and wheels of the vehicle/machine prior to leaving the site.
    - High-pressure hot water cleaning, with water > 40 degrees C, will be carried out when machinery leaves the site

4) Due to the brevity of the works, refuelling may not be required. If refuelling is required this will be done at a distance of 20m from the river on adjacent hardstand. A spill kit must be in place while refuelling to contain any minor spills or leaks.

5) All materials used to contain such minor spills and leaks will be removed from site and disposed of as hazardous waste.

6) Several limestone boulders in excess of one tonne weight will need to be sourced and brought onto site. Size and shape of boulders will determine the number required but it is estimated to be six boulders on each side. These will be placed at the upstream deflectors only, as they are facing the full force of the river. The imported boulders will be from a local quarry whether blasted or excavated, and shall be free of invasive species.

7) A silt curtain will be placed downstream of the works to mitigate against excessive siltation, as per "Environmental Guidance: Drainage Maintenance & Construction" handbook EP 15

8) The tracking machine will drive onto the nearside deflector. From this deflector material that has become displace from the nearside deflector will be placed mid-stream allowing the tracking machine to cross the river to the far-side deflector.

9) Place the boulders using the excavator as instructed by the supervisor upstream of the far-side deflector. Excavator will displace loose substrate at the face of the groyne to enable siting of large boulders. Removed substrate will be used to build up and reinforce the rear of the groyne. The excavator arm will then reshape using the existing riverbed stone behind the boulders and build out the deflector until the desired shape is reached.

10) The tracking machine will then move back to the near side deflector and remove the material temporarily placed mid-stream for access. This materials will be place on the near side deflector. Place the boulders using the excavator as instructed by the supervisor upstream of the near side deflector. Excavator will displace loose substrate at the face of the groyne to enable siting of large boulders.

11) Removed substrate will be used to build up and reinforce the rear of the groyne. The excavator arm will then reshape using the existing riverbed stone behind the boulders and build out the deflector until the desired shape is reached.

12) Track off the near side deflector and the job is completed.

4.0 Existing Habitats at Proposed Works Location

A Phase 1 Habitats Assessment Survey was performed by David Kelly of KD Environmental Ltd. on 1st July 2022. The proposed works site and the immediate surrounding area was walked noting habitats and ecological features of interest in line with 'Best Practice for Habitat Survey and Mapping' (Smith et al., 2011). The dominant habitats were then classified using the classification system specified in 'A Guide to Habitats in Ireland' (Fossitt, 2000).

Interpretation Manual of European Union Habitats - EUR28, was referred to as a tool for corresponding the habitats classified using the Fossitt classification system with those habitats specified in the EU habitats directive as annexed habitats.

The habitats noted at the proposed works location are detailed as follows:

BL3, Buildings and Artificial Surfaces: There is a kayak and canoe centre with a coffee shop and carpark adjacent to the works location on the River Boyne at Trim. This habitat does not align with a priority EU Annex I Habitat.

Photo 1: Kayak centre and coffee shop adjacent to the works – this is the entrance to the works location

GA2, Amenity grassland – Parkland for public recreation runs adjacent to the River Boyne works location at Trim. This habitat is does not align with a priority EU Annex I Habitat.

Photo 2: Land adjacent to the River Boyne upstream of the works

FW2, Depositing Lowland River – the River Boyne flows through simple terrain through Trim. It can be classed as a depositing lowland river at this stage. This habitat does not align with a priority EU Annex I Habitat.

Photo 3: The River Boyne at Trim

GS2, Dry Meadows and Grassy Verges: Upstream of the works and adjacent to the River Boyne is land that consists of grassland that is not mown or grazed. It should be noted that works will not impact or infringe on this habitat. This habitat aligns to the annexed habitat, 'lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) (6510)'. Works are not within this terrestrial environment and will not need to access this area.

Photo 4: Dry Meadow grassland adjacent to the Boyne

5.0 Appropriate Assessment Screening

5.1 AA Screening Approach – Zone of Influence and Natura 2000 sites

As per Appropriate Assessment guidance, Natura 2000 sites within 15 kilometres of the proposed works locations must be considered when performing the Appropriate Assessment Screening for this project. This 15Km zone is often referred to as the 'Zone of Influence' (ZOI). However, when considering potential impacts such as noise and direct disturbance, we would expect that the potential ZOI will be much less than 15Km. Likewise for hydrological impacts the ZOI can be greater than 15Km. If a hydrological pathway exists between works and a Natura 2000 site, the conservation objectives of protected sites beyond 15km should therefore be considered.

The potential impacts of the works on these protected sites must be assessed using the recognised source – pathway- receptor approach. If a pollution pathway (chiefly hydrological) exists between the source (works site) and receptor (protected area Qualifying Interests and Special Conservation Interests), there is a potential pollution risk. A hydrological pathway allows for potential pollutants and contaminants to travel to downstream receptors using water as a transport medium. In this case the works on the River Boyne is the potential source, as the works are on the River Boyne itself, the River Boyne is the pathway and the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA and the Qualifying Interests (QIs) & Special Conservation Interests (SCIs) of these Natura 2000 sites are the receptors.

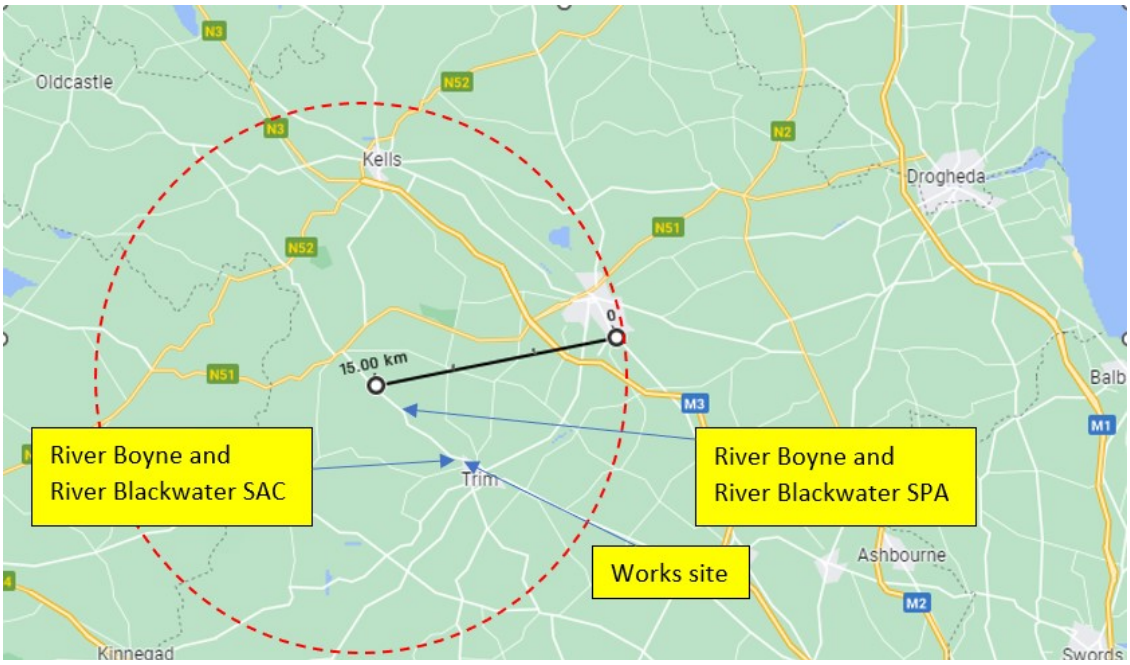

Figure 4: Natura 2000 sites within 15Km of the works

Table 1 below details Natura 2000 locations versus the Zone of Influence for the proposed works. Relevant information was sourced from Natura 2000 data forms, conservation objectives reports and site synopsis reports available from the National Parks and Wildlife Services website www.npws.ie

Natura 2000 Site	Site Codes	Qualifying Interest (QIs) / Special Conservation Interests (SCIs)	Distance from works	Zone of Influence
River Boyne & River Blackwater SAC	002299	Alkaline fens [7230] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]	0Km	The works are in-stream within the River Boyne and therefore there is a direct hydrological pathway to the River Boyne and River Blackwater SAC. The River Boyne and River Blackwater SAC is within the zone of influence for the proposed works.
River Boyne & River Blackwater SPA	004232	Kingfisher (Alcedo atthis) [A229)	0Km	The works are in-stream within the River Boyne and therefore there is a direct hydrological pathway to the River Boyne and River Blackwater SPA. The River Boyne and River Blackwater SPA is within the zone of influence for the proposed works.

Table 1: Natura 2000 sites in the Zone of Influence for proposed works on the River Boyne at Trim

5.2 Details of Natura 2000 Sites with the Zone of Influence

5.2.1 River Boyne and River Blackwater SAC

Location: N 53.6941, W -6.78493

Site Codes: 002299

Main Conservation Objective:
To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.
Favourable conservation status of a habitat is achieved when:
a) Its natural range, and area it covers within that range, are stable or increasing, and;
b) The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and,
c) The conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:
a) Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and;
b) The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and,
c) There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Qualifying Interests and Current Conservation Status:

- Alkaline fens [7230]
- Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
- Lampetra fluviatilis (River Lamprey) [1099]
- Salmo salar (Salmon) [1106]
- Lutra lutra (Otter) [1355]

Site Characteristics: The Boyne and its tributaries form one of Ireland's premier game fisheries and the area offers a wide range of angling, from fishing for spring salmon and grilse to seatrout fishing and extensive brown trout fishing. Atlantic Salmon (Salmo salar) use the tributaries and headwaters as spawning grounds. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the Habitats Directive. Atlantic Salmon run the Boyne almost every month of the year. The Boyne is most important as it represents an eastern river which holds large three-sea-winter fish from 20-30 lb. These fish generally arrive in February, with smaller spring fish (10 lb) arriving in April/May. The grilse come in July, water permitting. The river gets a further run of fish in late August and this run would appear to last well after the fishing season. The salmon fishing season lasts from 1st March to 30th September.

This site is also important for the populations of two other species listed on Annex II of the E.U. Habitats Directive which it supports, namely River Lamprey (Lampetra fluviatilis), which is present in the lower reaches of the Boyne River, and Otter (Lutra lutra), which can be found throughout the site. In addition, the site also supports many more of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. Common Frog, another Red Data Book species, also occurs within the site. All of these animals, with the addition of the Stoat and Red Squirrel, which also occur within the site, are protected under the Wildlife Act, 1976. Whooper Swans winter regularly at several locations along the Boyne and Blackwater Rivers. Known sites are at Newgrange (approx. 20 in recent winters), near Slane (20+ in recent winters), Wilkinstown (several records of 100+) and River Blackwater from Kells to Navan (104 at Kells in winter 1996/97, 182 at Headfort in winter 1997/98, 200-300 in winter 1999/00).

The site supports populations of several species listed on Annex II of the E.U. Habitats Directive, and habitats listed on Annex I of this Directive, as well as examples of other important habitat types. Although the wet woodland areas appear small there are few similar examples of this type of alluvial wet woodland remaining in the country, particularly in the north-east. The semi-natural habitats, particularly the strips of woodland which extend along the river banks, and the marsh and wet grasslands, increase the overall habitat diversity and add to the ecological value of the site, as does the presence of a range of Red Data Book plant and animal species and the presence of nationally rare plant species. (NPWS Site Synopsis River Boyne and River Blackwater SAC NF002299)

Site Quality and Importance: The main areas of alkaline fen in this site are concentrated in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough. The hummocky nature of the local terrain produces frequent springs and seepages which are rich in lime. A series of base-rich marshes have developed in the poorly-drained hollows, generally linked with these three lakes. Open water is usually fringed by Bulrush (Typha latifolia), Common Club-rush (Scirpus lacustris) or Common Reed (Phragmites australis), and this last species also extends shorewards where a dense stand of Great Fen-sedge (Cladium mariscus) frequently occurs. This in turn grades into a sedge and grass community (Carex spp. and Purple Moor-grass, Molinia caerulea), or one dominated by Black Bog-rush (Schoenus nigricans). An alternative aquatic/terrestrial transition is a floating layer of vegetation. This is normally based on Bogbean (Menyanthes trifoliata) and Marsh Cinquefoil (Potentilla palustris).

Other species gradually become established on this cover, especially plants tolerant of low nutrient status e.g. bog mosses (Sphagnum spp.). Diversity of plant and animal life is high in the fen and the flora includes many rarities. Plants of interest include Narrow-leaved Marsh-orchid (Dactylorhiza traunsteineri), Fen Bedstraw (Galium uliginosum), Cowbane (Cicuta virosa), Frogbit (Hydrocharis morsus-ranae) and Least Bur-reed (Sparganium minimum). These species tend to be restricted in their distribution in Ireland. Also notable is the abundance of aquatic stoneworts (Chara spp.) which are characteristic of calcareous wetlands. The rare plant Round-leaved Wintergreen (Pyrola rotundifolia) occurs around Newtown Lough. This species is listed in the Red Data Book and this site represents its only occurrence in Co. Meath.

Wet woodland fringes many stretches of the Boyne. The Boyne River Islands are a small chain of three islands situated 2.5 km west of Drogheda. The islands were formed by the build-up of alluvial sediment in this part of the river where water movement is sluggish. All of the islands are covered by dense thickets of wet, willow (Salix spp.) woodland, with the following species occurring: Osier (S. viminalis), Crack Willow (S. fragilis), White Willow (S. alba), Purple Willow (Salix purpurea) and Rusty Willow (S. cinerea subsp. oleifolia). A small area of Alder (Alnus glutinosa) woodland is found on soft ground at the edge of the canal in the north-western section of the islands. Along other stretches of the rivers of the site Rusty Willow scrub and pockets of wet woodland dominated by Alder have become established, particularly at the river edge of mature deciduous woodland. Ash (Fraxinus excelsior) and Downy Birch (Betula pubescens) are common in the latter, and the ground flora is typical of wet woodland with Meadowsweet (Filipendula ulmaria), Wild Angelica (Angelica sylvestris), Yellow Iris (Iris pseudacorus), horsetails (Equisetum spp.) and occasional tussocks of Greater Tussock-sedge (Carex paniculata).

The dominant habitat along the edges of the river is freshwater marsh, and the following plant species occur commonly in these areas: Yellow Iris, Creeping Bent (Agrostis stolonifera), Canary Reed-grass (Phalaris arundinacea), Marsh Bedstraw (Galium palustre), Water Mint (Mentha aquatica) and Water Forget-me-not (Myosotis scorpioides). In the wetter areas Common Meadow-rue (Thalictrum flavum) is found. In the vicinity of Dowth, Fen Bedstraw (Galium uliginosum), a scarce species mainly confined to marshy areas in the midlands, is common in this vegetation. Swamp Meadow-grass (Poa palustris) is an introduced plant which has spread into the wild (naturalised) along the Boyne approximately 5 km south-west of Slane. It is a rare species which is listed in the Red Data Book and has been recorded among freshwater marsh vegetation on the banks of the Boyne in this site. The only other record for this species in the Republic of Ireland is from a site in Co. Monaghan. The secondary habitat associated with the marsh is wet grassland and species such as Tall Fescue (Festuca arundinacea), Silverweed (Potentilla anserina), Creeping Buttercup (Ranunculus repens), Meadowsweet and Meadow Vetchling (Lathyrus pratensis) are well represented. Strawberry Clover (Trifolium fragiferum), a plant generally restricted to coastal locations in Ireland, has been recorded from wet grassland vegetation at Trim. At Rossnaree river bank on the River Boyne, Round-Fruited Rush (Juncus compressus) is found in alluvial pasture, which is generally periodically flooded during the winter months. This rare plant is only found in three counties in Ireland.

Along much of the Boyne and along tributary stretches are found areas of mature deciduous woodland on the steeper slopes above the floodplain marsh or wet woodland vegetation. Many of these are planted in origin. However the steeper areas of King Williams Glen and Townley Hall wood have been left unmanaged and now have a more natural character. East of Curley Hole the woodland has a natural appearance with few conifers. Broadleaved species include oaks (Quercus spp.), Ash, willows, Hazel (Corylus avellana), Sycamore (Acer pseudoplatanus), Holly (Ilex aquifolium), Horse-chestnut (Aesculus hipposcastanum) and the shrubs Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa) and Elder (Sambucus nigra). South west of Slane and in Dowth, some more exotic tree species such as Beech (Fagus sylvatica), and occasionally Lime (Tilia cordata), are seen. The coniferous trees Larch (Larix sp.) and Scots Pine (Pinus sylvestris) also occur. The woodland ground flora includes Barren Strawberry (Potentilla sterilis), Enchanter's-nightshade (Circaea lutetiana) and Ground-ivy (Glechoma hederacea), along with a range of ferns.

Variation occurs in the composition of the canopy - for example, in wet patches alongside the river, White Willow and Alder form the canopy. Other habitats present along the Boyne and Blackwater include lowland dry grassland, improved grassland, reedswamp, weedy waste ground, scrub, hedge, drainage ditch and canal. In the vicinity of Lough Shesk, the dry slopes of the morainic hummocks support grassland vegetation which, in some places, is partially colonised by Gorse (Ulex europaeus) scrub. Those grasslands which remain unimproved for pasture are species-rich, with Common Knapweed (Centaurea nigra), Creeping Thistle (Cirsium arvense) and Ribwort Plantain (Plantago lanceolata) commonly present. Fringing the canal alongside the Boyne south-west of Slane are areas with Reed Sweet-grass (Glyceria maxima), Great Willowherb (Epilobium hirsutum) and Meadowsweet. (NPWS Site Synopsis, River Boyne and River Blackwater SAC NF002299)

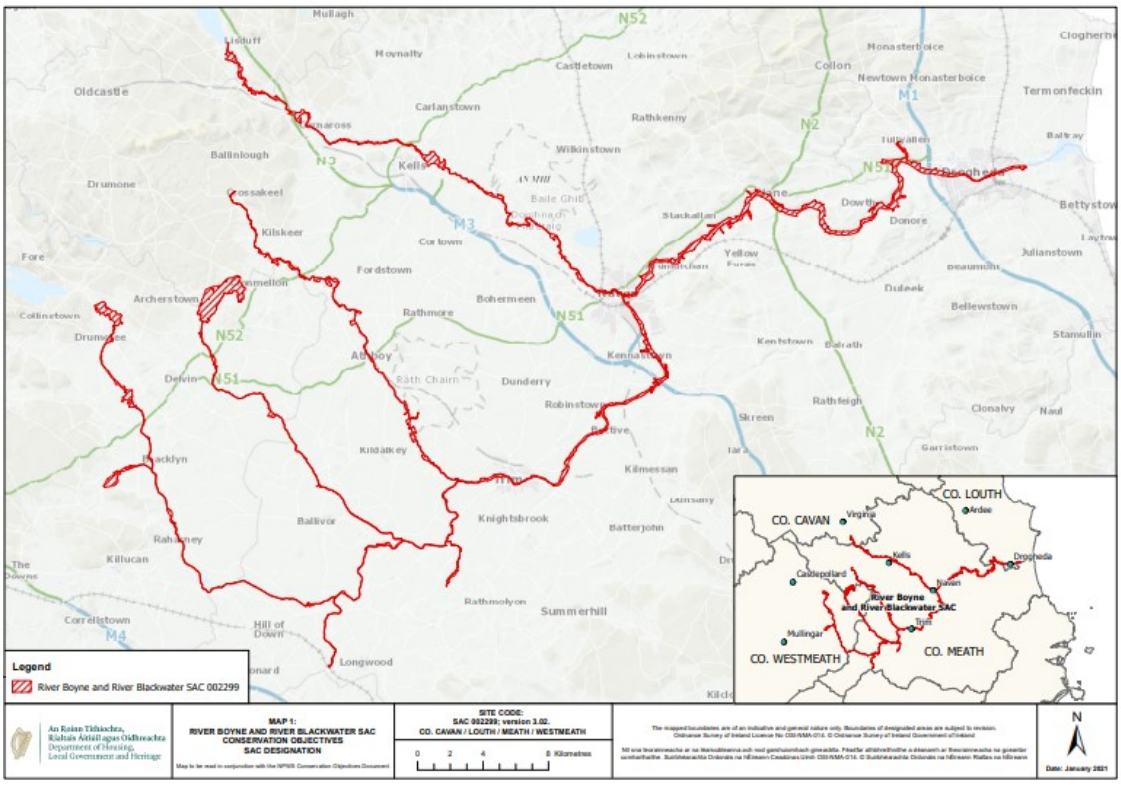

Figure 5: River Boyne and River Blackwater SAC Site Boundary Map

5.2.2 River Boyne and River Blackwater SPA

Location: N 53.635, W -6.66389

Site Codes: 0004232

Main Conservation Objectives:
The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network. European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. Favourable conservation status of a habitat is achieved when:
a) its natural range, and area it covers within that range, are stable or increasing, and • the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
b) the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:
a) population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
b) the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
c) there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA

Special Conservation Interests and Conservation (Article 12) Status:

- Kingfisher (Alcedo atthis) [A229] Amber List status

Site Characteristics:
The River Boyne and River Blackwater SPA is a long, linear site that comprises stretches of the River Boyne and several of its tributaries; most of the site is in Co. Meath, but it extends also into Cos Cavan, Louth and Westmeath. It includes the following river sections: the River Boyne from the M1 motorway bridge, west of Drogheda, to the junction with the Royal Canal, west of Longwood, Co Meath; the River Blackwater from its junction with the River Boyne in Navan to the junction with Lough Ramor in Co. Cavan; the Tremblestown River/Athboy River from the junction with the River Boyne at Kilnagross Bridge west of Trim to the bridge in Athboy, Co. Meath; the Stoneyford River from its junction with the River Boyne to Stonestown Bridge in Co. Westmeath; the River Deel from its junction with the River Boyne to Cummer Bridge, Co. Westmeath. The site includes the river channel and marginal vegetation. Most of the site is underlain by Carboniferous limestone but Silurian quartzite also occurs in the vicinity of Kells and Carboniferous shales and sandstones close to Trim. (NPWS Site Synopsis, River Boyne and River Blackwater SPA, NF004232

Site Quality and Importance: A survey in 2010 recorded 19 pairs of Kingfisher (based on 15 probable and 4 possible territories) in the River Boyne and River Blackwater SPA. A survey conducted in 2008 recorded 20-22 Kingfisher territories within the SPA. Other species which occur within the site include Mute Swan (90), Teal (166), Mallard (219), Cormorant (36), Grey Heron (44), Moorhen (84), Snipe (32) and Sand Martin (553) – all figures are peak counts recorded during the 2010 survey. The River Boyne and River Blackwater Special Protection Area is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive. (NPWS Site Synopsis, River Boyne and River Blackwater SPA, NF004232)

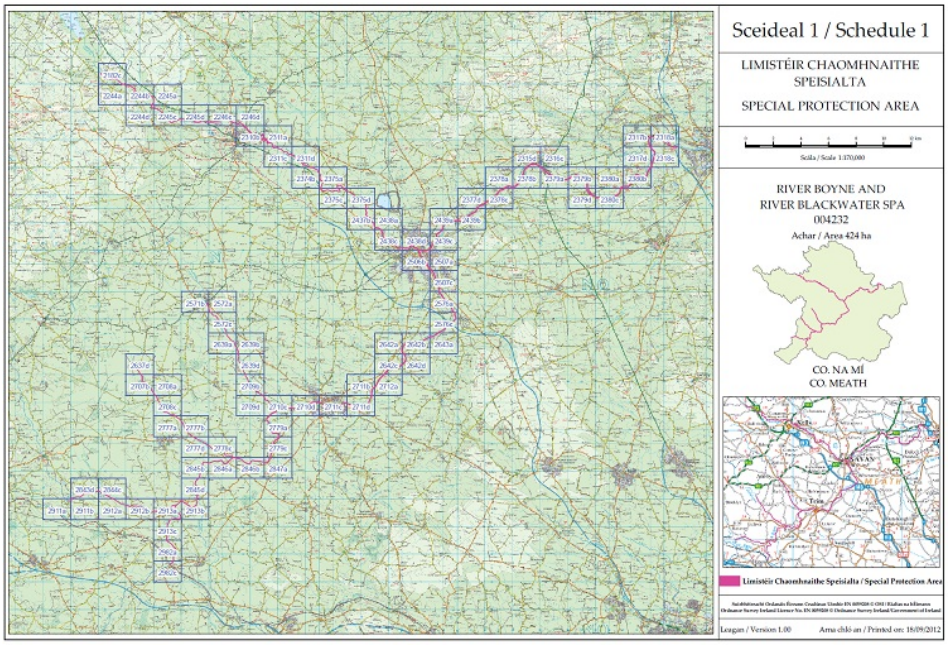

Figure 6: River Boyne SPA Site Boundary Map in Co. Meath

5.3 Potential Impacts on Natura 2000 sites

Table 2a and 2b which follow detail the potential threats and impacts on the Qualifying Interests (QIs) and Special Conservation Interests (SCIs) within the zone of influence of the proposed works on the River Boyne. Guidelines for Ecological Evaluation and Assessment from the Institute of Ecological and Environmental Management (IEEM) have been referred to in assessing the significance of the ecological and environmental impacts. The table below summarises the criteria for classifying ecological impacts.

Impact Magnitude	Definition
No change	No discernible change in the ecology of the affected feature.
Imperceptible Impact	A change in the ecology of the affected site, the consequences of which are strictly limited to within the development boundaries.
Minor Impact	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary, but these consequences are not considered to significantly affect the distribution or abundance of species or habitats of conservation importance.
Moderate Impact	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect the distribution and/or abundance of species or habitats of conservation importance.
Substantial Impact	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect species or habitats of high conservation importance and to potentially affect the overall viability of those species or habitats in the wider area.
Major Impact	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to be such that the overall viability of species or habitats of high conservation importance in the wider area is under a very high degree of threat (negative impact) or is likely to increase markedly (positive impact).

Table 2: Categorising Ecological Impacts

Natura 2000 Site and Linkage	Qualifying Interest (QIs)	Potential Impact	Significant (Yes/No)
River Boyne and River Blackwater SAC, 002299 The works are in-stream and on the River Boyne, within this SPA.	Alkaline fens [7230] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]	The in-stream works on the River Boyne have the potential to impact on Lamprey, Salmon and Otter unless suitable mitigation measures are incorporated into the works. Elevated suspended solids, loss of hydrocarbons and biosecurity risks must be considered and controlled. The proposed works will not impact on terrestrial environments as they are in-stream with access from an existing road and carpark. Therefore Alkaline fens and Alluvial Forests will not be affected.	Yes. There is potential for the works to cause direct disturbance to the species listed as Qualifying Interests (QIs) for this Natura 2000 site. Preventative actions are required to control these risks.

Table 3a: Assessment of Potential Impacts on the River Boyne and River Blackwater SAC

Natura 2000 Site and Linkage	Special Conservation Interest (SCIs)	Potential Impact	Significant (Yes/No)
River Boyne and River Blackwater SPA No. 004232 The works are in-stream and on the River Boyne, within this SPA.	Kingfisher (Alcedo atthis) [A229)	The proposed works have the potential to cause negative impacts on Kingfisher and the timing of the works should be controlled to prevent such impacts.	Yes. There is potential for the works to cause direct disturbance to the species listed as Special Conservation Interests (SCIs) for this Natura 2000 site.

Table 3b: Assessment of Potential Impacts on The River Boyne and River Blackwater SPA

5.4 Relevant Qualifying Interests – Habitats

The maps below are taken from NPWS (2019) report 'The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments'.

5.4.1 Alkaline Fens [7230]

The overall current conservation status of this habitat is bad with an overall conservation trend as deteriorating. The works are in-stream on the River Boyne with access from an existing road and carpark. Therefore no impact on terrestrial environments will occur.

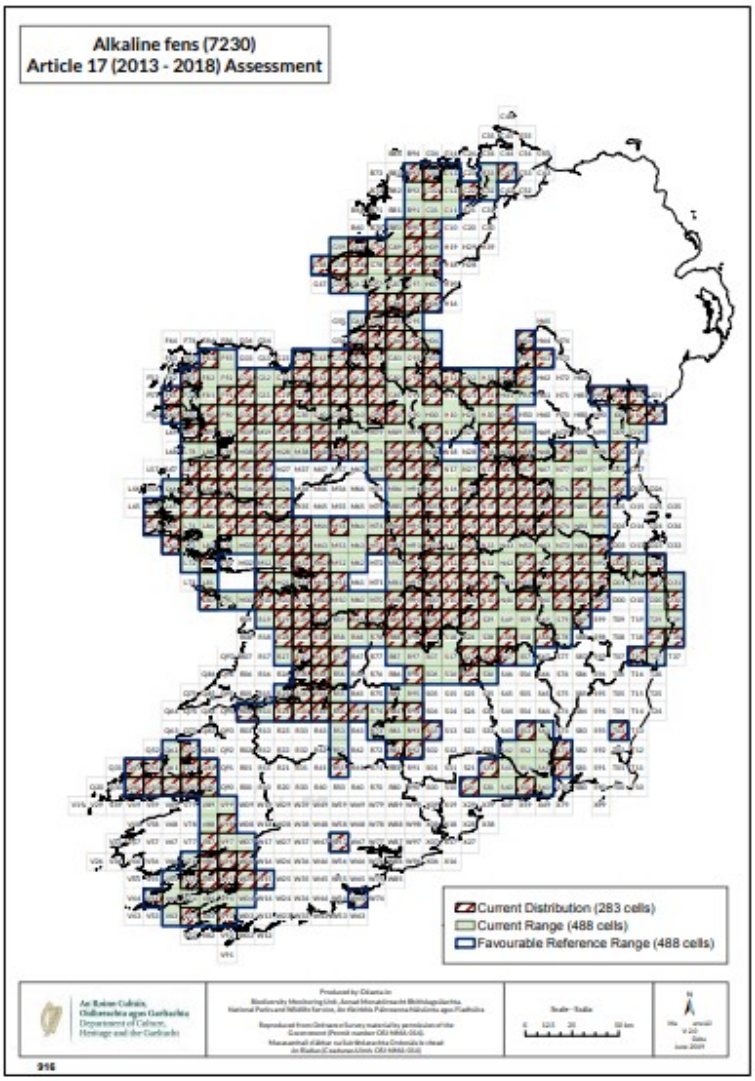

Figure 7: Alkaline Fens Map, Ireland, 2018

5.4.2 Alluvial Forests [91E0]

The conservation status of this habitat is reported to be bad with a conservation trend as deteriorating - The Status of EU Protected Habitats and Species in Ireland, 2019. The works are in-stream on the River Boyne with access from an existing road and carpark. Therefore no impact on terrestrial environments will occur.

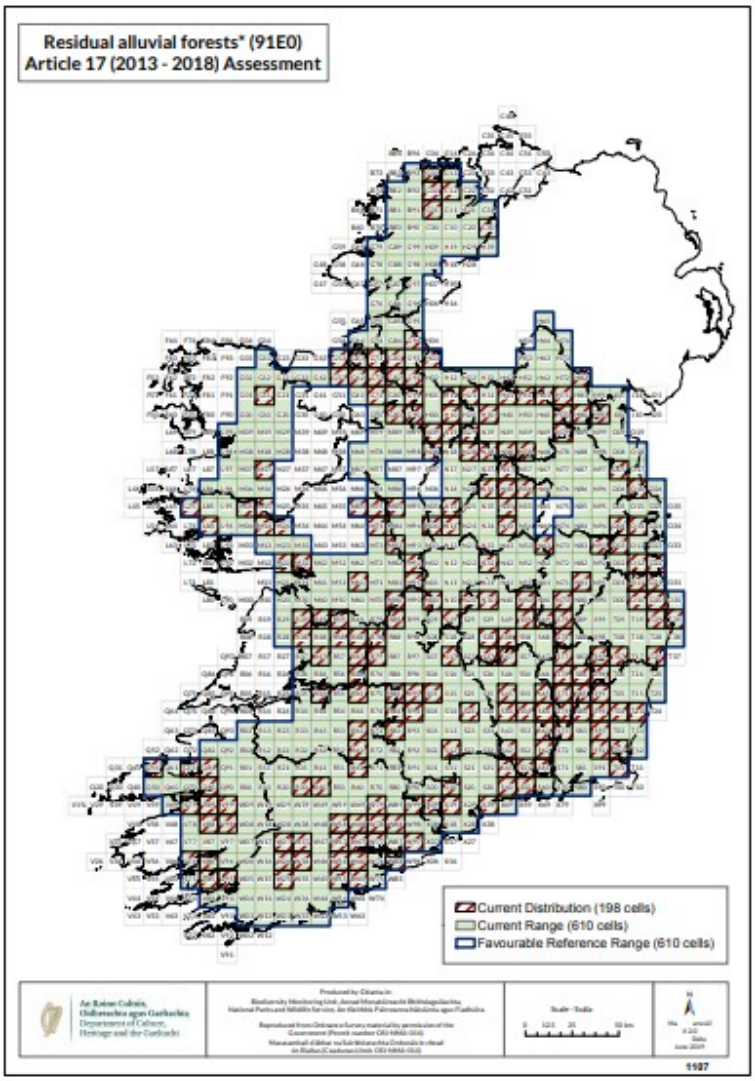

Figure 8: Alluvial Forests Map, Ireland, 2018

5.5 Relevant Qualifying Interests - Species

5.5.1 Kingfisher (A229)

Kingfisher (Alcedo atthis) are an Annex I protected species under the EU Birds Directive 2009/147/EC. Annex I of the Birds Directive lists 193 species and sub-species which are:

- in danger of extinction;
- vulnerable to specific changes in their habitat;
- considered rare because of small populations or restricted local distribution;
- requiring particular attention for reasons of the specific nature of habitat.

In order to prevent impacts on Kingfisher, the works on the River Boyne will be conducted in September and outside the protected bird breeding season between 1st March and 31st August under the Birds Directive (2009/147/EC).

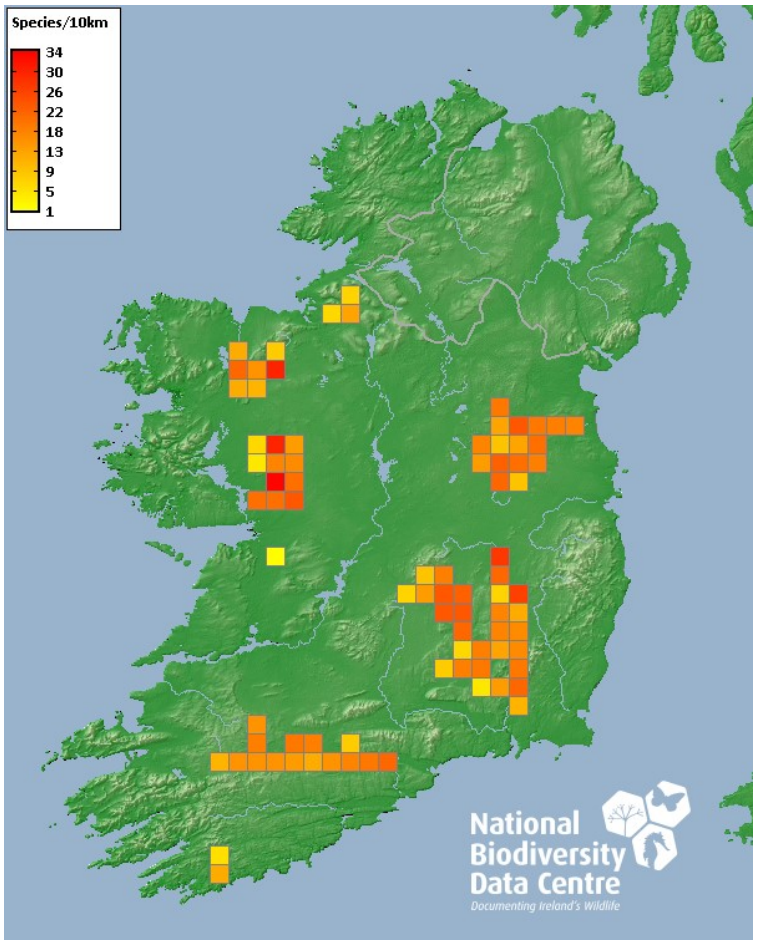

Figure 9: Kingfisher Distribution Map, Ireland, 2010

5.5.2 River Lamprey (1099)

The map below is a National Distribution Maps for River Lamprey (*Lampetra fluviatilis)*. Lamprey spawn in the Spring or early Summer. Trained and qualified Inland Fisheries Ireland staff will be contacted to survey the works location for the presence of spawning lamprey prior to the commencement of works. It is planned to conduct the work in September and therefore spawning Lamprey will not be impacted upon. If Lamprey are present, IFI officers can relocate the lamprey downstream to other deflectors that are not being worked on.

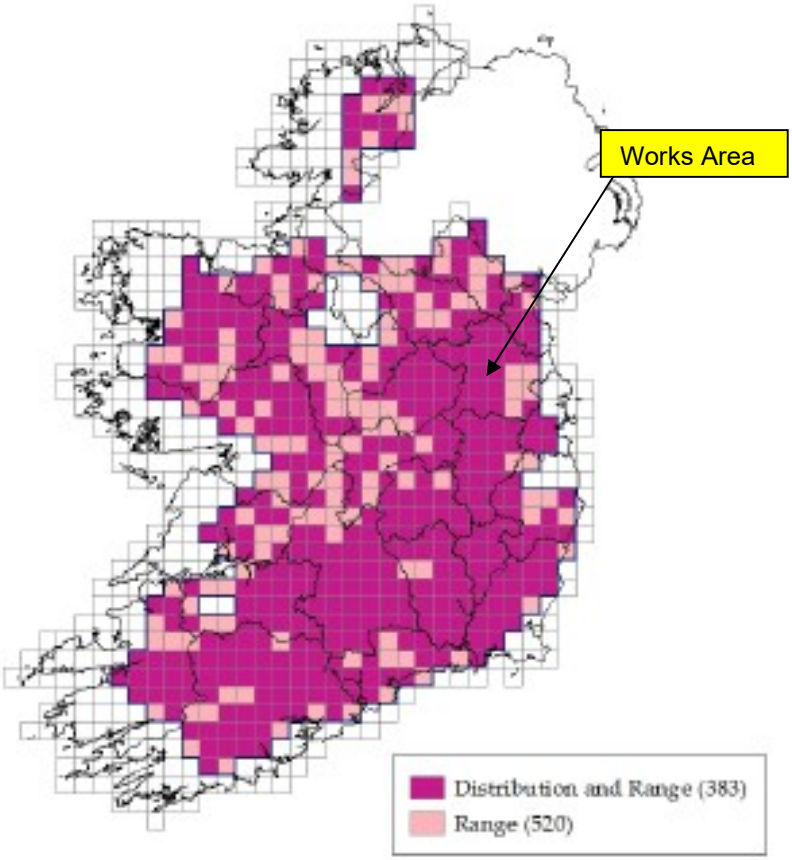

Figure 10: River Lamprey Distribution in Ireland, 2018

5.5.3 Otter (1066)

Otter (Lutra lutra) presence is identified through dropping (spraints), tracks, anal spraying, anal jelly or fish scales. Fisheries Ireland staff are aware and experienced in the identification of holts and the presence of otters. No presence of otter or otter holts was identified during the site visit on 1st July 2022.

Otter breed in early spring and whelp their young in early Summer. It is planned to perform works over three days in September and work will not be conducted between 1st March and August 31st. Therefore there will be no significant impact on Otter from the proposed works.

The map below is taken from the NPWS (2019): The Status of EU Protected Habitats and Species in Ireland.

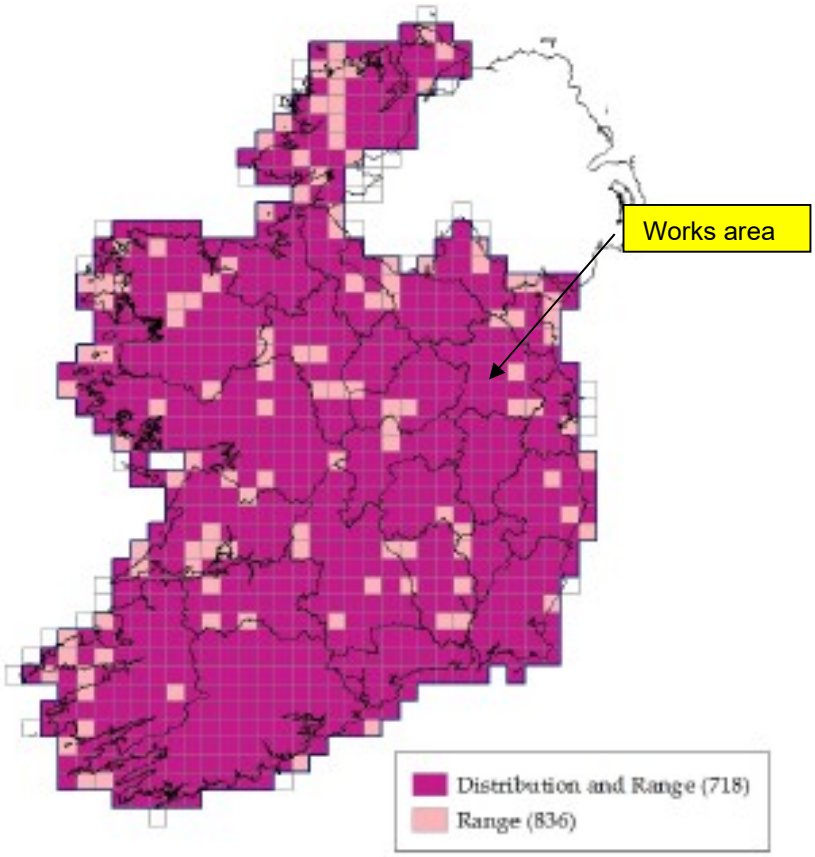

Figure 11: Otter Status Map 2019

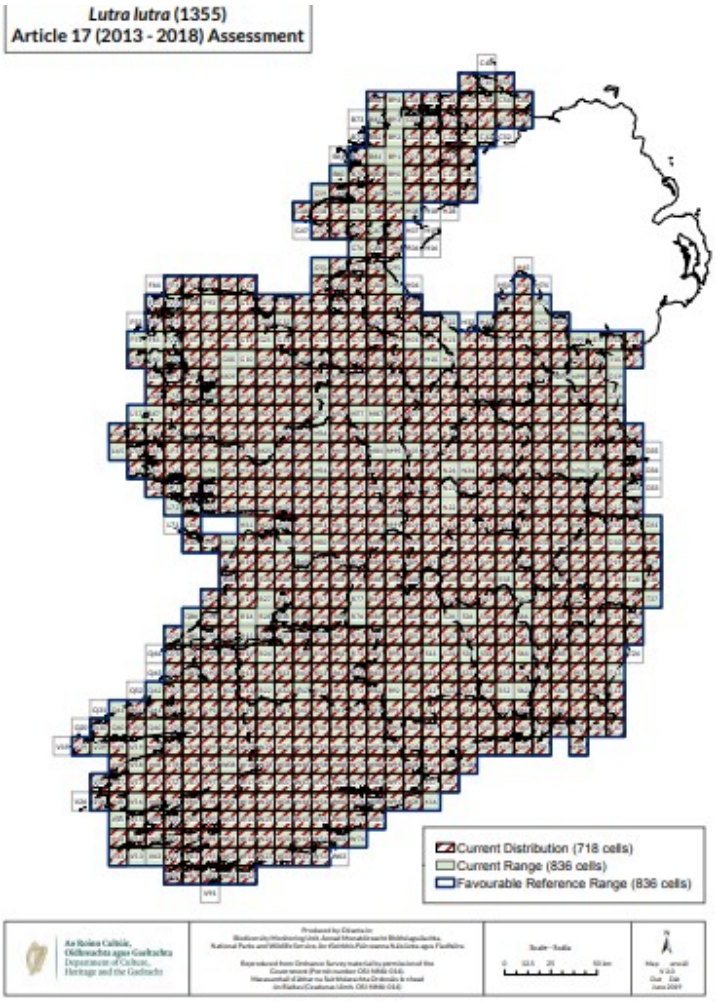

Figure 12: Otter Distribution Map 2018

5.5.4 Salmon (1066)

The maps below are a National Distribution Map for Atlantic Salmon (Salmo salar). Salmon are listed as a conservation Qualifying Interest for The River Boyne and River Blackwater SAC.

The Atlantic Salmon distribution map and information below is taken from the NPWS (2019): The Status of EU Protected Habitats and Species in Ireland.
It should be noted that the River Boyne is listed as a 'Salmonoid' water under the S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations, 1988.
Salmon spawn from 1st October throughout the Winter and the works will be conducted in September to avoid impacting upon spawning salmon. The works will result in more favourable spawning conditions.

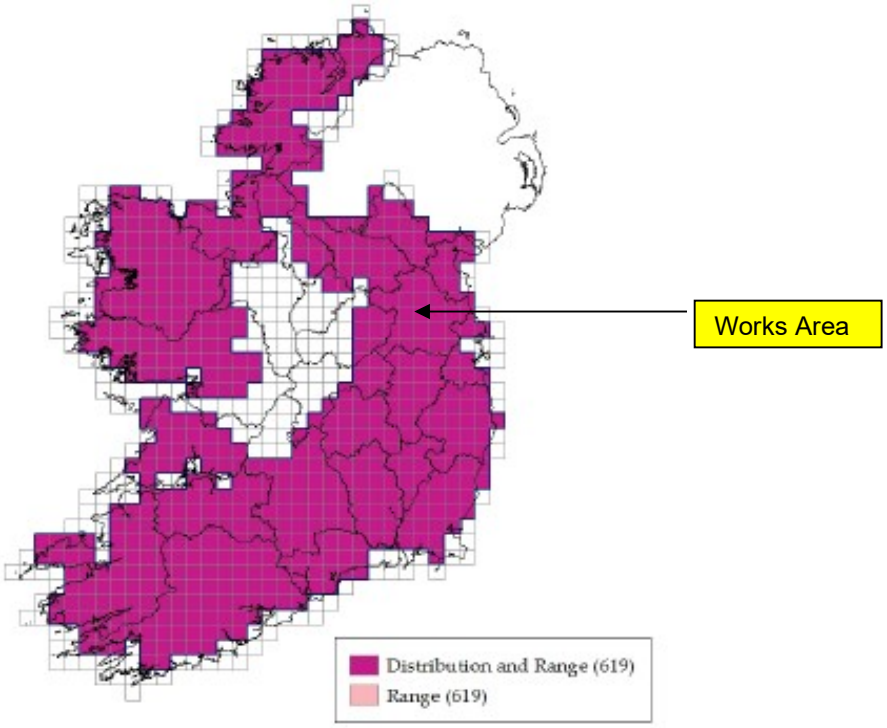

Figure 13: Atlantic Salmon Distribution Range 2019

5.6 AA Screening Conclusion

Following the completion of the appropriate assessment screening for the proposed in-stream works on the Boyne River at Trim, and applying a precautionary principle, it has been concluded that the proposed works, if unmitigated, may have the potential to impact on the Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of two Natura 2000 sites – The River Boyne and River Blackwater SAC (Site Code 002299) and The River Boyne and River Blackwater SPA (Site Code 004232).
A stage 2 Appropriate Assessment including a Natura Impact Statement, is therefore required for these works with effective mitigation measures identified to prevent impacts on Natura 2000 sites from these works.

6.0 Natura Impact Statement

The primary environmental effects that must be considered from the proposed works on the River Boyne are direct impacts on protected species such as lamprey, otter and kingfisher. Other potential threats such as biosecurity risks and a loss in water quality must also be considered.

It is good practice when detailing potential ecological impacts from works to make clear both the potential significant effects without mitigation and the residual significant effects following mitigation.

Tables 4a and 4b below detail the potential environmental impacts on the conservation objectives on Natura 2000 sites within the Zone of Influence which may be impacted upon by the proposed works. The mitigation measures required to protect against these potential impacts are detailed in section 7.

It should be noted that all of the mitigation measures detailed should be effectively implemented in full to ensure the works do not have a detrimental environmental and ecological impact on the conservation interests of Natura 2000 sites.

6.1 Potential Impacts on the River Boyne and River Blackwater SAC (SAC No. 002299)

Qualifying Interests (QI)	Potential Threats to QI
Alkaline fens [7230] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]	The works are in-stream on the River Boyne with access from an existing road and carpark. Therefore no impact on terrestrial environments will occur. The works are planned for September 2022 and are outside of the breeding season for Lamprey and Otter. Lamprey spawn in the Spring. The Salmon run on the River Boyne takes place in late Spring and into the Summer. Salmon usually begin spawning in October and throughout the Winter and works will not take place after 30th September to prevent impacting on spawning salmon. The works will involve the use of a tracking machine entering the water and tracking to across stream to access the far side deflector and deposit boulders in front of the far side deflector. There is therefore a risk to water quality through the loss of hydrocarbons. If a significant hydrocarbon loss occurred into the River Boyne at the works location, these hydrocarbons will cause a loss in water quality with potential impacts on flora and fauna. The works will involve the use of a tracking machine and this machine will enter the water. There is therefore a biosecurity risk of introducing evasive species and disease to the River Boyne. The tracking machine will be used in-stream to move existing river bed materials back into position onto the stone deflectors. This will result in a localised elevation of suspended solids levels. These elevated suspended solids will migrate downstream unless mitigated against.

Table 4a: Potential Impacts on the River Boyne and River Blackwater SAC

6.2 Potential Impacts on the River Boyne and River Blackwater SPA (SPA No. 004323)

Special Conservation Interest (SCI)	Potential Threat to SCI
Kingfisher (Alcedo atthis) [A229)	The proposed works are planned for September 2022 and outside the protected bird breeding season between 1st March and 31st August under the Birds Directive (2009/147/EC). The works may temporarily disturb Kingfisher that could be in the vicinity but works will be conducted over three working day and this disturbance is seen as insignificant as it will be brief and outside the bird breeding season.

Table 4b: Potential Impacts on The River Boyne and River Blackwater SPA

7.0 Mitigation Measures

The mitigation measures detailed in this report must be incorporated into work practices on site. The method statement provided by the OPW for the works is included as Appendix 1. The works and this method statement must incorporate these mitigation measures to ensure risks posed by the works are effectively mitigated to protect the Qualifying Interests and Special Conservation Interests of Natura 2000 sites. Tables 5a and 5b which follow, detail the mitigation measures required to protect the conservation objectives on Natura 2000 sites within the Zone of Influence and other conservation interests which may be impacted upon by the proposed works.

Qualifying Interests	Potential Threats	Mitigation Measures	Residual Impact
Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]	**Direct Disturbance** of breeding Lamprey, Salmon and Otter leading in a loss in individuals and a reduction in species density within the River Boyne and River Blackwater SAC.	The proposed works are planned for September 2022 outside the breeding season for Otter and outside the spawning season for Lamprey and Salmon. Prior to commencing works, Inland Fisheries Ireland will be requested to inspect the works area on the River Boyne to ensure there are no lamprey present. Electrofishing can be used if required to determine this. If lamprey are present IFI staff can move these fish under licence to a similar downstream location on the River Boyne.	None.
	Loss in water quality if fuel from tracking machine performing in-stream works was lost into the river, this oil could migrate to downstream receptors and habitats.	A spill kit will be available for the excavator on site. All machinery will be inspected daily to ensure there are no leaks or drips. It is expected that the tracking machine will be fully fuelled off-site before the work begins and that no other refuelling will be required as the machine will drive short distances and the works will take place over three days. If refuelling is required this will be done on hardstand no closer than 20m from the river. Daily inspection of tracking machine before use. The tracking machine will be parked on adjacent hardstand 20m from River after each working day.	None.
	Biosecurity Risks - Risk of introducing invasive species due to use of contaminated plant, vehicles and tools.	The Fisheries Ireland guidance on disinfection of plant and equipment will be adhered to before commencing works. Use Virkon Aquatic to disinfect plant, equipment, footwear etc… This is a disinfectant in the peroxygen (hydrogen peroxide) family. It is available in tablet form. It is 99.9% biodegradable and breaks down to water and oxygen and is not corrosive at the working dilution.	None

Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]	**Loss in water quality** from the tracking machine moving instream materials and tracking in-stream causing elevated suspended solids. These elevated levels of suspended solids will migrate to downstream receptors.	A silt curtain will be placed downstream of the works to mitigate against the migration of elevated suspended solids to downstream receptors, as per "Environmental Guidance: Drainage Maintenance & Construction" handbook EP 15. This curtain will be a terram and post system and will be placed downstream of the deflector being worked on. The curtain will run midway to the edge of the next downstream deflector to entrap suspended solids.	None

Table 5a: Mitigation Measures to Protect the Qualifying Interests of the River Boyne and River Blackwater SAC

Special Conservation Interest	Potential Threats	Mitigation Measures	Residual Impact
Kingfisher (Alcedo atthis) [A229)	**Direct Disturbance** of breeding Kingfisher leading in a loss in individuals and a reduction in species density within the River Boyne and River Blackwater SAC.	The proposed works are planned for September 2022 and outside the protected bird breeding season between 1st March and 31st August under the Birds Directive (2009/147/EC). The works are over a brief period – 3 days	None
	Loss in water quality if fuel leaked from excavator used to place gravel in the River.	A spill kit will be available for the excavator on site. All machinery will be inspected daily to ensure there are no leaks or drips. It is expected that the tracking machine will be fully fuelled off-site before the work begins and that no other refuelling will be required as the machine will drive short distances and the works will take place over three days. If refuelling is required this will be done on hardstand no closer than 20m from the river. Daily inspection of the excavator before use. Park machine on adjacent hardstand 20m from River	None
	Biosecurity Risks - Risk of introducing invasive species due to use of contaminated plant, vehicles and tools.	The Fisheries Ireland guidance on disinfection of plant and equipment will be adhered to before commencing works. Use Virkon Aquatic to disinfect plant, equipment, footwear etc… This is a disinfectant in the peroxygen (hydrogen peroxide) family. It is available in tablet form. It is 99.9% biodegradable and breaks down to water and oxygen and is not corrosive at the working dilution. Only prewashed boulders from a reliable source will be used. Re-sue of in-stream materials will be prioritised.	None

Table 5b: Mitigation Measures to Protect the Special Conservation Interests of the River Boyne and River Blackwater SPA

8.0 Predicted and Cumulative Impacts – Post Mitigation

Having identified the qualifying interests (QIs) of the River Boyne and River Blackwater SAC and the special conservation interests (SCIs) of the River Boyne and River Blackwater SPA and reviewing the work plan for the project, an assessment for possible impacts can be generated. See "Assessment of plans and projects significantly affecting Natura 2000 sites- Methodology guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission, 2001".

8.1 Ecological and Environmental Impacts

The ecological impacts of the proposed works on the River Boyne at Trim have been categorised using the criteria in Table 2.

Land-Take: There will be no land take from protected sites as a result of the proposed works.
No Impact or Change to Natura 2000 sites

Distance from Natura 2000 site or key features of the site: The works are within the River Boyne and River Blackwater SAC and River Boyne and River Blackwater SPA. However, the works will have no impact on the qualifying interests (QIs) and special conservation interests (SCIs) of these Natura 2000 sites when mitigation measures outlined in this report are fully implemented.
No Impact or Change to Natura 2000 sites

Water: The proposed works are in-stream and without the implementation of mitigation measures the works have the potential to impact on water quality. However, following the effective implementation of mitigation measures outlined in this report, any impact on water quality will be minor and localised.
No Impact or Change to Natura 2000 sites

Air Emissions: No significant emissions are expected. Diesel exhaust from the tracking machine will have a minor localised impact on air quality. No Impact or Change to Natura 2000 sites.

Noise: The noise levels in the immediately vicinity will increase during works due to the operation of machinery and completion of works. However, this will not have a significant effect on birdlife due to the brevity of the works – just three days. Works will be conducted in daytime hours and outside of the bird breeding season.
No Impact of Change to Natura 2000 sites.

Reduction of Habitat: No loss of habitat will occur within Natura 2000 sites. Four pairs of deflectors are already deflectors in place and the works will repair two of these. The addition of the stone boulders will change the aesthetic appearance of the site but these will for the main be submerged underwater and no significant reduction or alteration to habitats with Natura 2000 sites will occur.

Disturbance to Key Species :
There is no risk of disturbance of key indicator species due to the timing of the works in September which is outside the breeding season for Lamprey, Otter, Kingfisher ad Salmon.
No Impact or Change to Natura 2000 sites

Habitat or Species Fragmentation: There will be no habitat or species fragmentation as a result of the works. No Impact or Change to Natura 2000 sites

Reduction in Species Density: There will be no significant reduction in species density from the proposed works.
No Impact or Change to Natura 2000 sites

Changes in key indicators of conservation value:
No Impact or Change to Natura 2000 sites

8.2 Consideration of In-Combination Effects

The potential in-combination effects of the OPW proposed works on the River Boyne at Trim must be considered with potential impacts posed by other such plans and projects in the vicinity of the Boyne catchment. A cumulative impact may result from incremental changes caused by another past, present or foreseeable future actions combined together with the proposed works on the River Boyne.

The in-stream works on the River Boyne will not result in environmental or ecological impacts on Natura 2000 sites when the mitigation measures outlined in this report are effectively implemented. However, there are other works that take place within the catchment of the River Boyne that pose environmental threats. Agricultural impacts on water quality from direct livestock access and the landspeading of slurry and organic wastes as a fertiliser will negatively impact on the water quality within the Boyne catchment.

Private enterprise such as forestry, house construction and local authority works such as roadworks within the Boyne catchment may also impact on water quality.
We can also expect commercial facilities in the area which discharge trade effluents and stormwater under licence into receiving rivers and stream within the catchment to impact on water quality.

Domestic waste water treatment plants and poorly functioning septic tanks may also impact on the water quality of the River Boyne.

The EC (2001) guidelines on the provision of Article 6 of the Habitats' Directive state that the phrase 'in combination with other plans or projects' in Article 3(3) of the Habitats Directive refers to the cumulative impacts due to plans or projects 'that are currently under consideration together with the effects of any existing or proposed projects or plans.'

Arterial Drainage Works may be carried out on other watercourses within the River Boyne catchment by the Office of Public Works to mitigate flood risk. Such works have the potential to impact on downstream water quality. However, the in-stream works to repair the in-stream deflectors and the installation of protective boulders will not impact upon water quality when the mitigation measures provided in this report are effectively implemented. Therefore, the proposed works on the River Boyne will not contribute to or have an in-combination effect with arterial drainage works on water quality.

Inland Fisheries Ireland may also plan to undertake fisheries enhancement works on other rivers and stream to improve fish habitats within the River Boyne catchment. These works may have the potential to result in in-combination and cumulative impacts on water quality. However, as the works proposed by the OPW on the River Boyne at Trim will not impact upon water quality when the mitigation measures provided in this report are effectively implemented, no significant cumulative or

in-combination impacts are predicted from the works on the River Boyne in-combination with similar IFI works in the region.

A review of the Appropriate Assessment report for the Meath County Development draft Plan 2021-2027 was performed. This Appropriate Assessment concludes that;

*"*Screening for Appropriate Assessment identified that the implementation of the CDP had the potential to result in likely significant effects on European sites. Subsequently, an NIR was prepared to further explore these likely significant effects and to ascertain if the CDP could adversely affect the integrity of any European sites.

The assessment identified that the majority of the CDP (e.g. policies and land use zonings) did not give rise to likely significant effects on European sites, and that where likely significant effects were identified these could be mitigated. All actions arising from the CDP shall be required to conform to the mitigation measures contained within this NIR. In addition, all lower level plans and projects arising from the implementation of the CDP will themselves be subject to the requirements of the Habitats Directive, as transposed into Irish law, when details become known*."*

Therefore, the proposed works by the OPW cannot have or contribute to in-combination effects with other local authority development projects within County Meath, as projects within the county development plan itself are not foreseen to give rise to impacts on Natura 2000 sites.

No In-Combination Impact on Natura 2000 sites will result from the OPW proposed works on the River Boyne at Trim when mitigation measures outlined in this report are effectively implemented.

9.0 Conclusion

Following the implementation of the mitigation measures detailed in section 7 of this Appropriate Assessment , no significant adverse effects on Natura 2000 protected sites will occur as a result of the in-stream works on the River Boyne at Trim proposed by the OPW. The conservation status of the Annex I habitats and Annex II species will not be compromised by the proposed works either directly, indirectly or cumulatively following the implementation of these mitigation measures.

The integrity and conservation objectives of the River Boyne and River Blackwater SAC (Site Code 002299), the River Boyne and River Blackwater SPA (Site Code 004232) or other Natura 2000 sites will not be affected by the proposed works following the implementation of and adherence to the mitigation measures detailed in section 7 of this NIS report.

Potential impacts on the conservation interests of these protected sites have been assessed using the recognised source – pathway- receptor approach. Under Article 6(3) and (4) of the Habitats Directive, a precautionary approach to the Appropriate Assessment screening of projects and works has been taken.

In-stream works within this project will involve the alternation of habitat within individual work areas due to the placing of large boulders in-stream above the existing stone deflectors. These structures will alter the flow dynamics of the River Boyne and will enhance the habitat for salmonoid fish. This is beneficial to birdlife and mammals that prey on fry and adult fish.

The proposed works have the potential to cause a minor and localised loss in water quality. However, mitigation measures will control risks posed to water quality and the works will have no impact on Natura 2000 sites following the implementation of the mitigation measures detailed in this report.

David Kelly BSc. MSc.
Technical Manager
KD Environmental Ltd.

11th July 2022

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Appendix 1

OPW Method Statement for Works on The River Boyne at Trim

OPW
Oifig na nOibreacha Poiblí
Office of Public Works

Trim River Maintenance

Boyne Catchment

Date: May 2022

www.opw.ie

Table of Contents

1.0 Preface

The OPW carried out a number of Arterial Drainage Schemes on catchments under the Arterial Drainage Act, 1945. Under section 37 of the 1945 Act, the OPW is required to maintain drainage works in proper repair and effective condition.

Today, the OPW's annual arterial drainage maintenance works programme provides drainage outfall for 260,000 hectares of agricultural lands, comprises 11,500km of river channel, and approximately 800km of embankments, and are providing a level of protection from flooding to urban areas, critical infrastructure, including in excess of 20,000 properties. These maintenance works are carried out in accordance with relevant legislation, through a range of environmental assessments, including Strategic Environmental Assessments, Appropriate Assessments and Ecological Assessments, supported by widespread stakeholder consultation.

2.0 Introduction

The river enhancement works on the Boyne C1 peg 51800-52000 as undertaken with the Inland Fisheries Ireland (IFI) in 2012 – 2014, are in need of repair. The deflectors/ groynes act to divert the flow of water through the centre of the channel, thus creating pools and habitat for young fry along the riverbank.

A by-product of these works was the increased turbulence in the centre channel helping to oxygenate the river and creating a recreation facility for canoeists.

As can be seen in Fig 1, with each winter, the deflectors on the upstream side are eroding and fragmenting, thus losing their shape and effectiveness.

OPW wish to undertake essential repair of these works by placing large boulders to the front of the deflectors and reinstating the gravels behind them.

Figure 1 – Deflectors/ Groynes at peg 51900

3.0 Location

Site location is on the West side of Trim town, off Watergate St., Townparks North, Trim Co. Meath. See red box on Fig 2.

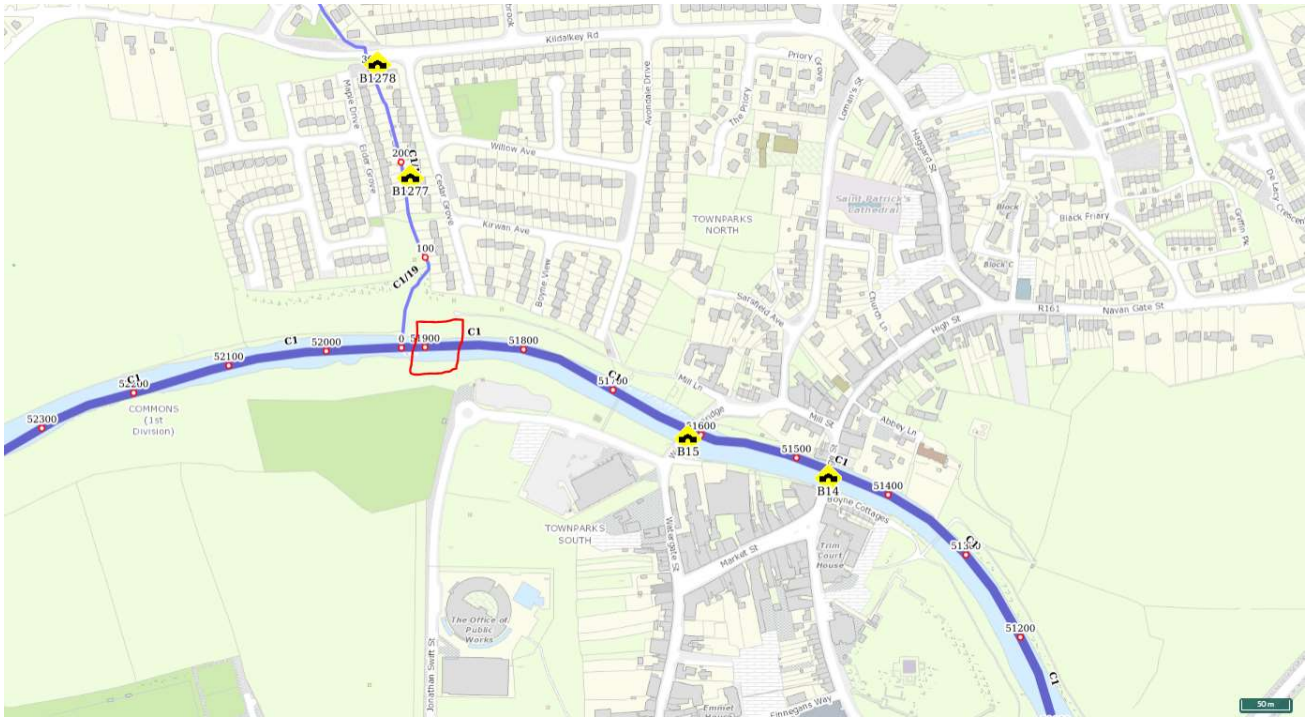

Figure 2 – Site location in Red Box

4.0 Operational Procedures

This is a live document and may change as the works progress.

This method statement should be read in parallel with the completed Project Risk Assessment/Safety Plan, all relevant project drawings and specifications etc.

The Project Risk Assessment/Safety Plan and method statement are live documents and subject to regular change. If there are any major changes in weather conditions the risks on site need to be reassessed prior to starting work.

All potential hazards should be identified and where possible removed or appropriate mitigation measures put in place.

All work to be carried out in accordance with safe working practices. (If any issue needs clarification contact your immediate supervisor)

If any changes are made to the agreed methods of works on site, the foreman must be contacted to ensure that the changes are risk assessed and that new risks are removed or controlled. These should be recorded on the Project risk assessment on an extra worksheet. If there are any changes in the weather, new risks may need to be considered and controls put in place.

Manual handling of equipment and materials should be kept to a minimum and machinery used where possible**, however at no point should a person enter the danger zone/swing zone**

of the machine without the driver being alerted and the controls of the machine being isolated unless an alternative safe system of work has been agreed.

All staff should have received adequate familiarisation with equipment or machinery which they are asked to use. If in doubt, check training database. **If they don`t have the familiarisation training they should not use the equipment.**

At all times the Driver is responsible for the safe operation of the machinery. (This includes dumpers and other plant as well as excavators) It is his responsibility to ensure that there is no one within the danger zone/ swing zone when the isolation lever/ Dead-man lever is engaged and/ or the machine is capable of being operated. **If due to the operation, being carried out this is not possible he needs to speak to the foreman and come up with an alternative safe system of work.** The machine should always be switched off when leaving the excavator.

Never walk under a load being lifted by machinery or carry out work in the vicinity of a load being lifted, unless you have discussed this with the foreman and adequate controls put in place to manage the risk. When lifting a load with machinery keep the load as close to the ground as possible. Never enter the trench or excavation prior to the load being lifted in. Use guide ropes if necessary to position the load.

1. A PRA (Project Risk Assessment) and safety plan should be completed by the Foreman and communicated clearly to all personnel involved in the works along with the contents of this method statement.

2. Contact all relevant stakeholders and advise of proposed works, and about the need to make eye contact with the machine driver before approaching him so that the machine can be turned off and made safe.

3. Site to be inspected for services / ground conditions / access & egress etc.

4. Plant used on site is restricted to plant approved in advance by OPW engineering staff and will vary depending on requirements. Where the load to be lifted exceeds 1 ton in weight a weight watcher/prolec system is a legal requirement. Where lesser loads are being lifted it is very important that the safe load capacity of the machine is not exceeded. The driver should assess the load prior to lifting and if unsure of the weight he should seek advice from the Civil / Mechanical foreman or engineer. All plant including hired plant used for lifting should have load hold valves/check valves installed or should not be used for lifting. The machine should have a weight watcher/ prolec system for lifting purposes. (For example: Some of the large 6 inch pumps can weigh up to 2 tonnes)

5. Install / erect all H&S controls identified in Project Risk Assessment / Safety Plan: signage, fencing, access/egress route, secure access ladders, barriers etc.

6. Set up huts, welfare facilities and storage compound as required.

A summary of the work plan is provided below.

1) With a 25 tonne excavator, track onto the deflectors to place boulders as instructed by the supervisor. All grease, oils, lubricants and fuelling procedures to comply with OPW environmental procedures and criteria, as per "Environmental Guidance: Drainage Maintenance & Construction" handbook EP 17.

2) All machinery and plant must be thoroughly inspected for faults and leaks prior to entering the water at the start of each work day.

3) Biosecurity measures to disinfect mobile plant, equipment and clothing must be adhered to in order to prevent the spread of aquatic invasive species and diseases. Biosecurity will be required for all equipment and machinery entering the watercourse (and its margins) pre and post works.

    - All PPE, equipment and machines entering the water will be power-washed before entry to the site and sprayed with a 1% virion aquatic solution following the IFI method for disinfection of equipment.
    - Visually inspect all equipment that has come into contact with the water for evidence of attached plant or animal material, or adherent mud or debris. This should be done before leaving the site.
    - Remove any attached or adherent material (vegetation and debris) before leaving the site of operation.
    - Ensure that all water is drained from any live wells and other water retaining compartments, tanks and other equipment before transportation elsewhere.
    - Disinfectant will be applied to the undercarriage and wheels of the vehicle/machine prior to leaving the site.
    - High-pressure hot water cleaning, with water > 40 degrees C, will be carried out when machinery leaves the site

4) Due to the brevity of the works, refuelling may not be required. If refuelling is required this will be done at a distance of 20m from the river on adjacent hardstand. A spill kit must be in place while refuelling to contain any minor spills or leaks.

5) All materials used to contain such minor spills and leaks will be removed from site an disposed of as hazardous waste.

6) Several limestone boulders in excess of one tonne weight will need to be sourced and brought onto site. Size and shape of boulders will determine the number required but it is estimated to be six boulders on each side. These will be placed at the upstream deflectors only, as they are facing the full force of the river. The imported boulders will be from a local quarry whether blasted or excavated, and shall be free of invasive species.

7) A silt curtain will be placed downstream of the works to mitigate against excessive siltation, as per "Environmental Guidance: Drainage Maintenance & Construction" handbook EP 15

8) The tracking machine will drive onto the nearside deflector. From this deflector material that has become displace from the nearside deflector will be placed mid stream allowing the tracking machine to cross the river to the far-side deflector.

9) Place the boulders using the excavator as instructed by the supervisor upstream of the far-side deflector. Excavator will displace loose substrate at the face of the groyne to enable siting of large boulders. Removed substrate will be used to build up and reinforce the rear of the groyne. The excavator arm will then reshape using the existing riverbed stone behind the boulders and build out the deflector until the desired shape is reached.

10) The tracking machine will then move back to the near side deflector and remove the material temporarily placed mid-stream for access. This materials will be place on the near side deflector. Place the boulders using the excavator as instructed by the supervisor upstream of the near side deflector. Excavator will displace loose substrate at the face of the groyne to enable siting of large boulders.

11) Removed substrate will be used to build up and reinforce the rear of the groyne. The excavator arm will then reshape using the existing riverbed stone behind the boulders and build out the deflector until the desired shape is reached.

12) Track off the near side deflector and the job is completed.

13) At no point should a person enter the danger zone/swing zone of the machine while this work is taking place. Trained signaller to instruct machine operator when lifting loads where the machine operator does not have adequate sightlines. Inform mechanical section of lift and seek advice on lifting plan if required. If there is no prolec on the machine find out the safe working load with the machine at its maximum reach and operating across tracks ie perpendicular to the tracks (worst case) and make this safe working load known to the machine operator.

14) If the boulders are being loaded onto a dumper, the dumper driver should make sure that the dumper is safely in position, switched off, and should get down off the dumper while it is being loaded. If excavated material is to be reused it should be placed away from the work area (not along a bank edge) so that it will not interfere with the on-going works. Hired dumpers may not be used on roads unless the insurance has been confirmed with the supplier.

15) Where the dumper is to be used, stop blocks should be placed back from the edge of the excavation/ work area/ to prevent the wheels of the machinery reaching the bank edge.

16) Reinstate roadways, paths and ground as required.

17) Remove fencing, huts, compound, signage etc.

18) Inspect completed works and signoff on Project Risk Assessment / Safety Plan.

5.0 Sign off

Attach to PRA.

Method Statement to be discussed with operational staff on site.

Approved by:
Date:

Signed by all staff working on site:

Signed:	Date

6.0 Appendices

EP 15 Construction Silt Management

Scope

This procedure relates to all construction works where silt mitigation is required.

Purpose

To ensure the reduction in artificial sources of silt from total silt load of waterbodies.

Responsibilities

The responsibility lies with the relevant staff.

Related Documentation

Guidelines on Protection of Fisheries IFI.

Procedure

Before Works Commence

1. Consider the key ecological receptors and water flow paths.
2. Consider options available (set back defences rather than dredging), remove risk of silt rather than mitigate, where possible.
3. Define contractually agreed thresholds from silt mitigation in CEMP where required.
4. Install turbidity monitoring where required.
5. Consult with IFI and NPWS regarding systems and timing of work.

During the Works

6. Use ecological assistance when dewatering behind cofferdams or temporary diversions, translocation of specific species maybe required.
7. Ensure works area within waterbody does not become dry in an unmanaged fashion, killing fish or other aquatic species.
8. Monitor the effectiveness of the installed silt control measure.
9. Minimise increased silt levels, when removing control measures.
10. Develop a maintenance and inspection schedule for silt control measures,
11. Manage site compound and works area runoff effectively including wheel washings of transport.
12. Minimise in-channel works and design haul roads and crossing points effectively, to allow fish transition at all times..
13. Manage excavated spoil or dredged material effectively.
14. Consider allowing river to return to background silt levels when required, use turbidity monitoring or other data to manage effectively.
15. Ensure reporting procedure in place in the event of a pollution incident.

Where deepening and widening of a natural watercourse is required, consider a full diversion as the first option. This will isolate the works area, reducing ecological impacts by limiting the ongoing generation of silt. Flow should be transferred to the bypass in a carefully managed way, translocating relevant species, ensuring the downstream watercourse does not run dry, while taking into account fish passage and appropriate design flow. The bypass can be open channel or pipe. An open channel requires erosion control and if constructed sufficiently in advance, this can re-vegetate naturally before the flow is diverted, reducing requirements for artificial erosion control.

EP 17 Water Pollution

Scope

This procedure relates to all works beside waterbodies.

Purpose

To ensure best practice for works beside waterbodies

Responsibilities

The responsibility lies with the relevant staff.

Related Documentation

Guidelines on the Protection of Fisheries, IFI.

Procedure

1. Monitor the weather forecasts during all works, develop a contingency plan to prevent damage or pollution during extreme weather and high flow events.
2. Isolate works area from aquatic environment where possible.
3. Ensure measures taken to prevent cement or concrete entering the waterbody.
   a) Use precast concrete where possible.
   b) Prevent old cured concrete when demolishing from entering waterbody.
   c) Deploy suitable sealed shuttering where required.
   d) Position scaffold above high water level where possible.
   e) Use youngman boards, toe boards, and netting as required.
   f) All concrete equipment should be washed out in designated/designed area.
   g) Concrete delivery trucks should return to batching plant for washout.
4. Ensure measures taken to prevent fuel or oil entering the waterbody.
   a) Refuelling should not be undertaken within 50m of a watercourse, or ensure no direct flowpath.
   b) Use biodegradable oils.
   c) Operators should check their vehicles on a daily basis before starting work.
   d) Emergency spill kits should be available on machines.
   e) Ensure no flowpath from parked overnight vehicles.
   f) Ensure on site fuel stored in bunded tanks.
   g) Use plant "nappies" on compressors and pumps as required.

5. Do not leave exposed soil from vehicle track marks, use bog mats and leave natural vegetation buffer strips where appropriate.
6. **Ensure good housekeeping of site waste and compound.**
7. **Store and remove wastewater from site.**
8. **Ensure good systems of work involving use of chemicals harmful to aquatic life.**

Pic 17.1 Plant nappy under a compressor.

Water quality can be degraded by nitrogen and phosphorus. Nitorogen is water soluble and could become concentrated within drains that are not working efficiently. Phosphorus is less soluble and can be entrained in silt, this can impact on water quality when it becomes mobile within the receiving waters. Accordingly, care should be taken when maintenance is occurring in lands where slurry has been recently spread, do not compromise natural buffers that may be in place.