



# SLANE BYPASS & PUBLIC REALM ENHANCEMENT SCHEME

APPROPRIATE ASSESSMENT

Volume 5 – Report to Inform Screening for AA



Tionscadal Éireann  
Project Ireland  
**2040**



An Roinn Iompair  
Department of Transport



Bonneagar Iompair Éireann  
Transport Infrastructure Ireland



comhairle chontae na mí  
meath county council



WESTMEATH NATIONAL ROADS OFFICE

Óifig na hIarmhí um Bhóithre Náisiúnta



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# 1 INTRODUCTION

## 1.1 Scope of Report

RPS was commissioned by Meath County Council (MCC) to produce this report to inform Screening for Appropriate Assessment (AA). This report will inform the decision of the Competent Authority in their screening for Appropriate Assessment (AA) for the proposed N2 Slane Bypass (hereafter referred to as the 'proposed scheme') in Slane, Co. Meath.

This report has been prepared to accompany a Planning Application by MCC, and is an examination of whether, in view of best scientific knowledge and applying the precautionary principle, the proposed scheme, either individually or in combination with other plans or projects, is likely to have a significant effect on any European site(s). The assessment will be carried out in accordance with the legal context outlined in **Section 1.3**.

## 1.2 Background

The N2 is an important National Primary Route connecting our capital city to the border with Northern Ireland, passing through counties Dublin, Meath, Louth and Monaghan, before continuing as the A5 to Derry and onto Donegal.

Every day this route carries significant volumes of local and long-distance traffic causing congestion and delays. This is an ongoing safety concern and has a negative impact on Slane village. The road has a history of traffic accidents in Slane, resulting in injury, and even a number of road deaths. The N2 Slane Bypass is underpinned by national, local and regional policy, including Project Ireland 2040 – the National Planning Framework (DHLGH, 2018), Project Ireland 2040 - National Development Plan 2018-2027 (DPER, 2018), Transport Strategy for the Greater Dublin Area 2016 – 2035 (NTA, 2016), and Meath's County Development Plan 2013 – 2019 (MCC, 2013).

Transport Infrastructure Ireland (TII) and MCC are developing a bypass of Slane Village to remove a significant sub-standard section of the existing N2 National Primary Route. This project also encompasses Traffic Management measures within Slane, together with works on the N51 between the bypass and the centre of the village.

## 1.3 Legislative Context

### 1.3.1 European Sites

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

In the Republic of Ireland, European sites comprise:

- Special Areas of Conservation (SACs) designated for habitats, plants, and non-bird species, under the Habitats Directive (92/43/EEC);
- Special Protection Areas (SPAs) designated for bird species and their habitats, under the Birds Directive (79/409/ECC as codified by Directive 2009/147/EC); and
- 'Candidate' sites including 'cSACs'. The process of designating cSACs as SACs is ongoing in Ireland. The term SAC is used throughout this report for both SACs and cSACs, given they are subject to equal protection.

The requirements of the Directive have been transposed into Irish legislation principally through the Birds and Natural Habitats Regulations (BNHR) 2011, as amended and Part XAB of the Planning and Development Act 2015 (as amended).

### 1.3.2 Appropriate Assessment

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to have a significant effect on or to adversely affect the integrity of European sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment (AA):

*“Any plan or project not directly connected with or necessary to the management of the [European] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”*

Article 6(4) states:

*“If, in spite of a negative assessment of the implications for the [European] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.”*

## 1.4 Stages of Appropriate Assessment

### *Stage 1: Screening / Test of Significance*

This process identifies whether the proposed scheme is directly connected to or necessary for the management of a European site(s) and identifies whether the development is likely to have significant impacts upon a European site(s) either alone or in combination with other projects or plans.

The output from this stage is a conclusion for each European site(s) of not significant, significant, potentially significant, or uncertain effects. The latter three conclusions will indicate that site be brought forward to Stage 2.

This report is the output of Stage 1, Screening for Appropriate Assessment.

### *Stage 2: Appropriate Assessment*

This stage considers the impact of the proposed scheme on the integrity of a European site(s), either alone or in combination with other projects or plans, with respect to: (i) the site’s conservation objectives; and (ii) the site’s structure, function and its overall integrity. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts is undertaken.

The output from this stage is a Natura Impact Statement (NIS). This document must include sufficient information for the competent authority to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must consider alternatives (Stage 3) or proceed to Stage 4.

### *Stage 3: Assessment of Alternatives*

This process examines alternative ways of achieving the objectives of the project that avoid adverse impacts on the integrity of the European site. This assessment may be carried out concurrently with Stage 2 in order to find the most appropriate solution. If no alternatives exist or all alternatives would result in negative impacts to the integrity of the European sites, then the process either moves to Stage 4 or the project is abandoned.

### *Stage 4: Assessment where Adverse Impacts Remain*

This stage includes the identification of compensatory measures where, in the context of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

## 2 DESCRIPTION OF THE PROPOSED SCHEME

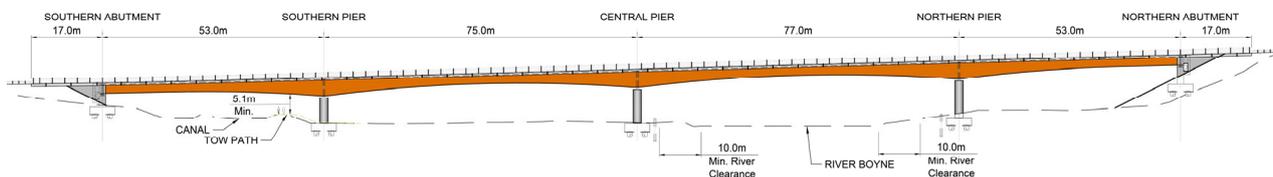
### 2.1 Proposed Scheme Overview

The proposed N2 bypass route corridor runs to the east of Slane Village and is approximately 3.5 km in length. The proposed route diverts from the existing N2, in a north-easterly direction, from a location approximately 400 m north of McGruder’s crossroads in the townland of Johnstown. It continues in a north-north easterly direction, through Fennor and Crewbane townlands in a deep cutting. The route passes under the existing Rosnaree Road, crossing the River Boyne approximately 630 m east of the existing Slane Bridge.

On the southern side of the river, the proposed bridge will span over the Boyne Canal and towpath which forms part of the Boyne Navigation. The Inland Waterways Association of Ireland (IWA) – Boyne Navigation Branch have as a primary objective the restoration of the canal. A minimum vertical clearance for canal navigation is generally required to be a minimum of 3.6 m, a minimum vertical clearance of 5.1 m to the canal towpath is also required for maintenance of the canal.

At the proposed location of the crossing the river channel is approximately 50 m wide and the flood channel is approximately 120 m wide. Setback exclusion zones of minimum 10 m width are also required from the top of both the northern and southern banks of the river to avoid hydraulic effects on river flows, as well as any disturbance to the bed of this important fisheries habitat. The minimum 10 m set-backs ensure that construction works for the piers and foundations will have no adverse impact on the river, including the risk of pollution from construction materials.

The proposed new structure comprises a four-span steel plate girder bridge made composite with a reinforced concrete deck slab as illustrated in **Figure 2.1**. The span arrangements are approximately 53 m, 75 m, 77 m and 53 m and give a total bridge length of approximately 258 m. The depth of the steel plate girders varies from 4 m at the intermediate supports to 2.15 m at mid span and the abutments. The substructure consists of cast in-situ reinforced concrete bearing shelves and columns supported by bored pile capped foundations at the piers. The abutments consist of cast in-situ reinforced concrete walls supported by bored pile foundations.



**Figure 2.1: Overview of Proposed Span Arrangement of the River Boyne Bridge**

The particular constraints of the site, the River Boyne, Boyne Navigation channel and towpath, European SAC/SPA designation of the site and the sensitivity of the area to visual intrusion, together with structural and aesthetic considerations have determined the optimal form for the bridge structure. The result is a structure with well-balanced structural form in terms of span/depth proportions, minimal footprint within the SAC/SPA and at an elevation which minimises adverse impact on the landscape and visual intrusion.

After crossing the river, the route runs in a north-easterly direction in a deep cutting until it reaches the N51. It crosses the N51 roundabout, approximately 1,300 m east of the N2/N51 junction in the centre of Slane Village. The route then proceeds northwards, passing east of Ledwidge Cottage, through the townlands of Cashel and Mooretown, before turning north-west to tie in with the existing N2, approximately 500 m north of the entrance to the Grassland Agro plant. The section from the N51 to the northern tie-in to the N2 is a combination of cut and fill.

At-grade roundabouts are proposed at each tie in with the existing N2 and at the interface with the N51.

The Proposed Scheme includes for a realignment of the N51 between the proposed bypass and the edge of the village. The purpose of the realignment is to provide consistency of cross-section, easing of existing bends, extension of the existing footway and to provide public lighting.

The improvements to the N51 between Slane village and the proposed bypass include the following:

- Realigning the N51 route west of the N2 Bypass over approximately 820 m adopting a design speed of 60 km/h to improve the standard of the horizontal alignment. This will improve some localised sharp bends, improving visibility along the route.
- On the east side of the bypass, the N51 is realigned for approximately 600 m to remove a significantly sub-standard section of the existing route.
- The proposed traffic management measures and public realm improvements within Slane Village include:
  - Removal of traffic signals and left turn slips at the existing junction;
  - Provision of necessary signage and road markings so that the junction becomes a priority junction with the east-west N51 forming the major arms and the northern and southern approaches giving way;
  - Realignment of kerb lines to narrow the carriageway widths on approach to the junction and allow widening of the road verge and footway;
  - Provision of verge areas for suitable on-street planting;
  - Provision of raised pedestrian/ cyclist crossing ramps on each arm of the junction with signalised crossings on the N51 arms and zebra crossings on the N2 arms;
  - Enhanced pedestrian/ cyclist accessibility from the centre of Slane to the Existing River Boyne bridge and river amenity area; and
  - New off-street parking area.

With the increasing popularity of recreational cycling generally in Ireland, provision for local cycling loops incorporating the proposed bypass is proposed. The route of a local cycling loop could include the existing N2 route through the village and linking with the cycling facilities along the proposed bypass. A further route for a cycling route may be feasible using the proposed link to the existing canal tow path and linking back to the existing N2.

The concept of walking loops between the village and the bypass offers an opportunity to enhance the amenity value of the project to the local community and visitors to Slane. The Proposed Scheme includes for the provision of enhanced footway access along the existing N51 between the village and the bypass. Taking this into consideration, the provision of shared use cycle/ pedestrian facilities along the proposed bypass, linking to the existing canal tow path, presents the opportunity for an appealing pedestrian route.

An overview of the Proposed Scheme is shown on **Figure 2.2**. In summary the Proposed Scheme comprises the following main elements:

- Approximately 3.5 km of mainline N2 bypass Type 2 dual carriageway;
- Approximately 1.4 km of realigned N51 National Road;
- Reconfiguration of The Square junction in Slane, including removal of traffic light control;
- Public Realm improvement and traffic management measures in Slane village;
- Approximately 2.7 km of scheme works and maintenance access tracks;
- 3 at-grade roundabouts at N2 South, N51 and N2 North;
- 1 major bridge crossing of River Boyne
- 1 new road overbridge to allow the proposed N2 to pass under Rossnaree Road;
- 2 farm overbridges;
- 3 No. new culverts on the Mattock (Mooretown) Stream<sup>1</sup> and removal of existing culvert under existing N2;
- Provision of shared footway/cycleway facilities, including a pedestrian/cyclist link to the existing Boyne Canal towpath;

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<sup>1</sup> An upper tributary of the EPA delineated Mattock River\_030. Referred throughout EIAR as Mattock (Mooretown) Stream.

- Utility diversions;
- Drainage system, including attenuated outfalls; and
- Landscaping and environmental mitigation measures.

Also included in the Proposed Scheme are substantial temporary works associated with the construction of the River Boyne Bridge. The Proposed Scheme includes for both the construction and decommissioning of these temporary works.

Other temporary works such as at overbridge construction locations will also be necessary as will the establishment of site compounds and other temporary areas e.g. stockpiling. The Proposed Scheme includes for both the construction and decommissioning of all these temporary works.

### 2.1.1 Design Measures to Offset Impact

Throughout the option selection and design processes, a number of measures were employed to help offset the impact of the Proposed Scheme; these included:

- Location of the river crossing to reduce visibility in the landscape and to avoid Annex I Habitat and Architectural Conservation Areas.
- Design of the bridge crossing to reduce visibility in the landscape – low level rather than statement bridge.
- Inclusion of a 10m setback distance from either side of the banks of the River Boyne to help preserve otter movements and eliminate any direct negative impact on the river during construction.
- Discussions with significantly impacted landowners and agricultural enterprises, and alignment adjustments where feasible and provision of suitable accommodation/ scheme works.
- Design and location to minimise visibility from World Heritage Property at Bru na Bóinne and from the monument at Knowth, in particular.
- Drainage design in accordance with the principles of SUDs to fully mitigate potential for pollution and increased flood risk.
- Design of the supporting bridge piers to have the least amount of impact in terms of footprint and in terms of visual impact.
- Design and inclusion of sympathetic Public Realm Enhancement (having regard to the overall Public Realm plan) to the Proposed Scheme to reflect and connect heritage, and to enhance the village amenity for the local and wider community.
- Design of the bridge crossing to avoid piers in the river and reduce disturbance of riverine environment.
- Acquisition of the wet field under and either side of the proposed River Boyne bridge crossing as part of biodiversity enhancement to include planting of native wet meadow species mix.

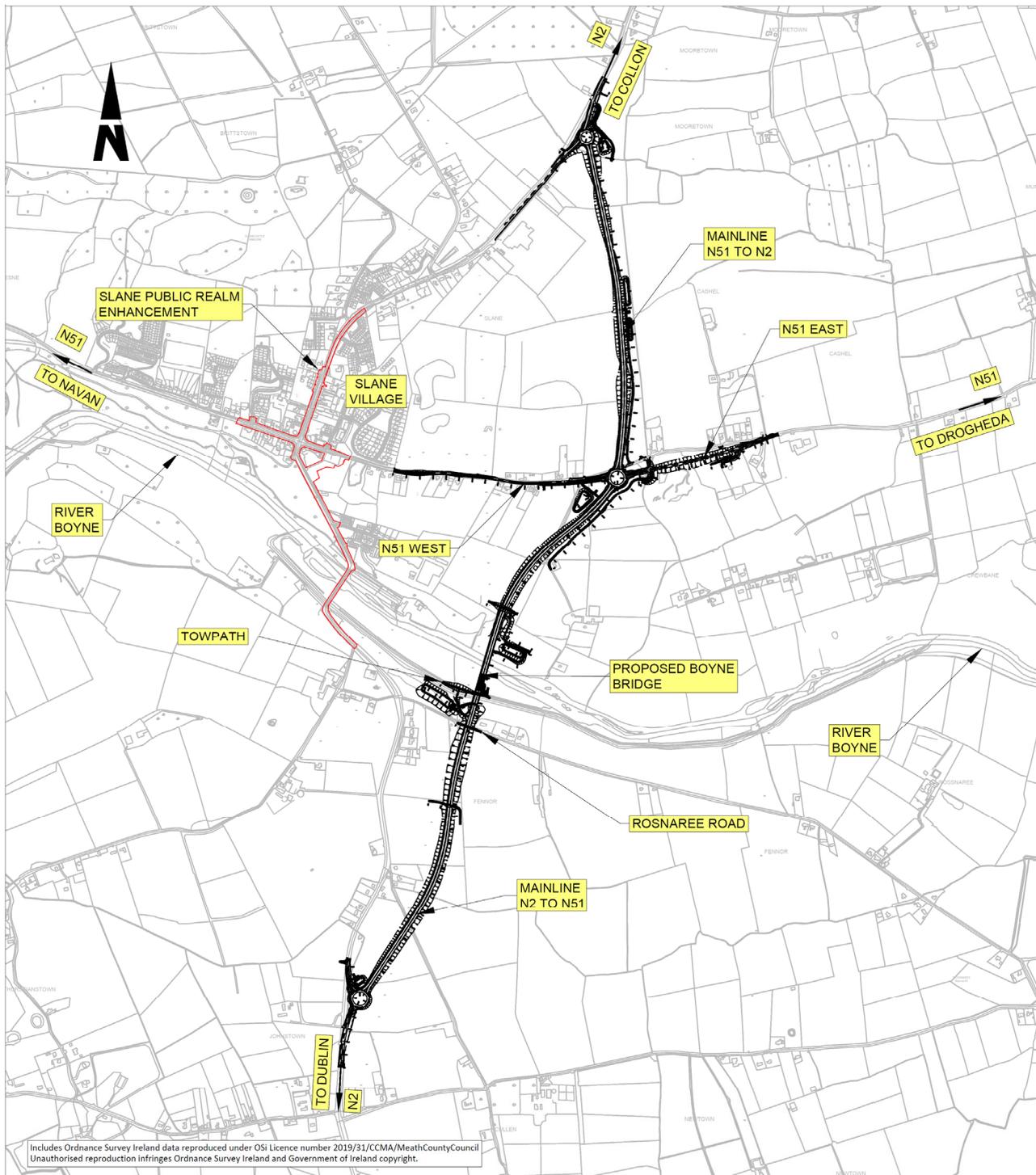


Figure 2.2: Outline of the Proposed N2 Slane Bypass and Public Realm Enhancement Scheme

## 2.2 Description of the Construction Phase

### 2.2.1 Introduction

There will be approximately 39 hectares (ha) of land permanently acquired for the construction of the Proposed Scheme, including acquisition of three occupied private dwellings, one unoccupied dwelling at the proposed northern N2 roundabout tie-in, and one derelict gate lodge on the N51. In addition, approximately 6 ha of land will be temporarily acquired to facilitate construction activities including site compounds, stockpile areas, temporary access roads and temporary works areas. The temporarily acquired land will be reinstated post construction and returned to the registered owner.

## 2.2.2 Pre-Construction Stage

Prior to construction, a site environmental team will be appointed including but not limited to an Environmental Clerk of Works, a Project Ecologist, and a Project Archaeologist. They will supervise works, ensure mitigation is delivered in accordance with planning permission (if received) and liaise with the corresponding Employers Representative on environmental matters.

In advance of the main contract works, a number of advanced works contracts will be required to enable the main construction; these include:

- Ground Investigation Works;
- Ecological surveys and mitigation work;
- Archaeological Surveys and testing;
- Treatment and management of non-native invasive plant species; and
- Water quality monitoring.

Other advance works will also be carried out to prepare the site for the main construction work such as fencing, site clearance, demolitions, utility diversions etc.

Four houses are included for demolition: a derelict gate lodge at N51 west approx. Ch. 700; an occupied private dwelling adjacent to the proposed bypass, approx. Ch. 825; an occupied private dwelling at N51 east approx. Ch. 75; and agricultural buildings and an uninhabited dwelling at the northern roundabout tie-in. A further occupied residential property and house is being acquired but the house will not be demolished.

Also, part of the early works on the site will be putting in place a drainage system to protect sensitive areas from damage as a result of materials like soils being washed into rivers and surrounding areas. The River Boyne is a sensitive watercourse which is designated as a European SAC site. It also contains habitats and species which depend on the quality of the water for survival. The potential sources of materials like soils are earthwork slopes, stockpiles, construction traffic and features such as ponds and ditches. To prevent/control this material being released into the watercourses, the following controls will be used: planting of exposed slopes and covering slopes in mats to reduce loss of material; dams, silt barriers and ponds as a second line of control and finally materials such as stockpiles will be located away from sensitive features and pathways that would lead to watercourses.

## 2.2.3 Construction Works

### 2.2.3.1 Compounds and Access

One of the main features of early construction will be the set-up of the main construction compound which will provide office and welfare facilities for site construction and also an area for storage of materials. The main compound will be located north of the river at the junction of the proposed bypass and the N51. As significant construction works are required from the southern bank of the River Boyne to provide the bridge over the Boyne, a smaller second compound will also be needed and will be located just south of the Rossnaree Road and west of the proposed bypass. These compounds will be removed after the construction is completed and all materials removed from the site.

The transport of material and people to and from the site will generate additional temporary traffic on the road network. In particular, there will be a large volume of earthworks to be removed off-site. Six access points have been identified to ensure safe and efficient movements to and from the site. These are:

- Southbound side of N2 at southern end of proposed bypass (Access 1);
- Eastbound and Westbound sides of Rossnaree Road L16002 near local road crossing of proposed bypass (Access 2 and 3);
- Eastbound and westbound sides of N51 near proposed N51 roundabout junction (Access 4 and 5); and
- Southbound side of N2 at northern end of proposed bypass (Access 6).

Works required to maintain access to lands, reinstate property boundaries, and provide ducting for services, will be completed as early as feasible in the construction programme.

### 2.2.3.2 Traffic Management During Construction

Traffic management on the existing road network will include the following:

- **N2:** A reduction in speed limit and appropriate warning signage will be required on the approaches to Access Points 1 and 6 as listed above. The design of N2 South and North roundabouts allows for offline construction; however, temporary traffic management will be needed for construction of the links to the existing road.
- **N51:** A reduction in speed limit and appropriate warning signage will be required on the approaches to Access Points 4 and 5. The design of N51 roundabout allows for offline construction, however, temporary traffic management will be needed for construction of the links to the existing road. The proposed works on the N51 link between the bypass and Slane village entails on-line improvement works. The majority of this work will be completed under temporary traffic management arrangements whereby the road will be maintained open, with single way shuttle systems at varying locations to enable the construction works to be completed in a safe manner. Some works, such as pavement construction may be carried out under a temporary road closure.
- **Rosnaree Road L16002:** Appropriate warning signage will likely be required on the approaches to Access Points 2 and 3. Temporary closure of the Rosnaree Road will be necessary to facilitate the construction of the mainline in the area and also the proposed Rosnaree Road overbridge. The closure is expected to last for a period of eight to nine months. Diversions via McGruder's Cross will be in place in order to maintain local access during this temporary closure.
- **Abnormal loads** are likely to deliver large plant (cranes) and bridge girders for works to be done on the north and south side of the River Boyne. The abnormal loads for the north side will be routed via the M1 and N51 for access to the site. The abnormal loads for the southside will be routed to the site access on Rosnaree Road via the N2. In both cases the loads will be subject to statutory process and management in accordance with the legislation.
- **Slane village:** The proposed public realm works within Slane village involve considerable works to reconfigure existing roads and footways. All works in the village can only take place after the proposed bypass is operational and traffic volumes will have reduced through the village. The works will be constructed with temporary traffic management arrangements in place. Works areas will be isolated using one-way shuttle systems for the most part during the construction. However, temporary road closures are also anticipated to facilitate critical works. These road closures are likely to be at night and local diversions will be in place.

Significant increases in Heavy Goods Vehicles (HGV) using the road network are expected over the 36 month construction period, particularly toward the mid-phase (around month 15) when over 500 HGV movements are anticipated per day. The majority of this additional HGV traffic will use the national road network. There is estimated to be an increase of 38 HGV accessing the centre of Slane village during construction on some days when particular activities are being carried out on site. This is primarily due to materials being brought to the site and will ultimately depend on the actual source of these materials. All earthworks removal HGV traffic will be routed to avoid any need to access through the centre of Slane.

For the purposes of this EIAR, it has been assumed that excess material resulting from earthworks will be brought to Huntstown Inert Waste Recovery Facility (Roadstone Ltd.), in Dublin and to a much lesser extent, Mullaghcrone Quarry (Roadstone Ltd), in Donore Co. Meath. The main advantage of Mullaghcrone is its proximity to the construction site, though it is limited by its annual authorised intake and the negative environmental impact of transporting HGV through the village of Donore. Huntstown is accessible from the N2 and has a significantly higher annual authorised intake, however the facility is approximately 40 km from the site.

### 2.2.3.3 Earthworks

The preferred alignment for the Proposed Scheme sets the scheme low in the landscape to reduce its impact on the sensitive heritage landscape and the World Heritage Property of Brú na Bóinne. This means much of the Proposed Scheme is in cutting (dug out). Even though some of the material to be removed can be used elsewhere on the scheme to build up slopes or new noise or landscape features there will still be a significant quantity of extra material remaining which will need to be removed from the site to a licensed facility for reuse. In total, some 520,000 m<sup>3</sup> is expected to be removed from the site. It is intended that this

material will leave the site directly upon excavation. Stockpiles will be required north and south of the river to hold topsoil for later reuse in the scheme.

### 2.2.3.4 River Boyne Bridge

The River Boyne is a significant salmonid river. It is also part of the River Boyne and River Blackwater SAC which is a designated European site under the EU Habitats Directive. It is protected for habitats and species that include salmon, otter and alluvial forest. In addition, the River Boyne and River Blackwater is also a designated SPA under the EU Birds Directive for the common kingfisher.

The River Boyne Bridge is required to carry the proposed bypass over the River Boyne and the Boyne Canal and associated towpath. The bridge will be a four-span steel bridge with a reinforced concrete deck slab. The span arrangement is 53m, 75m, 77m and 53m gives a total bridge length of 258m.

To construct the River Boyne bridge, it will be necessary to construct considerable temporary works. These include temporary access roads and temporary working platforms to support the plant necessary to carry out the construction. Construction of these works within the boundary of the SAC will be necessary and is unavoidable. Three piers and two abutments are required for the proposed bridge.

Due to the extreme environmental sensitivity of the River Boyne, no works will be permitted within the river itself and a further zone and set-back of 10 m from the river bank will be put in place to ensure protection of otters using the river. No work will be permitted within this zone. The location of the proposed River Boyne bridge is within the floodplain of the river and the approach to construction has taken this into account as there is a likelihood that the river will flood at some point during the construction period.

Access to the south side of the river is proposed from Rosnaree Road. A temporary access road will be built. This access road will also need a temporary bridge over the Boyne Navigation Canal. Access to the north side will also require an access road. This access road will provide access for the Boyne bridge northern pier and abutment and also provide access for the construction of Attenuation Pond 3 and Farm Overbridge 3.

A series of temporary working platforms will be necessary for bridge construction. These will be located within the boundary of the ecologically sensitive River Boyne and River Blackwater SAC. A key concern is the management of contaminated or sediment-laden run-off from the working areas during their construction, operation and decommissioning. Four working platforms will be required and will be constructed using reno mattresses (**Figure 2.3**). These are stone filled platforms which reduce the risk of sediment erosion and silt deposition. They will be filled outside of the SAC to avoid any silt or sand washing out into the river. The platforms will be constructed so that machinery only operates from the platforms.



**Figure 2.3: Example Reno Mattress<sup>2</sup>**

A structure called a cofferdam will be needed to construct the bridge piers and foundations (**Figure 2.4**). This is a watertight structure that is pumped out to allow construction to take place below the waterline. To create the cofferdam, low-noise piling machine will press sheet piles into the ground. The cofferdam will

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<sup>2</sup> <http://gabionproducer.com/gabions/reno-mattress.html>

enclose the proposed excavation and further piling works stopping uncontrolled run-off from reaching the River Boyne.



**Figure 2.4: Example Cofferdam<sup>3</sup>**

The bridge will require bored pile foundations down to rock. This will require a large piling rig and crane to access each section of the valley; south of the canal, between the canal and the river and north of the river. Once these are in place the bridge deck will be lifted into place in sections by crane, operating from the temporary working platforms.

At the end of construction, the reno mattresses will be removed such that machines are always working from the platform. Decommissioning is expected to take less than one month.

General control measures to be implemented by the appointed contractor will comprise the following:

- Machinery that can, will be returned to the site compound located outside the SAC boundary at the end of each working day.
- Machinery will be either pressure hosed or required to drive through a wheel wash to remove loose sediment and contaminants prior to entering the SAC boundary.
- Regular checks and maintenance of machinery will be carried out.
- Refuelling will not be carried out within the SAC boundary or within 50 m of a watercourse.
- Refuelling will be carried out using 110% capacity double bunded mobile bowzers. The refuelling bowser will be operated by trained personnel. The bowser will have spill containment equipment which the operators will be fully trained in using.
- Plant nappies or absorbent mats will be placed under refuelling point during all refuelling to absorb drips (only to occur outside of the SAC boundary).
- Mobile bowzers, tanks and drums will be stored in secure, impermeable storage area, away from drains and open water.
- Continuous weather monitoring will be carried out so as to time works within favourable weather windows, where this is feasible and also to predict when river flood events might occur. As part of this, river level gauges will be monitored with an early warning system which is triggered once the water level passes a critical threshold. In such instances, all people, plant and machinery must be removed from the platform and the cofferdams.

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<sup>3</sup> [Portadam-Cofferdam-Brochure-2020.pdf](#)

### 2.2.3.5 Other Structures

Other than the proposed River Boyne bridge, four principal structures are required on the proposed N2 Slane Bypass Scheme. These include a shared use cycle and pedestrian bridge adjacent to the mainline to link the existing Boyne Canal towpath to the shared facility (the bridge will span over the Boyne Canal and tie into the towpath) and three overbridges to carry two farm tracks and Local Road L16002 (Rosnaree Road) over the proposed N2 Slane Bypass primary route.

### 2.2.3.6 Public Realm Enhancement in Slane

The scheme includes for the construction of traffic management measures and public realm enhancement works within Slane village. To construct the proposed works, temporary traffic management measures including the operation of stop/go one-way shuttles will be utilised. Some night-time works are expected to be required over the construction period including road planning and paving. Road planning will be limited, where possible to a period from 19:00 – 22:00 hrs and road paving will occur primarily during night-time periods. Access to the works will be from the existing N2 and N51.

Construction activities include the removal or existing road pavement and footpaths, utility diversion, installation of new road pavements and footpaths, and construction of an off-street car park. Equipment includes excavators, dumpers, planners, rollers and pavers.

## 2.2.4 Environmental Management

At commencement of the project, the contractor will appoint an Environmental Clerk of Works and a Project Ecologist to ensure the proper management and delivery of all environmental mitigation for the scheme and to provide advice and support on an ongoing basis throughout the construction phase.

Construction impacts are generally of a short-term duration over the construction period and are often localised. The works will be carried out in compliance with all relevant legislation and industry best practice guidance including but not limited to the suite of TII guidance on construction of national road schemes and Construction Industry Research and Information Association (CIRIA) guidance. This relevant guidance and best practice requirements will be further detailed in the Environmental Operating Plan (EOP) which has been prepared for the scheme. This will be a live document that evolves as construction progresses, ensuring protection of the environment throughout.

Given the sensitivity of the receiving environment, prior to starting works, the contractor will prepare an Environmental Emergency Response Plan which fully includes the mitigation requirements identified in the water and biodiversity chapters of the EIAR.

Construction noise will be kept to a minimum in accordance with industry best practice however construction noise will impact on neighbouring residences during certain activities such as piling and rock breaking. No drilling and blasting is expected. Noise levels will be monitored to make sure that levels stay within defined noise level limits.

It is unavoidable that there will be dust generated during earthworks and construction. Control measures will be implemented to reduce dust, including spraying of haul roads, use of wheel washes and regular sweeping. Monitoring of dust generation will be part of the management of construction activities.

A Resource and Waste Management Plan (RWMP) will be prepared by the contractor before construction starts to ensure that the materials and waste resulting from construction and demolition activities are managed and disposed of in compliance with the relevant legislation.

## 2.2.5 Construction Phase Programme

It is anticipated that there will be approximately 150 to 200 people employed on the construction site across the Proposed Scheme, rising to approximately 230 staff at peak construction. The numbers of people employed directly on the site will vary throughout the construction period as the various activities are undertaken.

Overall, the construction period is assessed to be 36 months with the proposed works on the north side of the river up to the N51 taking approximately 27 months duration and works on the south side of the river taking 33 months. One of the most important elements for the programme is considered to be the

construction works around the River Boyne bridge. Key advanced site preparation works as part of an advance works contract could reduce the overall construction period from 36 months to circa 30 months.

The construction of the proposed public realm and traffic management proposals in Slane Village can only be carried out after the proposed bypass has been constructed and is open to traffic, relieving the existing traffic volumes within the village. As such, the construction of the works in Slane village, which are an integral part of the scheme are most likely to be procured under a separate construction contract undertaken after the bypass works are completed. The likely construction period for the proposed works in Slane village is estimated to be between 6 and 9 months.

The construction will include a number of stages beginning with site preparation, moving to the main excavations and construction works and finally close out. Normal working times will be 07:00 to 19:00 hours Monday to Friday and 08:00 to 16:30 hours on Saturdays. Subject to Local Authority approval, working times outside these normal hours, including Sundays, may be permitted for activities such as diversion of utilities or working on existing roads outside of peak traffic periods to avoid or minimise traffic congestion. Noisy construction activities will be avoided outside normal hours and the amount of work outside normal hours will be strictly controlled. As part of procedures to be followed to enable work outside of normal working hours, the Contractor will be required to notify affected residents in good time of upcoming planned works.

## 3 METHODOLOGY

### 3.1 Appropriate Assessment Guidance

EU and national guidance exist in relation to Member States' fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in relation to this AA has had regard to the following guidance:

- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of Environment, Heritage and Local Government (DoEHLG, 2010);
- Communication from the Commission on the Precautionary Principle (EC, 2000);
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (known as MN2000), Office for Official Publications of the European Communities, Luxembourg (EC, 2018);
- 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. Office for Official Publications of the European Communities, Brussels (EC, 2001);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission (EC, 2007);
- Nature and biodiversity cases: Ruling of the European Court of Justice (EC, 2006);
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013); and
- Article 6 of the Habitats Directive: Rulings of the European Court of Justice (EC, 2014).

There have been significant changes to AA practices since both the EC (2001) and the DoEHLG guidance (2010), arising from practices and rulings in European, UK and Irish courts. These changes have been addressed in the preparation of this report.

### 3.2 Screening Process (Stage 1)

The Screening for Appropriate Assessment (Stage 1) will incorporate the following steps:

- Describing the project or plan (see **Section 2**);
- Identifying the European sites potentially affected by the project or plan (see **Section 4.2**);
- Determining whether a project or plan is directly connected with or necessary to the conservation management of any European sites (see **Section 5.4**);
- Identifying and describing any potential effects of the project or plan on European sites, alone, in combination and cumulatively with other plans/projects (see **Section 5.4**); and
- Assessing the likelihood of significant effects on European sites (see **Section 5.4**).

### 3.3 Ecological Data

#### 3.3.1 Desk Study

A desk study was completed to assess the potential for all QIs and SCIs of European sites to occur, given their ecological requirements identified by Balmer et al. (2013) for SCIs, and the National Parks and Wildlife Service (NPWS) for QIs (NPWS, 2019a, b, c).

SCI Birds and mobile QI species can travel many kilometres from their core areas, and desktop surveys assessed the potential presence of such species beyond the European sites for which they are QIs/SCIs. Desktop studies had particular regard for the following sources:

- EPA online interactive mapping tool<sup>4</sup>
- Tabulated lists for all European sites in Ireland of SCIs and QIs, obtained through a data request to the NPWS;
- Information on ranges of mobile QI populations in Volume 1 of NPWS' Status of EU Protected Habitats and Species in Ireland (NPWS, 2019a), and associated digital shapefiles obtained from the NPWS Research Branch;
- Information on ranges of mobile SCIs bird populations from Bird Atlas 2007–11 (Balmer et al., 2013), excluding birds of prey whose ranges were determined with reference to Hardey et al. (2013);
- Mapping of European site boundaries and Conservation Objectives for relevant sites in County Dublin and beyond, as relevant, available online from the NPWS;
- Distribution records for QI and SCI species of European sites held online by the National Biodiversity Data Centre (NBDC<sup>5</sup>);
- Details of QIs/SCIs of European sites within the National Biodiversity Action Plan 2017-2021 (DoCHG, 2017);
- Data including surface and ground water quality status, and river catchment boundaries available from the online database of the Environmental Protection Agency (EPA<sup>6</sup>);
- Information on groundwater aquifers, recharge, and vulnerability available from the online database of Geological Survey Ireland (GSI);
- National and regional surveys of semi-natural habitats, including grasslands (O'Neill et al., 2013), saltmarsh (McCorry and Ryle, 2009; Devaney and Perrin, 2015), and woodland (Perrin et al., 2008);
- Boundaries for catchments with confirmed or potential freshwater pearl mussel (FWPM) *Margaritifera margaritifera* populations in GIS format available online from the NPWS;

### 3.3.2 Field Study

In addition to the desktop studies, a number of habitat and protected species surveys of the proposed scheme site have been undertaken by RPS ecologists on various dates and across seasons between 2017 and 2021. Surveys confirmed that there was no presence of habitats with the affinity to provide priority Annex I habitat within the footprint of the proposed scheme, however surveys confirmed a number of invasive alien plant species (IAPS) located largely downstream of the proposed scheme, namely; Himalayan Balsam *Impatiens* and Japanese Knotweed *Fallopia japonica*. Comprehensive bird surveys have also been undertaken.

### 3.3.3 Limitations

The receiving environment (i.e. baseline condition) may naturally vary through seasons and between years (NRA, 2008). This limitation is acknowledged and considered as part of this report.

Sources of desk study information are neither exhaustive nor necessarily easily available, and every effort was made to obtain ecological data in the public domain to inform the description of the receiving environment and its assessment. It is possible that other information, not in the public domain and known only to private individuals, exists. This limitation to the assessment is acknowledged and incorporated into the assessment.

## 3.4 Relevant European Sites

The identification of relevant European sites to be included in this report was based on the identification of the Zone of Influence (Zoi) of the proposed scheme, a source-pathway-receptor model of effects, and the

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<sup>4</sup> Available at <https://gis.epa.ie/EPAMaps/>. Accessed August 2021

<sup>5</sup> Assessing records up to 10 years old (from date of search), for an area of 5 km from the proposed scheme site. Available online at: <https://maps.biodiversityireland.ie/Map>, Accessed August 2021.

<sup>6</sup> Available online at <https://gis.epa.ie/EPAMaps/>. Accessed August 2021

likely significance of any identified effects. An initial 15 km Zol (see **Section 3.4.2**) is applied, however it is important to note that European Sites beyond this 15 km Zol are also included for assessment where a pathway is identified.

### 3.4.1 Source-Pathway-Receptor Model

The likely effects of the proposed scheme on any European site from has been assessed using a source-pathway-receptor model, where:

- A 'source' is defined as the individual element of the proposed works that has the potential to impact on a European site, its qualifying features and its conservation objectives;
- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor; and
- A 'receptor' is defined as the Special Conservation Interests (SCI) of SPAs or Qualifying Interests (QI) of SACs for which conservation objectives have been set for the European sites being screened.

A source-pathway-receptor model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The source-pathway-receptor model was used to identify a list of European sites, and their QIs/SCIs, with potential links to European sites. These are termed as 'relevant' European sites/QIs/SCIs throughout this report.

### 3.4.2 Zone of Influence

The proximity of the proposed scheme to European sites, and more importantly QIs/SCIs of the European sites, is of importance when identifying potentially likely significant effects. A conservative approach has been used, which minimises the risk of overlooking distant or obscure effect pathways, while also avoiding reliance on buffer zones (e.g. 15 km), within which all European sites should be considered. This approach assesses the complete list of all QIs/SCIs of European sites in Ireland (i.e. potential receptors), instead of listing European sites within buffer zones. This follows Irish departmental guidance on AA:

*"For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects"* (DoEHLG, 2010; p.32, para 1).

Following the guidance set out by the NRA (2009), the Project has been evaluated based on an identified Zol with regard to the potential impact pathways to ecological feature (e.g. mobile and static). The Zol of the Project on mobile species (e.g. birds, mammals, and fish), and static species and habitats (e.g. saltmarshes, woodlands, and flora) is considered differently. Mobile species have 'range' outside of the European site in which they are QI/SCI. The range of mobile QI/SCI species varies considerably, from several metres (e.g. in the case of whorl snails *Vertigo* spp.), to hundreds of kilometres (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have Zols within close proximity of the Project, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source.

Hydrological linkages between the Project and European sites (and their QIs/SCIs) can occur over significant distances; however, any effect will be site specific depending on the receiving water environment and nature of the potential impact. As a precautionary measure, a reasonable worst-case Zol for water pollution from the proposed scheme site is considered to be the surface water catchment. In this report, the surface water catchment is defined at the scale of Catchment Management Unit (CMU), as adopted in the River Basin Management Plan (RBMP) for Ireland 2018-2021 (DoHPLG, 2018). The Zone of Influence then extends into the first coastal water body.

Hydrogeological linkages between the Project and European sites (and their QIs/SCIs) are highly variable based on the characteristics of the groundwater body, methodologies used, and the presence of groundwater dependant habitats and species. As a precautionary measure, a reasonable worst-case Zol for water pollution from the proposed scheme site is considered to capture the entirety of each groundwater body the Project overlies.

The initial zone of influence is therefore combined to capture 15km around the the proposed scheme, the Catchment Management Unit (CMU) as a whole, and the relevant groundwater bodies. Further consideration in relation to hydrological linkages are discussed in **Section 4.3**.

### 3.4.3 Identification of Likely Significant Effects

The Commission's Notice (EC, 2019) advises that the appropriate assessment procedure under Article 6(3) is triggered not by the certainty but by the likelihood of significant effects, arising from plans or projects regardless of their location inside or outside a protected site. Such likelihood exists if significant effects on the site cannot be excluded. The significance of effects should be determined in relation to the specific features and environmental conditions of the site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

A significant effect is triggered when:

- there is a probability or a risk of a plan or project having a significant effect on a European site;
- the plan is likely to undermine the site's conservation objectives;
- a significant effect cannot be excluded on the basis of objective information; and
- Measures to prevent or offset risk [mitigation measures] would be required.

### 3.4.4 Scoping of European Sites

Following the identification of European sites within the initial Zol, a secondary scoping was carried out before sites were taken forward to the assessment stage. Each of the sites were considered in detail to establish connectivity (if any). Disturbance buffers, hydrological, and hydrogeological linkages extending from the proposed scheme were assessed to determine if pollution sources arising from the proposed scheme could come into contact with QI/SCI habitats and species.

Where it was deemed that there is potential for one QI or SCI habitat/species from a European site within the Zol to come into contact with a pollution source, the entire European site is brought into the assessment stage.

## 3.5 Screening Process

The Screening for Appropriate Assessment (Stage 1) will incorporate the following steps:

- I. Describing the project or plan;
- II. Identifying the European sites potentially affected by the project or plan;
- III. Determining whether a project or plan is directly connected with or necessary to the conservation management of any European sites
- IV. Identifying and describing any potential effects of the project or plan on European sites, alone, in-combination and cumulatively with other plans/projects; and
- V. Assessing the likelihood of significant effects on European sites.

## 4 RECEIVING ENVIRONMENT

### 4.1 Overview of the Proposed Scheme

The proposed scheme will bypass Slane Village in County Meath, crossing the River Boyne to the east of Slane and will consist of approximately c. 3.5km of dual carriageway and associated road upgrades. The predominant landuse within the Zol of the proposed scheme is agricultural lands, discrete areas of residential development, and the River Boyne and its associated floodplain.

The assessment of desk study information indicates that there were no habitats with the affinity to provide QI habitats within the footprint of the proposed scheme which was further confirmed during field surveys.

### 4.2 European Sites

European sites identified within the initial Zol of the proposed scheme are detailed in **Table 4-1**. This table includes a connectivity (S-P-R) column and scoping column to identify relevant qualifying interest and European sites to be brought forward for assessment. In total, two SAC's and two SPA's have been brought forward for further assessment, and seven habitats and three species have been brought forward for further assessment.

All relevant European sites identified in this report are illustrated in **Figure 4.1**. European sites displayed are those deemed relevant to the Zol of the proposed scheme following an initial scoping stage.

**Table 4-1: Conservation Objectives of Relevant European Sites**

Site (Code), Distance from Proposed Works, Conservation Objectives Version & Date	Qualifying Interest(s) [code] * Priority Habitat / Special Conservation Interest(s)	Conservation Objective(s)	Connectivity (S-P-R)	Scoping for Further Assessment
River Boyne and River Blackwater SAC (002299), proposed scheme is within the SAC, Conservation Objectives Generic Version 5.0 (23/03/2021), (NPWS, 2021a).	<ul style="list-style-type: none"> <li>Alkaline fens [7230]</li> <li><b>*Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</b></li> <li><b>River Lamprey <i>Lampetra fluviatilis</i> [1099]</b></li> <li><b>Salmon <i>Salmo salar</i> [1106]</b></li> <li><b>Otter (<i>Lutra lutra</i>) [1355]</b></li> </ul>	To maintain or restore the favourable conservation condition	<p>Yes- the proposed scheme is within the European site, therefore there is direct hydrological/ hydrogeological connectivity to QI habitats and/or species.</p> <p>However, Alkaline fens [7230] are concentrated in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough which are all located upstream of the scheme near Delvin. The proposed scheme does not support connectivity to this priority habitat.</p> <p>Alkaline fens only have been scoped out for further assessment.</p>	Scoped In.
Boyne Coast and Estuary SAC (001957), 13.6km east of the proposed scheme, Conservation Objectives Specific Version 1.0 (31/10/2012), (NPWS, 2012).	<ul style="list-style-type: none"> <li><b>Estuaries [1130]</b></li> <li><b>Mudflats and sandflats not covered by seawater at low tide [1140]</b></li> <li><b>Salicornia and other annuals colonizing mud and sand [1310]</b></li> <li><b>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</b></li> <li><b>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</b></li> <li>Embryonic shifting dunes [2110]</li> <li>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') [2120]</li> <li>*Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130]</li> </ul>	<p>To maintain or restore the favourable conservation condition</p> <hr/> <p>The status of Mediterranean salt meadows (<i>Juncetalia maritimi</i>) under review.</p> <hr/> <p>To maintain or restore the favourable conservation condition</p>	<p>Yes- the proposed scheme is upstream of the European site, therefore there is hydrological connectivity to QI habitats and/or species via the River Boyne.</p> <p>However, Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') [2120], Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130] and Embryonic shifting dunes [2110] occur above the high-water mark and have therefore been scoped out from further assessment due to the absence of connectivity with the proposed scheme.</p>	Scoped In.
Killyconny Bog (Cloghbally) SAC (000006), 30km north west of the proposed scheme,	<ul style="list-style-type: none"> <li>*Active raised bogs [7110]</li> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> </ul>	<p>To restore the favourable conservation condition</p> <hr/> <p>The long-term aim for Degraded raised bogs still</p>	No- there is no pathway identified between the proposed scheme and the European site, therefore it is excluded from further assessment.	Scoped Out.

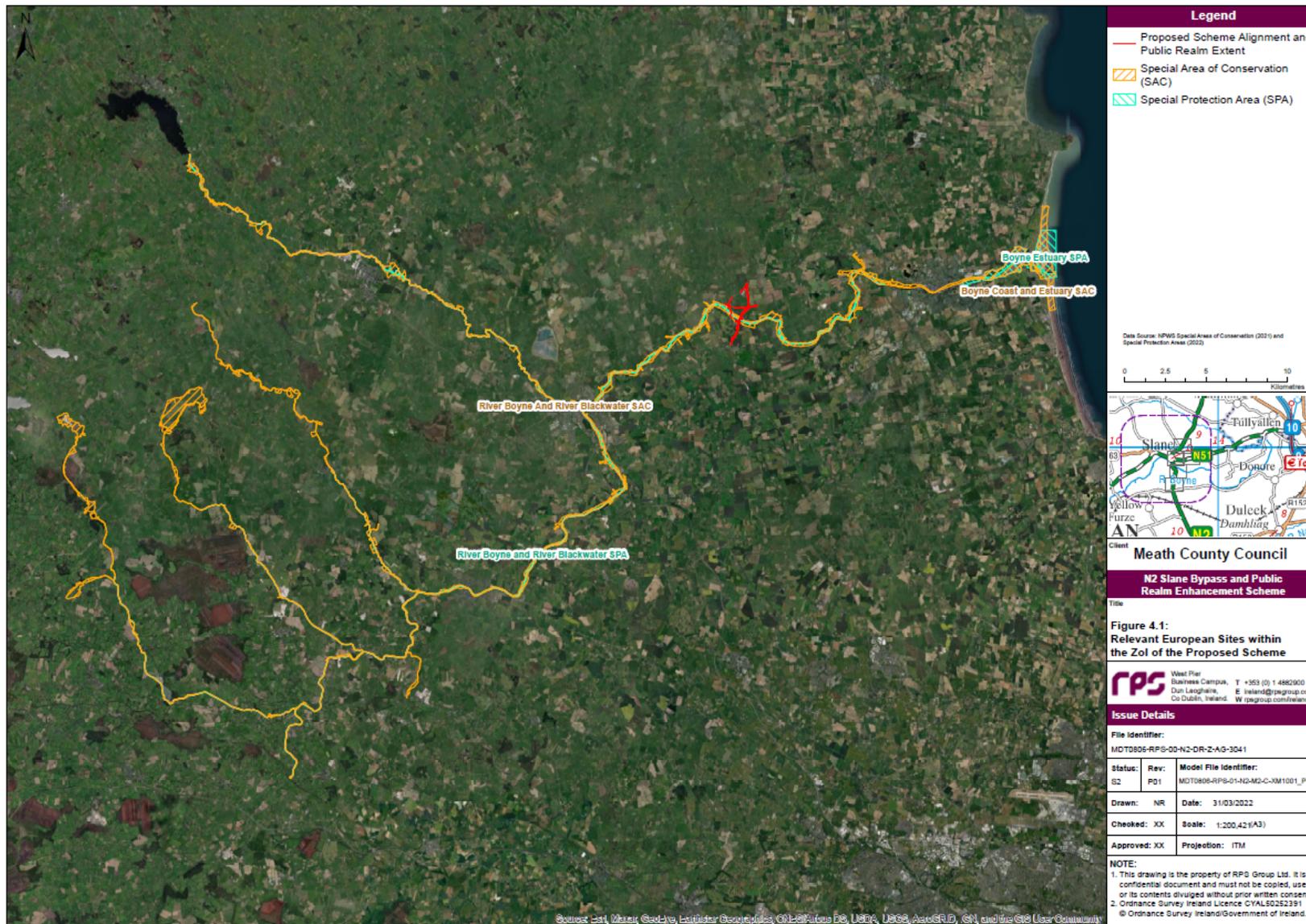
## REPORT TO INFORM SCREENING FOR APPROPRIATE ASSESSMENT

Site (Code), Distance from Proposed Works, Conservation Objectives Version & Date	Qualifying Interest(s) [code] * Priority Habitat / Special Conservation Interest(s)	Conservation Objective(s)	Connectivity (S-P-R)	Scoping for Further Assessment
Conservation Objectives Specific Version 1.0 (02/11/2015), (NPWS, 2015a).		capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs [7110] and a separate conservation objective has not been set.		
Girley (Drewstown) Bog SAC (002203), 26.8km west of the proposed scheme, Conservation Objectives Generic Version 8.0 (23/03/2021), (NPWS, 2021b).	<ul style="list-style-type: none"> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> </ul>	To maintain or restore the favourable conservation condition	No- there is no pathway identified between the proposed scheme and the European site, therefore it is excluded from further assessment.	Scoped Out.
White Lough, Ben Loughs and Lough Doo SAC (001810), 45km west of the proposed scheme, Conservation Objectives Generic Version 8.0 (23/03/2021), (NPWS, 2021c).	<ul style="list-style-type: none"> <li>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</li> <li>White-clawed Crayfish <i>Austropotamobius pallipes</i> [1092]</li> </ul>	To maintain or restore the favourable conservation condition	No- there is no pathway identified between the proposed scheme and the European site, therefore it is excluded from further assessment.	Scoped Out.
Lough Bane and Lough Glass SAC (002120), 40.8km west of the proposed scheme, Conservation Objectives Generic Version 8.0 (23/03/2021), (NPWS, 2021d).	<ul style="list-style-type: none"> <li>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</li> <li>White-clawed Crayfish <i>Austropotamobius pallipes</i> [1092]</li> </ul>	To maintain or restore the favourable conservation condition	No- there is no pathway identified between the proposed scheme and the European site, therefore it is excluded from further assessment.	Scoped Out.
Mount Hevey Bog SAC (002342), 41.7km south west of the proposed scheme, Conservation Objectives Specific Version 1.0 (21/03/2016), (NOWS, 2016).	<ul style="list-style-type: none"> <li>*Active raised bogs [7110]</li> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> <li>Depressions on peat substrates of the Rhynchosporion [7150]</li> </ul>	<p>To restore the favourable conservation condition</p> <hr/> <p>The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs [7110] and a separate conservation objective has not been set.</p> <p>Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat.</p>	No- there is no pathway identified between the proposed scheme and the European site, therefore it is excluded from further assessment.	Scoped Out.
Wooddown Bog SAC (002205), 51.7km west of the proposed scheme, Conservation Objectives Generic Version 8.0 (23/03/2021), (NPWS, 2021e).	<ul style="list-style-type: none"> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> </ul>	To maintain or restore the favourable conservation condition	No- there is no pathway identified between the proposed scheme and the European site, therefore it is excluded from further assessment.	Scoped Out.

## REPORT TO INFORM SCREENING FOR APPROPRIATE ASSESSMENT

Site (Code), Distance from Proposed Works, Conservation Objectives Version & Date	Qualifying Interest(s) [code] * Priority Habitat / Special Conservation Interest(s)	Conservation Objective(s)	Connectivity (S-P-R)	Scoping for Further Assessment
Lough Lene SAC (002121), 43.6km west of the proposed works, Conservation Objectives Generic Version 8.0 (23/03/2021), (NPWS, 2021f).	<ul style="list-style-type: none"> <li>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</li> <li>White-clawed Crayfish <i>Austropotamobius pallipes</i> [1092]</li> </ul>	To maintain or restore the favourable conservation condition	No- there is no pathway identified between the proposed scheme and the European site, therefore it is excluded from further assessment.	Scoped Out.
Raheenmore Bog SAC (000582), 65.9km south west of the proposed works, Conservation Objectives Specific Version 1.0 (02/11/2015), (NPWS, 2015b).	<ul style="list-style-type: none"> <li>*Active raised bogs [7110]</li> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> <li>Depressions on peat substrates of the Rhynchosporion [7150]</li> </ul>	<p>To restore the favourable conservation condition</p> <p>The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs [7110] and a separate conservation objective has not been set.</p> <p>Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat.</p>		
River Boyne and River Blackwater SPA (004232), proposed works are within SAC, Conservation Objectives Generic Version 8.0 (23/03/2021), (NPWS, 2021g).	<ul style="list-style-type: none"> <li><b>Kingfisher <i>Alecco atthis</i> [A229]</b></li> </ul>	To maintain or restore the favourable conservation condition	Yes- the proposed scheme is within the European site, therefore there is direct hydrological/ hydrogeological connectivity to QI habitats and/or species.	Scoped In.
Boyne Estuary SPA (004080), 13.17km east of the proposed works, Conservation Objectives Specific Version 1.0 (26/02/2013), (NPWS, 2013)	<ul style="list-style-type: none"> <li><b>Shelduck <i>Tadorna tadorna</i> [A048]</b></li> <li><b>Oystercatcher <i>Haematopus ostralegus</i> [A130]</b></li> <li><b>Golden Plover <i>Pluvialis apricaria</i> [A140]</b></li> <li><b>Grey Plover <i>Pluvialis squatarola</i> [A141]</b></li> <li><b>Lapwing <i>Vanellus vanellus</i> [A142]</b></li> <li><b>Knot <i>Calidris canutus</i> [A143]</b></li> <li><b>Sanderling <i>Calidris alba</i> [A144]</b></li> <li><b>Black-tailed Godwit <i>Limosa limosa</i> [A156]</b></li> <li><b>Redshank <i>Tringa tetanus</i> [A162]</b></li> <li><b>Turnstone <i>Arenaria interpres</i> [A169]</b></li> <li><b>Little Tern <i>Sterna albifrons</i> [A195]</b></li> <li><b>Wetlands [A999]</b></li> </ul>	To maintain the favourable conservation condition	Yes- the proposed scheme is upstream of the European site which support a range of both estuarine, coastal and wading birds as well terrestrial birds which use mud and sand flats as supporting habitat or use tidal flats as roosting areas. Therefore there is hydrological connectivity to QI habitats which may have indirect effects on species via the River Boyne. Furthermore, several of these species have the potential to occur either through commuting or foraging within the Zol of the proposed scheme.	Scoped In.

Figure 4.1: Relevant European Sites within the Zone of Influence of the Proposed Scheme



## 4.3 Hydrological Connectivity and Flood Risk

### 4.3.1 Hydrological Connectivity

Analysis of the EPA online mapper identified both the Boyne\_170 (IE\_EA\_07B042150) and the Mattock\_030 (IE\_EA\_07M010300) within the immediate footprint of the proposed scheme. The River Boyne is an integral part of the River Boyne and River Blackwater SAC & SPA (NPWS, 2021a and 2021g), and are hydrologically connected to the downstream Boyne Coast and Estuary SAC (NPWS, 2012) and Boyne Estuary SPA (NPWS, 2013). The River Mattock is located 2 km north of the Boyne at the northern end of the proposed scheme where it eventually drains into the River Boyne 6.5 km downstream.

The River Water Body Status (2013-2018) for the Boyne\_170 is 'Good' and is placed at 'Review' in relation to the risk of not meeting its Water Framework Directive (WFD) targets. The River Water Body Status (2013-2018) for the Mattock\_030 is 'Unassigned' and is 'At Risk' in relation to not meeting its Water Framework Directive (WFD) targets. The Boyne\_170 and Mattock\_030 are connected to several other watercourses including the Boyne\_160 (IE\_EA\_07B042100), the Boyne\_180 (IE\_EA\_07B042200) and Devlins\_020 (IE\_EA\_07D020300).

The Boyne and Mattock Rivers both travel in an easterly direction toward the Boyne Estuary transitional water body (IE\_EA\_010\_0100) located 11.4km downstream before discharging into the Boyne Estuary Plume Zone coastal waterbody. The Transitional Waterbody Status (2013-2018) for the Boyne Estuary is 'Moderate' and is 'At Risk' of failing to meet its Water Framework Directive (WFD) targets. The Coastal Waterbody status (2013-2018) for the Boyne Estuary Plume Zone is 'Moderate' and is 'At Risk' of failing to meet its Water Framework Directive (WFD) targets.

The proposed scheme is within the Trim (IE\_EA\_G\_002), Wilkinstown (IE\_EA\_G\_010), and Donore (IE\_EA\_G\_021) groundwater bodies. The Wilkinstown and Donore groundwater bodies are classified as being of 'Good' status, for the period 2013-2018 and are 'Not At Risk' of failing to meet WFD targets. The Trim groundwater body is classified as being of 'Good' status, for the period 2013-2018 and is 'At Risk' of failing to meet WFD targets.

### 4.3.2 Flood Risk

Due to the topography of the proposed scheme site, the likelihood of flooding does not extend far into the development location. There are minor flood plains upstream and downstream of the proposed scheme site due to the meandering nature of the River Boyne, and the river banks do not extend far into the riparian zones. There have been several flood events recorded in close proximity to the proposed scheme in the past thirty years, and the more recent of these was in 2008 when a private dwelling in the Harlinstown area recorded flooding on their property.

The OPW Flood Risk Management Maps<sup>7</sup> indicate low probability (0.1% AEP) flood risk for within the route corridor and bridge of the proposed scheme. The flood maps also indicate low probability (0.1% AEP<sup>8</sup>) coastal flood risk along River Boyne, where it is subject to tidal influence. The Flood Risk Assessment (FRA) (RPS, 2021) additionally concluded flood risk to be low. The FRA assessed the potential impact of the proposed route corridor and bridge on fluvial, pluvial, and groundwater flooding and concluded that no section the proposed route corridor will be at risk of flooding.

A review of local flooding history<sup>7</sup> where the proposed scheme interacts with surface water identified a number of flood events in close proximity to the route corridor. Recorded events are as follows:

- Harlinstown Slane, private dwelling in the Harlinstown area recorded flooding on their property (August, 2008, 2.7 km northwest);
- The River banks and Boyne Bridge are recorded to have flooded significantly in 1990 and is not noted to be a recurring event (February, 1990, 0.5km west);

<sup>7</sup> Available online at <http://www.floodinfo.ie/map/floodmaps/#> Accessed April 2021.

<sup>8</sup> Low Probability flood events have an indicative 1-in-a-1000 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 0.1%.

- Four stretches of the Boyne from Slane to Drogheda are recorded to have flooded within the River Boyne flood plain. These areas are noted to flood 1 to 2 times per year making adjacent roads liable to flooding (Recurring, 1.3km west);
- Patrick Terrace, Slane along the N51 is recorded to flood after heavy rain due to inadequate town drainage (Recurring, 1.5km west);
- The River Boyne is recorded to have flooded in close proximity to Slane Castle. It was noted as the second highest in sixty years at Slane Castle behind that of 1954. It was potentially a result of channel clearance carried out close to the time (November 2000, 2km west); and
- Near Knockmooney along the existing N2. Flooding was recorded as a result of a dip in the road after heavy rainfall. This is noted to occur once per year (Recurring, 3.4km northeast).

## 4.4 Species Relevant to European Sites

### 4.4.1 Qualifying Interests

#### 4.4.1.1 Mammals

Desk study results of the National Biodiversity Data Centre (NBDC)<sup>12</sup> online database returned records for one QI species, European otter *Lutra lutra*. The most recent record is from 2018 (**Table 4-2**). Anecdotally, otter are well-known to occur within the Bone Valley and are generally active along this stretch of the River Boyne, largely utilising commuting and foraging territories. Multiple field surveys carried out between 2018 and 2020 along the River Boyne in respect of the proposed scheme identified evidence of otter trails, slides and sprainting.

Otter activity was particularly noted in association with an outfall pipe running immediately west of the proposed scheme down toward the Boyne. Potential holt territory was also noted between the existing N2 road bridge and the proposed new river crossing. The presence of a potential holt was further identified 0.35km west of the proposed scheme. Evidence of otter activity is present both upstream and downstream of the proposed scheme.

**Table 4-2: Qualifying Interest Species Returned from NBDC Data Search**

Species Name	Record Count	Date of Last Record	Habitat Preferences <sup>9</sup>
<i>Mammals</i>			
European Otter <i>Lutra lutra</i>	18	16/09/2018	Lakes and ponds, watercourses, riparian woodland, estuaries, sea inlets and bays, saltmarshes, swamps.

#### 4.4.1.2 Fish

The River Boyne and River Blackwater SAC is designated for containing important populations of QI river lamprey and Atlantic salmon. The main channel of the River Boyne is a designated salmonid river (S.I. No. 293 of 1988 Quality of Salmonid Waters Regulations). Spawning sites for Atlantic salmon (and brown trout) are confined principally to the tributaries and headwaters as there are very limited gravel deposits in the main channel (O’Grady 1998<sup>10</sup>, NPWS, 2014). O’Grady also notes that smaller tributaries support salmonid nursery areas while the larger streams and the main channel of the Boyne supports adult brown trout and salmon parr. Atlantic salmon run the Boyne almost every month of the year.

The River Boyne and River Blackwater SAC is also designated for containing important populations of river lamprey which are present in the lower reaches of the Boyne River. High densities of juvenile lamprey (likely to be both river and brook lamprey) were recorded at Slane Bridge with nursery habitat noted as widely available within the lower Boyne (O’Connor, 2006<sup>11</sup>). The presence of several large weirs along the river may

<sup>9</sup> Available online at <https://species.biodiversityireland.ie/>. Accessed April 2021.

<sup>10</sup> O’Grady M.F. 1998. *The Boyne: Studies of Irish Rivers and Lakes*, Ed. Christopher Moriarty. XXVII Congress of Societas Internationalis Limnologiae (SIL), Dublin.

<sup>11</sup> O’Connor W. 2006. *A survey of juvenile lamprey populations in the Boyne Catchment*. Irish Wildlife Manuals, No. 24 National Parks and Wildlife Service, Department of Environment, Heritage and Local

restrict the movement of both species along this stretch. Lamprey species were observed in lower densities upstream of Slane Bridge during the same survey.

#### 4.4.1.3 Invasive Alien Plant and Animal Species

A search of the National Biodiversity Data Centre (NBDC) database returned records of the presence of three scheduled invasive alien species (**Table 4-3**). The field surveys did not record the presence of scheduled invasive species within the footprint of the proposed scheme, however third schedule IAPS were noted outside of the proposed developemnt area along the River Boyne (Himalayan Balsam *Impatiens glandulifera*) in both upstream and downstream locations. Japanese Knotweed *Fallopia japonica* was further identified 0.6km east of the proposed scheme along Fennor road. Eastern Grey Squirrel are common throughout the wider study area.

**Table 4-3: Third Schedule Alien Plants and Animals Returned from NBDC Data Search.**

Species Name	Record Count	Date of Last Record	Risk of Impact	Third Schedule (S.I. No. 477/2011)
Indian Balsam <i>Impatiens glandulifera</i>	1	12/07/2014	High	Yes
Himalayan Balsam <i>Impatiens glandulifera</i>	1	12/07/2014	High	Yes
Eastern Grey Squirrel <i>Sciurus carolinensis</i>	6	31/12/2012	High	Yes

#### 4.4.2 Special Conservation Interests

The desk study returned records for 32 SCI bird species from the preceding 10 years (**Table 4-4**). Potentially suitable foraging, resting, commuting and/or nesting area with the Zol of the proposed scheme was identified for up to twelve of these species (e.g. habitat preference for agricultural fields, rough pastures, estuaries, streams, river systems and wetlands). Coastal and/or wintering birds are not deemed to be present within the proposed scheme area due to lack of suitable habitat and timings of the proposed scheme, respectively.

The River Boyne and River Blackwater SPA is designated for containing important populations of SCI Kingfisher. Field surveys have not identified active nesting areas however the proposed scheme is within active foraging territories of the SCI bird. A survey conducted in 2008 recorded 20-22 Kingfisher territories within the SPA.

The proposed scheme area lies outside of core foraging, resting, commuting and/or nesting territories of remaining SCI birds.

**Table 4-4: Special Conservation Interest Bird data returned from NBDC search**

Species Name	Record Count	Date of Last Record	Habitat Preferences
Black-headed Gull <i>Larus ridibundus</i>	17	31/12/2011	Resident along all Irish coasts, wintering inland also. Breeding nests on the ground in wetland areas, i.e. bogs, marshes, manmade lakes. Widespread across agricultural fields, and urban areas.
Black-legged Kittiwake <i>Rissa tridactyla</i>	1	31/12/2011	Summer visitor to steep coastal cliffs along all Irish coasts. Disperses to the open ocean in winter and less frequently seen. Breeds on steep sea cliffs where it builds a nesting platform on the most vertical and sometimes improbably steep areas. Will occasionally use man-made structures such as old buildings.
Common Coot <i>Fulica atra</i>	11	31/12/2011	Resident at ponds and lakes throughout Ireland. Wintering in lakes, coastal estuaries and river systems.
Common Goldeneye <i>Bucephala clangula</i>	1	31/12/2011	Winter visitor between November and April on coastal estuaries and inland lakes.

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Species Name	Record Count	Date of Last Record	Habitat Preferences
Common Greenshank <i>Tringa nebularia</i>	1	31/12/2011	Winter visitor to estuaries from September to April
Common Kingfisher <i>Alcedo atthis</i>	32	21/09/2017	Resident on Irish streams, rivers and canals. Wintering in lakes and coasts during extended poor weather
Common Pochard <i>Aythya ferina</i>	2	31/12/2011	Scarce summer visitor and widespread winter migrant between October & February to large shallow eutrophic waters i.e. well-vegetated marshes, swamps and slow flowing rivers.
Common Redshank <i>Tringa totanus</i>	6	31/12/2011	Resident and visitor populations. A common wader of wetlands throughout the country, though mainly coastal estuaries in winter. Nests in grassy tussock, in wet, marshy areas and occasionally heather. Breeds mainly in midlands.
Common Shelduck <i>Tadorna tadorna</i>	2	31/12/2011	Resident and winter migrant to sheltered estuaries or tidal mudflats. Breeds in open areas along seashores, larger lakes and rivers. Nest in holes in banks, trees, occasionally strawstacks or buildings. Increasing displacement to inland sites.
Eurasian Curlew <i>Numenius arquata</i>	16	20/12/2014	Winter visitor to Irish wetlands. Breeding throughout Ireland in floodplains, bog lands, meadows, rough pasture and heather
Eurasian Oystercatcher <i>Haematopus ostralegus</i>	1	31/12/2011	Resident & winter visitor to all coastal habitats, and particularly favour open sandy coasts. Nests principally on shingle beaches, dunes, salt marshes and rocky shores around the coast.
Eurasian Teal <i>Anas crecca</i>	8	31/12/2011	Resident & winter migrant. Wetland preferences in covered freshwater lakes, pools and small upland streams away from the coast. Wintering in coastal lagoons and estuaries and inland marshes, lakes, ponds and turloughs
Eurasian Wigeon <i>Anas penelope</i>	3	31/12/2011	Fairly widespread and common winter visitor. Can be found in flocks up to and over 1000 birds on large wetlands and waterbodies. Non-breeding in Ireland.
European Golden Plover <i>Pluvialis apricaria</i>	10	31/12/2011	Widespread distribution during wintering in coastal and inland habitats. Summer populations restricted to uplands in NW Ireland with heather moors, blanket bogs, and acidic grasslands.
Great Cormorant <i>Phalacrocorax carbo</i>	19	31/12/2011	Irish resident either at sea or on inland lakes and rivers. Breeds in colonies mainly around the coast of Ireland, with some birds breeding inland.
Grey Heron <i>Ardea cinerea</i>	49	31/12/2011	Common resident at wetlands, estuaries and along rivers throughout Ireland
Greylag Goose <i>Anser anser</i>	4	31/12/2011	Winter migrant between November & April wintering mostly at coastal sites near estuaries and grasslands for feeding. Feral birds are present year-round. Breeds by lakes and reservoirs, with the nest site often close to water and hidden in reeds or other waterside vegetation.
Hen Harrier <i>Circus cyaneus</i>	1	31/12/2011	Winter visitor to low-lying countryside along the coast. Breeding in upland areas and bogs confined to heather moorland and young forestry plantations
Herring Gull <i>Larus argentatus</i>	10	31/12/2011	Resident along all Irish coasts, breeding inland also. Widespread distribution
Lesser Black-backed Gull <i>Larus fuscus</i>	3	14/05/2012	Summer populations are distributed across the Irish coastline including offshore islands, islands in inland lakes, sand dunes and coastal cliffs. Winter visitors to more inland lakes
Little Egret <i>Egretta garzetta</i>	2	31/12/2011	
Little Grebe <i>Tachybaptus ruficollis</i>	12	31/12/2011	Resident on vegetated ponds and lakes throughout Ireland. Wintering habitat extends to include ephemeral wetlands and are often encountered on sheltered coasts, estuaries and coastal lakes and lagoons
Mallard <i>Anas platyrhynchos</i>	90	31/12/2011	Resident across all wetland habitats in Ireland.
Merlin <i>Falco columbarius</i>	2	31/12/2011	Favours upland habitats in summer and lowland and coastal sites October-April. Nesting on the ground on moorland, mountain and blanket bog. Also nests in woodland and has taken to nesting in forestry plantations adjacent to moorland.

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Species Name	Record Count	Date of Last Record	Habitat Preferences
Mew Gull <i>Larus canus</i>	5	31/12/2011	Widespread across Irish coastland. Nests on the ground in a wide variety of situations, including, islands, cliffs and shingle banks. Breeds on the coast and inland lakes in the west of Ireland.
Northern Fulmar <i>Fulmarus glacialis</i>	1	31/12/2011	Can be seen in Irish waters throughout the year, but winters at sea. Mainly breeds on sea cliffs, but will nest on level ground, on buildings and in burrows and crevasses.
Northern Lapwing <i>Vanellus vanellus</i>	18	31/12/2011	Irish resident and summer visitor across wetlands, pasture and rough land adjacent to bogs. Breed on open farmland, and bare fields.
Northern Pintail <i>Anas acuta</i>	2	31/12/2011	Local winter visitor to wetlands throughout Ireland from October to March. In winter, they form large flocks on brackish coastal lagoons, in estuaries and on large inland lakes.
Northern Shoveler <i>Anas clypeata</i>	1	31/12/2011	Resident & winter migrant. Most occur between October and March. Prefer shallow eutrophic waters rich in plankton and occur on a variety of habitats while wintering in Ireland, including coastal estuaries, lagoons and inland lakes and callows.
Peregrine Falcon <i>Falco peregrinus</i>	4	31/12/2011	Widespread resident in Ireland favouring coastal sites and cities with high vantage points
Red-breasted Merganser <i>Mergus serrator</i>	2	31/12/2011	Resident and winter visitor to brackish and marine waters, particularly in shallow protected estuaries and bays and lagoons, and also offshore. Nest on sheltered lakes and large rivers throughout the west and north of the country, though they are largely absent from Clare and a few pairs have been recorded in Wexford.
Ringed Plover <i>Charadrius hiaticula</i>	1	31/12/2011	Resident & winter visitor. Peak numbers between August and early October. Winter around the entire coastline but are quite sparse along the north and southeast coasts. Mostly recorded along sandy stretches or along the upper shores of estuaries and non-estuarine coastline.
Tufted Duck <i>Aythya fuligula</i>	3	31/12/2011	Resident & winter visitor. Preference for large open lakes in lowland areas for breeding, where nests are built in waterside vegetation. Also seen on town lakes, canals and slow-moving rivers.

## 5 SCREENING ASSESSMENT

### 5.1 Introduction

Appropriate Assessment is not required where (i) the proposed scheme is not connected with, or necessary to the management of any European site and (ii) where the Project, alone and in combination with other plans or projects, is not likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

### 5.2 Summary of Information Required

The screening assessment for AA follows the methodologies set out in **Section 3**, and an analysis of the following information:

- Zol of effect from the proposed scheme; and
- Distribution of QIs and SCIs in relation to the Zol.

### 5.3 Assessment of Source Pathway-Receptor Model

As described in the methodology (**Section 3**), the Screening for AA Report assessment adopts a comprehensive and precautionary approach for which the starting point is a complete list of all QIs/SCIs of European sites in Ireland. In this context, **Table 5-1** assesses a specific source-pathway-receptor model for this proposed scheme.

**Table 5-1: Source-Pathway-Receptor Model for the proposed scheme.**

Phase	Source of Potential Effect	Description of Potential Effect Pathway	Potential Zone of Influence of Effect
Construction	Noise, vibration, lighting and human presence during the movements of vehicles and staff associated with construction activities.	Noise or other construction-related disturbance could reduce the ability of populations of Qualifying Interest/ Special Conservation Interest species to forage, roost or breed.	Varies by species. Generally assessed within 500 m of the proposed scheme footprint for wintering birds (see Madsen, 1985; Smit & Visser, 1993; and Rees <i>et al.</i> , 2005). However, distance can be significantly lower (e.g. 150 m for otter underground sites (NRA, 2006), or higher (e.g. hen harriers may take flight when nesting at up to 750m from disturbance (Whitfield <i>et al.</i> , 2008).
	Surface water pollution carrying suspended silt or contaminants into local watercourses with potential for direct and indirect downstream effects.	Silt, hydrocarbons, and/or other contaminants (oils, fuels, etc.) may enter nearby watercourses through surface water run-off.	Surface water run-off carrying suspended silt or contaminants into local watercourses.
	Spread of invasive alien species during the construction of the proposed scheme.	Construction activities could lead to the dispersal of scheduled invasive species either via machinery, materials, clothing or wild animals.	The Zone of Influence of effects for spread of terrestrial invasive species is difficult to accurately estimate, as plant fragments may be spread on tyre treads to distant unrelated sites. In relation to water-borne spread of vegetation, the Zone of Influence generally is restricted to the surface water Catchment Management Unit.
	Changes of groundwater quality, yield and/or flow paths associated with earthworks during construction.	The construction activities could interfere with groundwater quality, yields and/or flow paths, potentially affecting the water quality or habitats dependent on groundwater supply.	The potential Zone of Influence of effects from earthworks to ground water quality, flow or/ or yield is difficult to accurately estimate as it will depend on factors including the depth and intrusion of excavations, and time of year (related to water levels). As a precautionary measure, a reasonable worst-case spatial Zone of Influence is considered to be 500 m from the point of excavation; which is a precautionary doubling of the 250 m stated as the potential Zone of Influence from intrusive

Phase	Source of Potential Effect	Description of Potential Effect Pathway	Potential Zone of Influence of Effect
			excavations to sensitive upland peatland sites (SEPA, 2014).
	Habitat destruction/loss	Land take for the construction of, or access to the proposed scheme, and trimming/cutting of trees/hedgerows. This can result in the loss of viable habitat and interfere with the feeding routes and waterflow for individual species.	Land take, habitat fragmentation and habitat deterioration and alteration within and adjacent to the boundaries of European sites associated with the proposed scheme. The favourable reference range of QI species is also considered, the zone of influence with therefore differ with species.
	Habitat fragmentation	Land take for the construction of, or access to the proposed scheme, and trimming/cutting of trees/hedgerows. This can result in the loss of viable habitat causing a fragmented landscape, reduced connectivity between habitats and interference for individual species.	
	Habitat deterioration and alteration	Change in land use and activity (i.e. land take and construction activities) causing a negative effect on local ecosystems used by QIs and SCIs. Deterioration and alteration of both terrestrial and freshwater habitats such as breeding sites/resting place and riverbed habitat.	
	Air pollution	Construction activities could lead to the dispersal of dust and other unwanted air borne pollutants as a result of construction materials, earthworks and the movement of vehicles.	The potential impact of the proposed scheme on sensitive ecosystems is limited to the local level. The potential for impact on an ecological site is highest within 200m of the proposed scheme (TII, 2011).
Operation	Noise, vibration, lighting and human presence during movements of vehicles and staff associated with construction activities.	Noise or other construction-related disturbance could reduce the ability of populations of Qualifying Interest/ Special Conservation Interest species to forage, roost or breed.	Varies by species. Generally assessed within 500 m of the proposed scheme footprint for wintering birds (see Madsen, 1985; Smit & Visser, 1993; and Rees <i>et al.</i> , 2005). However, distance can be significantly lower (e.g. 150 m for otter underground sites (NRA, 2006), or higher (e.g. hen harriers may take flight when nesting at up to 750 m from disturbance (Whitfield <i>et al.</i> , 2008).
	Surface water run-off carrying suspended silt or contaminants into local watercourses.	Silt, hydrocarbons, and/or other contaminants (oils, fuels, etc.) may enter nearby watercourses through surface water run-off.	Surface water run-off carrying suspended silt or contaminants into local watercourses.
	Habitat fragmentation	The presence of the infrastructure itself resulting in the loss of viable habitat causing a fragmented landscape, reduced connectivity between habitats and loss or	Land take, habitat fragmentation and habitat deterioration and alteration within and adjacent to the boundaries of European sites associated with the proposed scheme. The favourable reference range of QI species is also considered, the zone of influence with therefore differ with species.

Phase	Source of Potential Effect	Description of Potential Effect Pathway	Potential Zone of Influence of Effect
		reduction of available resources.	
	Habitat deterioration and alteration	The presence of the infrastructure itself resulting in a negative effect on local ecosystems used by QIs and SCIs. Deterioration and alteration of both terrestrial and freshwater habitats such as breeding sites/resting place and riverbed habitat.	
	Air pollution	Operational activities could lead to the dispersal of dust and other unwanted air borne pollutants as a result of the movement of vehicles.	The potential impact of the proposed scheme on sensitive ecosystems is limited to the local level. The potential for impact on an ecological site is highest within 200m of the proposed scheme (TII, 2011).
	Barrier to connectivity	There is potential for the proposed bridge crossing at the River Boyne to pose a barrier to connectivity to QIs and SCIs.	The populations of QIs and SCIs potentially affected are like those associated with the River Boyne and River Blackwater SPA, the Boyne Estuary SPA and the River Boyne and River Blackwater SAC.
	Collision risk (bird strike)	There is potential for the proposed bridge crossing at the River Boyne to pose a collision risk to birds in flight (i.e. foraging and commuting).	The bird populations potentially affected are most likely attributed to the SCIs of the River Boyne and River Blackwater SPA and the Boyne Estuary SPA.

### 5.3.1 Scoping of Effects

#### 5.3.1.1 Noise, Vibration, Lighting and Human Presence

The effects of noise, vibration, lighting, and human presence on SCIs and/or QI habitats and species, during the construction and operation of the proposed scheme, have been assessed. It has been identified that, due to the proximity to the Boyne River (e.g. proposed River Boyne bridge crossing), a core habitat for several QI and SCI species, noise, vibration and human disturbance during both the construction and operational phases may impact SCI and or QI species which are either known or are likely to occur within Zol of the proposed scheme.

In the absence of mitigation measures to control noise vibration and human disturbance during the construction and operation of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out.

#### 5.3.1.2 Surface Water Run-off

The effects of surface water pollution, from suspended silt or contaminants, on SCIs and/or QIs, during the construction and operation of the proposed scheme, have been assessed. It has been identified that, due to the proximity to the Boyne River, a core habitat for a number of QI and SCI species, surface water pollution during both the construction and operational phases may impact SCIs and or QI species and habitats which are either known or are likely to occur within Zol of the proposed scheme.

In the absence of mitigation measures to control surface water pollution during construction and operation of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out.

### 5.3.1.3 Disturbance of Invasive Species

The effects of disturbance of invasive species on QIs, during the construction and operation of the proposed scheme, have been assessed. The desk study results indicate that there are no known scheduled invasive plant species within the immediate footprint of the proposed scheme. This has been confirmed during seasonally appropriate surveys to date, although species such as Himalayan balsam *Impatiens glandulifera* in particular are widespread along upstream and downstream sections of the River Boyne, and can readily become established on suitably exposed soils or bare ground. The proposed scheme is not deemed to affect mobile invasive animal species in the area. The effects of disturbance of invasive animal species only, are scoped out from further assessment. The effects of disturbance of invasive plant species may impact SCIs and or QI species and habitats which are either known or are likely to occur within Zol of the proposed scheme.

On a precautionary basis, in the absence of mitigation measures to control the spread of invasive plant species during construction of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out. No operational impacts are foreseen.

### 5.3.1.4 Changes in Groundwater Quality, Yield and/or Flow paths

The effects of changes of yield of groundwater associated with earthworks on SCIs and/or QI habitats and species, during the construction and operational phase of the proposed works, have been assessed. There are no groundwater dependant habitats within the footprint of the proposed scheme, however indirect effects to water quality may occur in the Boyne floodplain through groundwater discharge to the Boyne River.

In the absence of mitigation measures to control surface water pollution during construction and operation of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out. No operational impacts are foreseen.

### 5.3.1.5 Habitats

#### 5.3.1.5.1 Habitat Destruction/Loss

The effects of habitat destruction/loss on SCI fauna species and/or QI habitats and species, during the construction and operation of the proposed scheme, have been assessed. The desk study results indicate that there are QI and SCI species utilising the proposed scheme study area. This has been confirmed during seasonally appropriate surveys to date. Both temporary and permanent removal of habitat is required and loss of Annex I habitat may occur as a result of the construction of the proposed River Boyne bridge crossing. To facilitate this element of the proposed scheme, works are required within the River Boyne and River Blackwater SAC.

Therefore, in the absence of mitigation measures to control habitat destruction/loss during the construction of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out. No habitat destruction during the operational phase is foreseen.

#### 5.3.1.5.2 Habitat Fragmentation

The effects of habitat fragmentation on SCI fauna species and/or QI habitats and species, during the construction and operation of the proposed scheme, have been assessed. The desk study results indicate that there are QI and SCI species utilising the proposed scheme study area. This has been confirmed during seasonally appropriate surveys to date. During construction, both temporary and permanent removal of habitat is required, therefore contributing to habitat fragmentation at a local level and within the wider landscape. Furthermore, in order to facilitate the proposed Boyne bridge crossing, works are required within the River Boyne and River Blackwater SAC. During operation, the presence of the proposed infrastructure may also contribute to habitat fragmentation.

Therefore, in the absence of mitigation measures to control habitat fragmentation during the construction and operation of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out.

### 5.3.1.5.3 Habitat Deterioration and Alteration

The effects of habitat deterioration and alteration on SCI fauna species and/or QI habitats and species, during the construction and operation of the proposed scheme, have been assessed. The desk study results indicate that there are QI and SCI species utilising the proposed scheme study area. This has been confirmed during seasonally appropriate surveys to date. During construction, the proposed scheme will bring about a change in land use, an increase in activity and land take. This will potentially have a negative effect on the surrounding environment and associated ecological receptors through deterioration and alteration of the former habitats present. During operation, the presence of the proposed infrastructure may also contribute to habitat deterioration and alteration.

Therefore, in the absence of mitigation measures to control habitat deterioration and alteration during the construction and operation of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out.

### 5.3.1.6 Air Pollution

The effects of air pollution on SCIs and/or QIs, during the construction and operation of the proposed scheme, have been assessed. It has been identified that, due to the intersection and proximity of the proposed scheme (within 200m) with the River Boyne and River Blackwater SPA and the River Boyne and River Blackwater SAC, air pollution during both the construction and operational phases may impact SCIs and or QI species and habitats which are either known or are likely to occur within Zol of the proposed scheme.

In the absence of mitigation measures to control air pollution during construction and operation of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out.

### 5.3.1.7 Barrier to Connectivity

The effects of barriers to connectivity as a result of the presence of the proposed scheme (i.e. bridge crossing) on SCIs and/or QIs, during the construction and operation of the proposed scheme, have been assessed. It has been identified that, during operation due to the potential obstruction of the bridge itself (and associated lighting; see **Section 5.3.1.1**), the proposed River Boyne bridge crossing during both the construction and operational phases may impact SCIs and or QI species (i.e. commuting, foarging, migration) which are either known or are likely to occur within Zol of the proposed scheme.

In the absence of mitigation measures to control barrier to connectivity during operation of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out. No construction phase impacts are foreseen.

### 5.3.1.8 Collision Risk (Bird Strike)

The effects of collision risk as a result of the presence of the proposed scheme (i.e. bridge crossing) on SCIs and/or QIs, during the construction and operation of the proposed scheme, have been assessed. It has been identified that, due to the potential obstruction of the bridge itself, the proposed River Boyne bridge crossing during both the construction and operational phases may impact SCIs (commuting and foarging) which are either known or are likely to occur within Zol of the proposed scheme.

In the absence of mitigation measures to control collision risk during operation of the proposed scheme, the potential for LSEs to the European site(s) cannot be ruled out. No construction phase impacts are foreseen.

## 5.3.2 Key Findings

The key findings of this section are that:

- In the absence of mitigation measures during the *construction phase* to control
  - Noise, vibration, lighting and human presence;
  - Surface water pollution;
  - The spread of invasive plant species;

- Changes in groundwater quality, yield and/or flow paths;
- Habitat destruction/loss;
- Habitat fragmentation;
- Habitat deterioration and alteration; and
- Air Pollution

the potential for LSEs to the European site(s) cannot be ruled out.

- In the absence of mitigation measures during the *operational phase* to control
  - Noise, vibration, lighting and human presence;
  - Surface water pollution;
  - Habitat fragmentation;
  - Habitat deterioration and alteration;
  - Air Pollution;
  - Barrier to Connectivity; and
  - Collision Risk (Bird Strike).

the potential for LSEs to the European site(s) cannot be ruled out.

## 5.4 In-Combination Effects

Legislation, guidance and case law (see **Section 1.3** and **Section 3.1**) requires that in-combination effects with other plans or projects are considered. On this basis, a range of other plans and projects were considered in terms of their potential to have in-combination effects with the proposed scheme.

The assessment of in-combination effects has regard for developments potentially affecting River Boyne and River Blackwater SAC, Boyne Coast and Estuary SAC, River Boyne and River Blackwater SPA, and Boyne Estuary SPA, with which a potential pathway has been identified.

### 5.4.1.1 Plans

A search was conducted of national, regional and local plans which were deemed relevant to the proposed scheme. The list is not exhaustive of all plans and programmes, but instead focuses on plans which may result in in-combination effect within relevant European sites. Plans identified are discussed below.

#### 5.4.1.1.1 National Development Plan

The National Development Plan 2018-2027 (Government of Ireland, 2018), which was subject to both SEA and AA, designates a number of Strategic Outcomes and Priorities of the plan including Regional Connectivity, Strengthened Rural Economies and Communities, and Sustainable Management of Water and other Environmental Resources. The National Development Plan highlights the need for investment in road networks to increase accessibility and connectivity throughout Ireland. Investment priorities over the period 2018-2027 assign €4.5 billion investment under the National Development Plan to local and regional roads, while Local Authorities are planning to progress a wide range of regional and local roads projects across the country.

These Strategic Priorities carry the potential for in-combination impacts with the proposed scheme on a variety of potential receptors, through pathways of habitat fragmentation/destruction, increased disturbance, and surface/groundwater pollution. Such individual projects arising from these priorities will, however, be subject to their own AA requirements. The National Development Plan 2018-2027 also sets biodiversity as a priority (i.e. Enhanced Amenity and Heritage – National Strategic outcome 7) and apportions €1.4 billion further support and deliver compliance with the EU's Habitats Directive.

Thus, the in-combination impacts from the National Development Plan 2018-2027 with the proposed scheme are not predicted to result in any Likely Significant Effects to any European site(s).

#### 5.4.1.1.2 National Biodiversity Action Plan 2017-2021

The National Biodiversity Action Plan for 2017-2021 demonstrates Ireland’s continuing commitment to meeting and acting on its obligations to protect biodiversity for the benefit of through a series of targeted strategies and actions. As the overall aim of this plan is to protect biodiversity and to continue and improve the transposition of the EU Habitats Directive and the EU Birds Directive into national legislation, no in-combination impacts from the National Biodiversity Action Plan 2017-2021 with the proposed scheme are predicted.

#### 5.4.1.1.3 Meath Development Plan 2013-2019; 2020-2026 (in draft)

The Meath County Development Plan 2013-2019 (MCC, 2016) identifies several areas of investment for the county. Of note is the completion of the Boyne Greenway which offers the potential of LSEs to several European sites. However, such projects arising will be subject to their own AA requirements. Furthermore, the county development plan states the avoidance of damage to such sites during the planning and construction of any cycle/pedestrian ways along the banks of the River Boyne or River Blackwater. County development plans through their biodiversity objectives ensure that all developments relating to movement and transport infrastructure are subject to Article 6 EU Habitats Directive Assessment to ensure that there are no likely significant effects on the integrity of any European site(s).

MOV OBJ 29

*“To support and facilitate the delivery of the bypassing of Slane, which is considered to comprise essential infrastructural development and to construct same subject to obtaining the relevant development consents required and to reserve and protect route option corridors from development which would interfere with the provision of the project.”*

The Meath County Development Plan 2013-2019 also sets out several relevant biodiversity objectives, including:

NH POL 5:

*“To permit development on or adjacent to designated Special Areas of Conservation, Special Protection Areas, National Heritage Area or those proposed to be designated over the period of the plan, only where an assessment carried out to the satisfaction of the Meath County Council, in consultation with National Parks and Wildlife Service, indicates that it will have no significant adverse effect on the integrity of the site.”; and*

NH OBJ 2:

*“To ensure an Appropriate Assessment in accordance with Article 6(3) and Article 6(4) of the Habitats Directive, and in accordance with the Department of Environment, Heritage and Local Government Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, 2009 and relevant EPA and European Commission guidance documents, is carried out in respect of any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect on a Natura 2000 site(s), either individually or in-combination with other plans or projects, in view of the site’s conservation objectives.”*

The draft Meath County Development Plan 2020-2026 (in draft) continues with such investment principles, supporting the N2 Slane bypass proposal subject to its appropriate assessment proceedings. As such, no in-combination impacts are foreseen.

RPO8.10

*“The RSES supports appraisal and or delivery of the road projects set out in Table 8.4 including N2 Slane Bypass subject to the outcome of appropriate environmental assessment and the planning process.”*

#### 5.4.1.1.4 Slane Local Area Plan 2009-2015

The Slane Local Area Plan (LAP) 2009 – 2015 was prepared by Meath County Council to replace the existing Slane Village Plan as contained in the County Development Plan 2001 – 2007. The LAP was subject to SEA and AA and further identifies the development of Slane Bypass as a positive and key piece of transport infrastructure which will benefit Slane village and alleviate the difficulties associated with high traffic

volumes. Slane LAP recognises and supports the biodiversity richness associated with the Boyne Valley and aims to protect and conserve biodiversity within the plan area and on adjoining lands. Projects arising within the plan area may offer the potential of LSEs to several European sites. However, such projects arising will be subject to their own AA requirements.

Thus, the in-combination impacts from the Slane Local Area Plan 2009-2015 with the proposed scheme are not predicted to result in any Likely Significant Effects to any European site(s).

### 5.4.1.2 Water Quality

Water Framework Directive provides a framework for the protection and improvement of rivers, lakes, marine and groundwaters in addition to water-dependent habitats. The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the protection of good and high-water quality status where it exists. The second cycle River Basin Management Plan, covering the period 2018 – 2021, was published in April 2018. The Plan sets out a proposed framework for the protection and improvement of Ireland’s water environment in line with Water Framework Directive objectives.

There are binding obligations on all Irish local authorities, including Meath County Council, to achieve good status of surface waters, under the terms of the EU Water Framework Directive 2000/60/EC. In relation to surface water quality, the publication of the River Basin Management Report for Ireland has highlighted the poor condition of many river bodies. The EPA is renewing its focus on improving water quality in its second River Basin Management Plan, and the Boyne is not listed as a prioritised area for action, due to its positive water quality status. This is also reflected in the current development plan for County Meath highlighting the sustainable use of the Boyne valley. The third River Basin Management Plan is due to be published in Q4 of 2021.

### 5.4.1.3 Projects

A search was conducted of planning applications (projects) within the vicinity of the proposed scheme, using the My Plan map viewer<sup>12</sup>, Meath County Council planning map viewer<sup>13</sup> and the Department of Housing, Planning and Local Government EIA portal map viewer<sup>14</sup>. The search was limited to the five year period preceding the date of issue of this report and excluded retention applications (i.e. typically local-scale residential or commercial developments where an impact has already occurred), incomplete, withdrawn, and refused applications.

Furthermore, a search of An Bord Pleanála’s website was completed to identify any relevant applications, including Strategic Infrastructure Development (SID), Strategic Housing Development (SHD), and Part 8 applications in the past three years or in close proximity to the Project. Key applications are displayed in **Table 5-2** and their potential for in-combination impacts discussed.

**Table 5-2: Planning Search Results from the County Planning and EIA Portal Maps**

Planning App.Ref. Number	Project/Applicant Name and Proposed Location	Brief Development Description	App.Status/ Outcome	Distance from Proposed scheme	Date Planning App. Granted	Potential for In-combination effects?
LB180279	Boyne Restoration works, Oldbridge County Meath	Development at the south bank of the Curly Hole on the River Boyne in the townland of Oldbridge County Meath. The development consists of Riverbank Restoration and protection works.	Granted	10km east	15/04/2019	Appropriate Assessment Stge 2 was carried out. Where mitigation measures are outlined and undertaken, no in-combination effects are deemed likely.

<sup>12</sup> Available online at <https://viewer.myplan.ie/> Accessed May 2021.

<sup>13</sup> Available online at: [www.myplan.ie](http://www.myplan.ie) Accessed in May 2020.

<sup>14</sup> Available online at: <http://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1>. Accessed in March 2020.

Planning App.Ref. Number	Project/Applicant Name and Proposed Location	Brief Development Description	App.Status/ Outcome	Distance from Proposed scheme	Date Planning App. Granted	Potential for In-combination effects?
19674	Sionna Homes Ltd., Newtownstalaban, County Louth	Demolition of 8 no. derelict dwellings and associated garages and structures. Construction of 61 no. mixed residential units. Vehicular, pedestrian and cycle entrance to the site from Newtown Road (L2307)	Further Information Request	17km east	03/10/2019	Appropriate Assessment Stge 2 was carried out. Where mitigation measures are outlined and undertaken, no in-combination effects are deemed likely.

#### 5.4.1.4 In-combination conclusion

The Boyne River provides the key pathway for impact to European sites. The search did not return any records of SID, SHD, or Part 8's with the potential for in-combination impacts along this pathway. Additional planning applications were largely absent from the immediate footprint of the proposed works and surrounding lands. A greater volume of applications were focussed near Drogheda and Navan, of which local-scale residential or commercial developments were excluded. Two proposed schemes in close proximity to the Boyne River have the potential to result in LSEs to European sites.

The applications listed in **Table 5-2** have been subject to AA processes and have incorporated mitigation into their design. Therefore, where described measures are effectively incorporated, no in-combination likely significant effects can be predicted from the proposed works. The plans additionally listed in **Section 5.4.1.1** provide objectives and aims that adequately rule out implications for in-combination effects. Therefore, no likely significant effects can be predicted from these plans or projects.

No other pathways have been identified by which any plan or project could have a likely significant in-combination effect on any of the European sites. It is concluded that there is no potential for cumulative or in-combination effects.

## 6 SCREENING CONCLUSIONS AND STATEMENT

RPS prepared this report to assess whether the proposed scheme, either individually or in combination with other plans or projects, and in view of best scientific knowledge, is likely to have a significant effect on European site(s).

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

Through an assessment of the source-pathway-receptor model, which considered the Zone of Influence of effects from the proposed scheme and the potential in-combination effects with other plans or projects, the assessment concludes the following:

- The Project is not directly connected with or necessary to the management of a European site;
- Applying the precautionary principle, alone, the proposed scheme is likely to result in LSE's on a number of European sites;
- It is not possible to rule out LSE in combination with other plans and projects.

It is therefore recommended that the proposed scheme is brought forward to Stage 2 – Natura Impact Assessment for consideration of adverse effects on integrity of European sites and the need for mitigation of these effects.

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