



OPW Oifig na
nOibreacha Poiblí
Office of Public Works



Comhairle Cathrach
& Contae **Luimnigh**

Limerick City
& County Council

Athea Flood Relief Scheme

Natura Impact Statement - Gravel Removal Works at Athea Bridge

January 2022

RYAN HANLEY

1 Galway Business Park, Dangan, Galway, H91 A3EF.
170/173 Ivy Exchange, Granby Place, Parnell Square West, Dublin 1, D01 N938.
Innovation House, Moneen Road, Castlebar, Co. Mayo, F23 E400.
Unit 1203, Building 1000, Gateway Business Park, New Mallow Road, Cork, T23 HDW9.

CLIENT	Limerick City and County Council
PROJECT NO.	2518
PROJECT TITLE	Athea Flood Relief Scheme
REPORT TITLE	Natura Impact Statement - Gravel Removal Works at Athea Bridge

Rev.	Status	Author(s)	Reviewed By	Approved By	Issue Date
1.0	Draft for Client Review	G. Kilbane	J. O'Connor J. Flanagan	E. Shields	21/04/2021
2.0	Updates based on Client Review	G. Kilbane	J. O'Connor J. Flanagan	E. Shields	29/04/2021
3.0	Updates following ABP FI Request	T. Stafford	J. O'Connor	E. Shields	20/01/2022

TABLE OF CONTENTS

NON-TECHNICAL SUMMARY	1
1 INTRODUCTION AND BACKGROUND TO THE PROJECT	2
1.1 INTRODUCTION	2
1.2 THE REQUIREMENT FOR APPROPRIATE ASSESSMENT	3
1.3 THE AIM OF THIS REPORT	4
2 THE APPROPRIATE ASSESSMENT PROCESS	5
2.1 GUIDANCE FOR THE APPROPRIATE ASSESSMENT PROCESS	5
2.2 STAGES OF ARTICLE 6 ASSESSMENT	5
3 METHODOLOGY	7
3.1 DESK STUDY	7
3.2 CONSULTATIONS WITH STAKEHOLDERS	8
3.3 FIELD WALKOVER SURVEYS	8
3.4 IMPACT PREDICTION	8
4 DESCRIPTION OF THE STUDY AREA	10
4.1 DESCRIPTION OF THE RECEIVING ENVIRONMENT	11
5 DESCRIPTION OF THE PROPOSED PROJECT	16
5.1 DESCRIPTION OF THE PROPOSAL	16
6 SCREENING FOR APPROPRIATE ASSESSMENT	19
6.1 DESIGNATED SITES IN THE VICINITY OF THE PROJECT	19
6.2 DESCRIPTION OF EUROPEAN SITES AND CURRENT TRENDS IN THE ABSENCE OF THE PROPOSED SCHEME	23
6.3 AA SCREENING CONCLUSION	24
7 NATURA IMPACT STATEMENT	33
8 TYPES OF IMPACTS ARISING FROM THE WORKS	34
8.1 LOWER RIVER SHANNON SAC (002165)	34
8.2 STACK'S TO MULLAGHAREIRK MOUNTAIN, WEST LIMERICK HILLS AND MOUNT EAGLE SPA (004161)	34
9 ASSESSMENT OF THE EFFECTS OF THE PROPOSED FLOOD RELIEF SCHEME ON EUROPEAN SITES 36	
9.1 LOWER RIVER SHANNON SAC	36
9.2 STACK'S TO MULLAGHAREIRK MOUNTAINS, WEST LIMERICK HILLS AND MOUNT EAGLE SPA	46
10 CUMULATIVE ASSESSMENT OF THE EFFECTS OF THE PROPOSED FRS WITH OTHER PLANS/ PROJECTS	48
10.1 DEVELOPMENT PLANS	48
10.2 OTHER DEVELOPMENTS	50
11 AVOIDANCE AND MITIGATION MEASURES	51
11.1 GENERAL MITIGATION	51
11.2 SUSPENDED SOLIDS AND HYDROCARBONS MITIGATION	52
11.3 MITIGATION FOR WORKS IN CHANNEL	53
11.4 BIOSECURITY MEASURES	54
11.5 WATER QUALITY MONITORING	54
11.6 POST CONSTRUCTION WORKS / REINSTATEMENT	55
12 CONCLUSIONS	56
13 REFERENCES	57

APPENDIX A - OTTER SURVEY A
APPENDIX B - OPW METHOD STATEMENT B

TABLE OF FIGURES

Figure 1-1: Gravel deposit upstream of Athea Bridge (Taken on 05/03/21)..... 2
 Figure 1-2: Gravel deposit downstream of Athea Bridge (Taken on 18/06/20) 3
 Figure 4-1: Location of Study Area, Athea, Co. Limerick 10
 Figure 4-2: Fossitt Habitat Classification within the vicinity of the Proposed Works 13
 Figure 5-1: Proposed works area for gravel removal works at Athea bridge..... 17
 Figure 5-2: Proposed access to works area in the River Galey from the R523 18
 Figure 6-1: European sites within 15km of the proposed works area..... 22

TABLE OF TABLES

Table 4-1: WFD status and risk for River Galey at Athea Bridge 15
 Table 6-1: European Sites within 15km of the proposed works and their potential for significant effects 19
 Table 6-2: European Sites and their Qualifying Interests within the Zone of Influence of the proposed worked
 Screened for NIS 25

NON-TECHNICAL SUMMARY

Ryan Hanley was commissioned by Limerick City and County Council (LCCC) to complete a Natura Impact Statement (NIS) for the proposed gravel removal works from the River Galey at Athea bridge, in advance of the proposed Flood Relief Scheme (FRS) at Athea, Co. Limerick. The NIS is summarised here to represent the context and content of the assessment, comprising the required information in support of the screening of the project in line with the requirements of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC) on the Conservation of Natural Habitats and of the Wild Fauna and Flora (hereafter referred to as the Habitats Directive).

The NIS identifies European Sites that are in close proximity to or have a hydrological or hydrogeological connectivity to the proposed works area. For this project, the potential for impacts from the proposed gravel removal works was considered using the “Source » Pathway » Receptor” approach. In view of best scientific knowledge and applying the precautionary principle, two European Sites (Lower River Shannon Special Area of Conservation (SAC) and Stack’s to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle Special Protection Area (SPA) were identified as having potential pathways for impacts in the absence of avoidance and mitigation measures.

The habitats and species designated as part of these European Sites were examined and the mechanisms by which adverse effects on the Conservation Objectives of these Qualifying Interests were identified as:

- Destruction and or loss of habitat due to the removal of substrates;
- Production of suspended solids within the water column during the works due to machinery traversing the site and the movement of silt and sediments;
- Release of hydrocarbons from machinery working instream;
- The spread of invasive species due to the removal of material that contains these species or the movement of machinery on site; and
- Disturbance/displacement of species due to increased noise and vibration during works.

The NIS provides mitigation measures to avoid and minimise these potential impacts so that the structure and function of these sites are not adversely affected by the proposed works.

The NIS concludes that, with the implementation of the mitigation measures specified in the report, the proposed gravel removal works alone or in-combination with other plans and/ or projects will not give rise to significant negative effects on the integrity of the Lower River Shannon SAC and Stack’s to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA.

1 INTRODUCTION AND BACKGROUND TO THE PROJECT

1.1 INTRODUCTION

Ryan Hanley was commissioned by Limerick City and County Council (LCCC) to undertake a Screening for Appropriate Assessment (AA) exercise and to collate information to complete a Natura Impact Statement (NIS) for the proposed gravel removal works from the River Galey at Athea bridge, in advance of the proposed Flood Relief Scheme (FRS) at Athea.

Over a period of time, gravel and silt have deposited in and around the arches of the Athea bridge (Figure 1-1 and Figure 1-2) as the water velocity of the River Galey during low flows at this point is not sufficient to carry sediment load. This has resulted in the development of a significant gravel bar with established vegetation in the channel.

This report contains information required for the competent authority to undertake an AA in relation to these gravel removal works from Athea bridge on the River Galey. It provides information and assesses the potential for the proposed works to impact on European Sites (Natura 2000 sites).

This report follows the Department of the Environment, Heritage and Local Government's guidelines (DoEHLG) 'Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities' (DoEHLG, 2009) and the Office of the Planning Regulator (OPR) practice note 'Appropriate Assessment Screening for Development Management' (OPR, 2021). Furthermore, the report has regard for recent European Court of Justice Decisions (CJEU).



Figure 1-1: Gravel deposit upstream of Athea Bridge (Taken on 05/03/21)



Figure 1-2: Gravel deposit downstream of Athea Bridge (Taken on 18/06/20)

1.2 THE REQUIREMENT FOR APPROPRIATE ASSESSMENT

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as “The Habitats Directive”, provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/ECC) as codified by Directive 2009/147/EC.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). The requirement for Appropriate Assessment is set out in Article 6 (3) which states:

“Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and 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 [Natura 2000] 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.”

1.3 THE AIM OF THIS REPORT

Appropriate Assessment is required to assess the proposed project, as identified above, with regard to impact on European Sites. It will identify whether the existing and proposed project is likely to have significant effects on European Sites in view of best scientific knowledge and the conservation objectives of the sites. European Sites are those identified as sites of European Community importance, designated as SACs under the Habitats Directive or as SPAs under the Birds Directive.

2 THE APPROPRIATE ASSESSMENT PROCESS

2.1 GUIDANCE FOR THE APPROPRIATE ASSESSMENT PROCESS

Article 6(3) of the EU Habitats Directive (92/43/EEC) defines the requirement for AA of certain plans and projects. In order to inform the requirements of this Screening and NIS, the following guidance documents have been referred to:

- DoEHLG Circular NPWS 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities;
- DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Department of the Environmental Heritage and Local Government;
- European Commission (2000) Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg. European Commission;
- European Commission (2001) 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;
- European Commission (2021) Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Brussels, 28.9.2021C (2021) 6913 Final;
- European Commission (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg;
- European Commission (2007) Guidance document on Article 6(4) of the ‘Habitats Directive’ 92/49/EEC; clarification of the concepts of: Alternative solutions, Imperative reasons of overriding public interest, Compensatory Measures, Overall Coherence, Opinion of the Commission;
- European Commission (2013). Interpretation Manual of European Union Habitats. Version EUR 28. European Commission;
- European Commission (2018) Managing Natura 2000 sites: The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC;
- European Union (Birds and Natural Habitats) Regulations 2011 to 2015;
- Office of the Planning Regulator (2021) Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. March 2021 and;
- Planning and Development Act 2000 (as amended).

2.2 STAGES OF ARTICLE 6 ASSESSMENT

The European Commission’s guidance promotes a staged process, as set out below, the need for each being dependent upon the outcomes of the preceding stage:

- (1) Screening;
- (2) Appropriate Assessment;
- (3) Assessment of Alternative Solutions; and
- (4) Assessment where no alternative solutions remain and where adverse impacts remain.
 - The “IROPI test” (Imperative Reasons of Over-riding Public Interest) and compensatory measures.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures.

Stage 1 of the process is intended to identify whether the project is ‘likely to have a significant effect’ upon a European site, referred to as ‘Screening for Appropriate Assessment’.

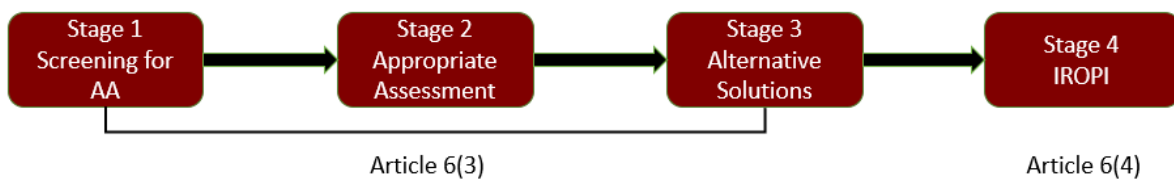
If the screening process identifies effects to be significant, potentially significant or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 Appropriate Assessment. Screening is undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan or project. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.

Section 177U of the Planning and Development Act 2010 (and Article 42, Birds and Habitats Regulations, 2011) states that; “the competent authority shall determine that an appropriate assessment of the proposed development is not required if it can be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will not have a significant effect on a European site.”

Stage 2 of the process, Appropriate Assessment, considers any potential impacts of the plan or project in greater detail including whether further mitigation measures are required. Specifically, it is focused on the potential for the proposed plan or project to impact on the conservation objectives of the Natura 2000 sites and the integrity of the Natura 2000 sites. This stage involves the collection of information which is specifically relevant to determining impacts including a description of the proposed plan or project, the conservation objectives of the Natura 2000 sites and an understanding of current factors which either maintain or threaten those conservation objectives, an assessment of aspects of the proposed plan or project which could negatively impact the conservation objectives of the Natura 2000 sites, both in the absence of and with mitigation measures.

If an adverse impact upon the site’s integrity cannot be ruled out, then Stage 3 will need to be undertaken to assess whether alternative solutions exist. If no alternatives exist that have a lesser effect upon the Natura 2000 site/s in question, the project can only be implemented if there are ‘imperative reasons of overriding public interest’, Stage 4, as detailed in Article 6(4). In essence, the work at Stage 1 will determine whether further stages of the process are required.

This report also includes the testing required under Stage 1: Screening for Appropriate Assessment.



3 METHODOLOGY

The approach taken in the preparation of this document is based on standard methods and follows best practice guidance as listed in Section 2.1.

3.1 DESK STUDY

A desk study was carried out to collate the available information on the ecological environment in the footprint of the proposed gravel removal works. The AA GeoTool application was used to support the data gathering process during screening (stage 1) and the appropriate assessment (stage 2) (EC, 2021). The National Parks and Wildlife Service (NPWS) and the National Biodiversity Data Centre (NBDC), along with other sites, have been consulted in order to identify, confirm and update existing records of Qualifying Interests and Special Conservation Interests and/or to identify the presence of suitable habitat for these species within the zone of influence of the proposed works:

- National Parks and Wildlife Service – online European Site information www.npws.ie;
- National Parks and Wildlife Service – Information on the status of EU protected habitats in Ireland (NPWS 2013a & 2013b);
- National Parks and Wildlife – Data Information Request;
- Environmental Protection Agency – Water Quality www.epa.ie; EPA mapping system <http://gis.epa.ie>; www.catchment.ie website;
- Information on www.wfdireland.ie and www.housing.gov.ie for the River Basin Management Plan 2018 – 2021 (RBMP, 2018);
- Geological Survey of Ireland – Geology, soils and Hydrogeology www.gsi.ie;
- Information on the conservation status of birds in Ireland (Colhoun & Cummins, 2013);
- National Biodiversity Data Centre (NBDC) online database <http://www.biodiversityireland.ie/>; and
- The Heritage Council <http://heritagemaps.ie>.

The habitats and species of Qualifying Interest (QI) for SACs and SPAs were the main focus of the desktop studies and therefore, any supporting documentation on the NPWS website for the European Sites, was also consulted in order to identify and confirm records of habitats and species within the area. Aerial imagery was consulted in order to get a broad overview of the habitat types present within the vicinity of the proposed works.

The LCCC website (www.limerick.ie) was consulted for information on other plans/projects in the area, which could result when cumulative impacts are considered in combination with the proposed gravel removal from the River Galey.

The following plans and projects were also reviewed and considered for in-combination effects:

- Limerick County Development Plan 2010 – 2016 (extended);
- River Basin Management Plan for Ireland 2018-2021;
- EPA database for licenced activities;
- Department of Housing, Planning, and Local Government – online land use mapping www.myplan.ie/en/index.html;
- Office of Public Works (OPW) Catchment Flood Risk Assessment and Management <http://www.cfram.ie/>; and

- OPW's management framework and drainage maintenance programme <https://www.opw.ie/en>.

3.2 CONSULTATIONS WITH STAKEHOLDERS

Consultation was undertaken with Inland Fisheries Ireland (IFI) regarding the proposed gravel removal works and existing information for the area. Measures recommended by IFI have been incorporated into the construction methodology for the project.

3.3 FIELD WALKOVER SURVEYS

A number of site visits were undertaken to establish the existing environment – 15th of January 2020, 18th of June 2020, 5th of March 2021 and 14th of April 2021. The site was surveyed by the Ryan Hanley ecology team who conducted a site walkover on the 5th of March 2021 and on the 14th of April 2021 in order to establish the habitats present. The walkover survey covered the gravel bar and adjacent habitats up and downstream of Athea bridge. Habitats were classified using habitat descriptions and codes published in the Heritage Council's 'A Guide to Habitat Types in Ireland' (Fossitt, 2000). The River Galey, within the Zone of Influence (Zol) of the proposed works, was examined with a view to determining potential ecological risks associated with the project.

During the walkover surveys of the site, the presence and utilisation of the area by mammal species and birds were noted and general ecological observations were made. Particular attention was given to identifying the presence of any otter holts, badger setts and bat roosts within the Zol of the proposed works. The fauna assessment was carried out using a combination of direct observation for tracks and signs, as well as determination of the suitability of the habitat for particular species. Non-volant mammal activity was assessed by checking for droppings at obvious locations and checking the river side for suitable holt / sett or couch sites (rest-up locations).

Trees, derelict buildings and the bridge were assessed for their suitability as potential bat roosting sites. Both banks of the River Galey, up and downstream of the proposed gravel removal works were also assessed for their suitability as nesting sites for kingfisher (*Alcedo atthis*).

A fisheries habitat assessment was undertaken by Ryan Hanley ecologists during the June 2020 survey and was reported on in the Constraints Study for the Athea FRS. Areas which would be important for fish spawning (smelt, salmonids and lamprey) were searched for. This survey considered the presence of juvenile fish habitat along the affected stretch, particularly with reference to the presence of habitats suitable for juvenile lamprey.

3.4 IMPACT PREDICTION

The methodology for the assessment of impacts is derived from the Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites (EC, 2001) and European Commission (2015) Ecological flows in the implementation of the Water Framework Directive – Guidance Document No. 31. Changes/ activities and impacts on Qualifying Interests are categorised by:

- Direct and indirect effects;
- Short and long-term effects;
- Construction, operational and decommissioning effects; and
- Isolated, interactive and cumulative effects.

Impacts that could potentially occur through the implementation of the proposed project, as detailed in Section 8, can be categorised as follows (EC, 2001):

- Loss/Reduction of habitat area;
- Disturbance to key species;

- Habitat or species fragmentation;
- Reduction in species density, and
- Changes in key indicators of conservation value such as decrease in water quality.

4 DESCRIPTION OF THE STUDY AREA

Athea village is located in west Co. Limerick, 3 km from the Limerick-Kerry border (Figure 4-1). The village is situated on the R523 Listowel to Ardagh regional road and the R524 Glin to Abbeyfeale regional road. The proposed works include the removal of gravel from the River Galey in the vicinity of Athea bridge. Athea bridge is a three-masonry arch structure comprising one central main arch and two side arches.

The River Galey is a tributary of the River Feale, that rises on the western slopes of Knockanimpuha Hill, in a steep-sided valley, and flows in a westerly direction through Athea before joining the Feale approximately 25km downstream of Athea village. Deposition of sediments, gravels and cobbles occurs in the River Galey at Athea bridge and a vegetated gravel bar has formed immediately up and downstream of the bridge. This deposition is impacting on the conveyance capacity at the bridge and potentially increasing flood risk locally. It is believed that historically, these deposits were removed as necessary by local landowners from the channel, however, since the river was designated as part of the Lower River Shannon SAC, this no longer happens.

Following extreme weather events in 2008, high river levels along the River Galey resulted in the major accumulation of trees and debris at Athea Bridge, which significantly reduced the available flow conveyance of the structure and represented a flood risk to the immediate locality. The OPW agreed to carry out the necessary remedial works and remove the debris at the request of LCCC. Since the works in 2008, OPW have returned to Athea on 4 separate occasions to remove trapped debris from beneath Athea bridge, freeing up any blockage and alleviating the immediate flood risk. On each occasion advanced consultation with IFI, NPWS and other stakeholders was facilitated by OPW.

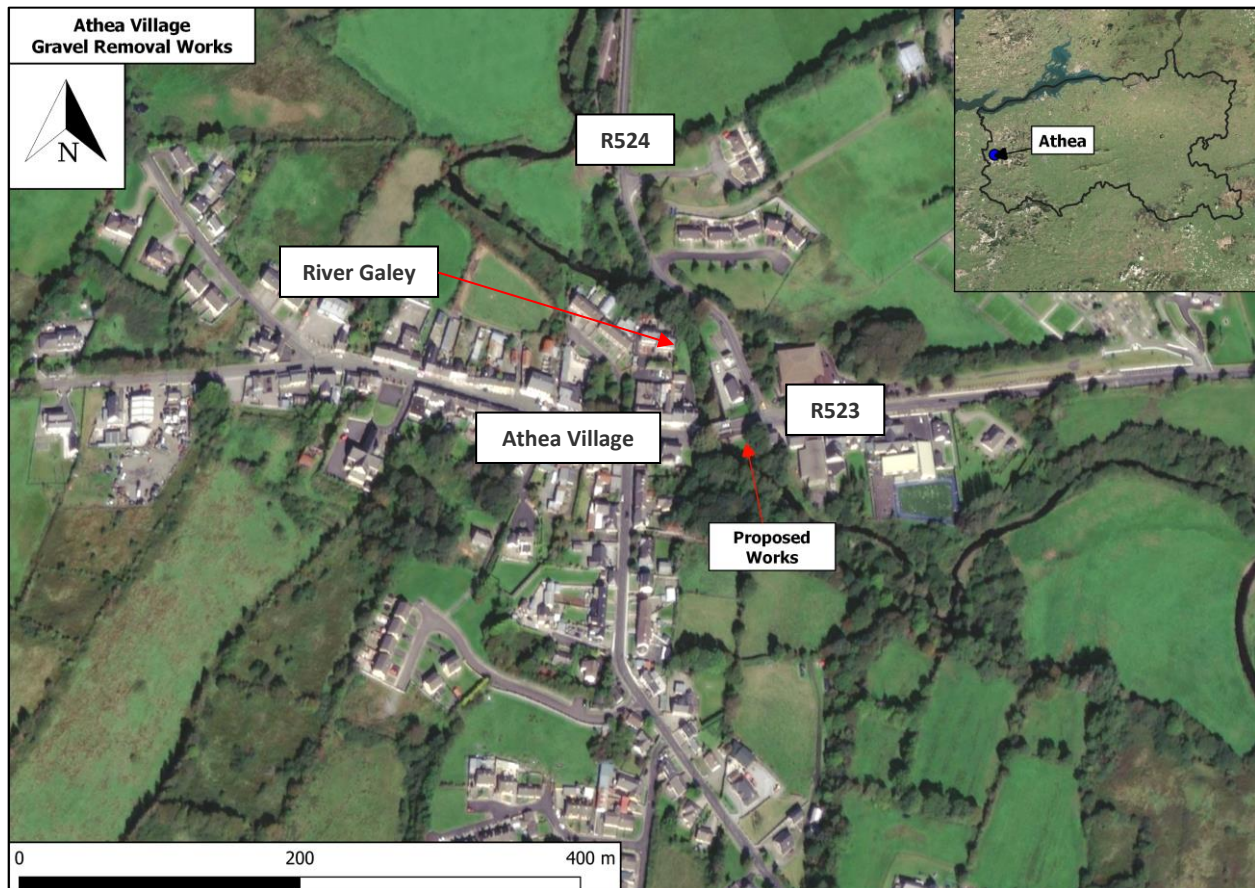


Figure 4-1: Location of Study Area, Athea, Co. Limerick

4.1 DESCRIPTION OF THE RECEIVING ENVIRONMENT

4.1.1 Habitats and Flora

The study area was examined in detail via a desktop study using aerial photography (Bing maps) and National Biodiversity Data Centre biodiversity maps to collate baseline information of the study area. In addition, site walkover surveys were undertaken on the 5th of March 2021 and on the 14th of April 2021, where species and habitats of interest were recorded. The following paragraphs describe the terrestrial and aquatic habitats and dominant and rarer flora within and adjacent to the proposed works area, according to the classification detailed in 'A Guide to Habitats in Ireland' (Fossitt, 2000) and cross referenced with Annex I habitats where required.

The dominant habitats within and adjacent to the gravel removal works are Depositing/lowland rivers (FW2), Exposed sand, gravel or till (ED1) and Amenity grassland (improved) (GA2). There are no Annex I Habitats identified within the study area. See Figure 4-2 for Habitat Map of the area.

Depositing/lowland rivers (FW2)

This category includes watercourses, or sections of these, where fine sediments are deposited on the river bed. Within the river channel there may be deep pools, backwaters, banks or mid-channel bars of gravel, sand or mud, in addition to vegetated islands and fringe reedbeds. The River Galey is a depositing/lowland river, which is approximately 42 km long and is the largest tributary of the Feale, joining it downstream of Listowel. The watercourse, along the section of the proposed gravel removal works, was examined and it was determined that the river is a meandering spate river at this point with a mix of 50% glide, 25% riffle and 25% pool sequences. It is a slow flowing river with low water levels and the riverbed is predominantly made up of cobble and gravel. No instream vegetation was present during the survey and there was no evidence of heavy siltation or mud settlements. The habitat along the right bank upstream of Athea bridge, where the river will be accessed for the proposed gravel removal works, is dominated by grass that is regularly maintained as a short sward with a number of plant species such as Daisy (*Bellis perennis*), Dandelion (*Taraxacum spp.*), Common Buttercup (*Ranunculus repens*) and Dock (*Rumex spp.*) scattered within the sward.

Exposed sand, gravel or till (ED1)

This category includes natural or artificial exposures of unconsolidated coarse or mixed sediment. Sand and gravel are mostly made up of sediment particles that are less than 16mm in diameter. Till, or boulder clay, is an unsorted mixture of pebbles, cobbles or boulders in a matrix of finer material such as sand, silt or clay. Deposits of sand, gravel or till may be exposed through natural forces of erosion among river banks and on some lake shores. Depending on their nature, these sediments may support a wide range of broadleaved herbs and grasses. The gravel deposit is classified as a till deposit with a mixture of cobble and gravel in a matrix of sand and silt. Species recorded on the deposit include grasses, Gorse (*Ulex europaeus*), Dandelion (*Taraxacum spp.*), Creeping buttercup (*Ranunculus repens*), Dock (*Rumex spp.*), Soft rush (*Juncus effusus*) and Willow saplings (*Salix spp.*). Stands of the invasive species Himalayan balsam (*Impatiens glandulifera*) were also noted to grow on the gravel deposit during the 2020 survey, although no plants were identified on the deposit during the March and April 2021 surveys.

Amenity grassland (improved) (GA2)

Amenity grassland is managed for purposes other than grass production and are regularly mown to maintain very short swards. The gravel deposit is proposed to be accessed from the right bank upstream of Athea bridge in an area classified as amenity grassland that is used as a public amenity with a bandstand and riverside seating. Species identified in this location is dominated by grass that is regularly maintained as a short sward with a number of plant species such as Daisy (*Bellis perennis*), Dandelion (*Taraxacum spp.*), Common Buttercup (*Ranunculus repens*) and Dock (*Rumex spp.*) scattered within the sward.

Buildings and Artificial surfaces (BL3)

This category incorporates all buildings, other than derelict stone buildings and ruins, and also covers areas that are covered with artificial surfaces. This is the predominant habitat in the area as the proposed works occur in Athea village. There are private dwellings located adjacent to the River Galey up and downstream of Athea bridge. The building upstream of the bridge, set back from the left bank of the river is derelict and the building adjacent to the access point for the proposed works on the right bank upstream of the bridge is currently unoccupied and falling into disrepair.

Stone walls and other Stonework (BL1)

This category incorporates stone walls and most other built stone structures in rural and urban situations. It includes dry stone and old mortar walls, stone walls that rise from rivers, canals or moats, stone bridges, derelict or ruinous buildings and old stone monuments, fortifications or ruins. These structures may support a diverse flora with abundant lichens, mosses and ferns and bridges can be important habitats for birds and bats in particular. The works are proposed to be undertaken in and around Athea bridge which is a freestanding triple-arch road bridge spanning the River Galey and was built in the 1820's that is an important part of Athea villages architectural heritage.

Wet Willow-Alder-Ash Woodland (WN6)

This broad category includes woodlands of permanently waterlogged sites that are dominated by willows, alder or ash, or by various combinations of some or all of these trees. An area of wet willow-alder-ash was identified on the left bank of the River Galey opposite the gravel deposit, upstream of Athea bridge. This woodland area is dominated by Ash (*Fraxinus excelsior*) and Willow (*Salix spp.*) with occasional Alder (*Alnus glutinosa*), Sycamore (*Acer pseudoplatanus*) and Hawthorn (*Crataegus monogyna*). Understorey vegetation comprised Lesser Celandine (*Ficaria verna*), Cowslip (*Primula veris*), Ivy (*Hedera helix*), Male Fern (*Dryopteris filix-mas*), Common nettle (*Urtica dioica*) and Cow parsley (*Anthriscus sylvestris*).

Scrub (WS1)

This broad category includes areas that are dominated by at least 50% cover of shrubs, stunted trees or brambles. The canopy height is generally less than 5m, or 4m in the case of wetland areas. Scrub can be either open, or dense and impenetrable, and it can occur on areas of dry, damp or waterlogged ground. An area of scrub was identified on the right bank of the River Galey upstream of the gravel deposit. Species identified primarily consists of Brambles (*Rubus fruticosus*) and Gorse (*Ulex europaeus*) with Ivy (*Hedera helix*), Common nettle (*Urtica dioica*), Common Buttercup (*Ranunculus repens*) and Common Vetch (*Vicia sativa ssp. Segetalis*).

Treelines (WL2)

Treeline habitats typically form field or property boundaries, roads or avenues narrow shelter belts and are interspersed with one another. Treelines are typically a narrow row or single line of trees that is greater than 5m in height. Treeline species identified throughout the walkover survey included Beech (*Fagus sylvatica*) and Ash (*Fraxinus excelsior*). A treeline adjacent to the gravel deposit on the left bank downstream of Athea bridge was noted to be recently chopped down and roots removed.



Figure 4-2: Fossitt Habitat Classification within the vicinity of the Proposed Works

4.1.2 Species

Otters

Eurasian otters (*Lutra lutra*) are protected under Annex II and Annex IV of the EU Habitats Directive and are a Qualifying Interest of the Lower River Shannon SAC. Their resting place is fully protected and any interference with or access to a holt is prohibited, except under an EU derogation. During baseline surveys of the area for the FRS (June 2020) the banks of the River Galey were checked for signs of otter activity. Presence of an otter track was recorded along the left river bank adjacent to the gravel deposit upstream of Athea bridge. The area was searched for signs of tracks, rest sites (couches), holts and spraints. No couches or spraints were found in the area. During the March 2021 survey, an otter spraint was identified along the left river bank upstream of the gravel deposit. No other signs of otter were identified during this survey.

A dedicated otter survey was undertaken on the 14th of April 2021 during a dry spell of mild, settled, bright conditions for the proposed gravel removal works. Where practical and safe, watercourses were surveyed for signs of otter from within the channel as well as along both banks for a corridor of approximately 250m up and downstream of Athea bridge. The walkover survey followed best practice survey methodology for otter as recommended by Lenton et al. (1980), Chanin (2003) and Bailey & Rochford (2006).

No signs of otter were identified as part of the walkover and limited opportunity for holting exists within or in proximity to the gravel deposit due to the open nature of the site and use of the site as an amenity area by the village for general recreation. A camera trap was placed in the area where tracks and spraint had been identified during the June 2020 and March 2021 surveys. The camera was left in situ for one week and otters were detected on five separate camera triggers during the deployment period. Two otters were detected together during one trigger and the remaining detections were of a single otter passing or sprainting (See Appendix A - Otter Survey).

Aquatic Environment and Fisheries

This River Galey is a tributary of the River Feale and is regarded as a good brown trout fishery with the average catch being recorded as 0.5 lbs in weight. There are no records of white-clawed crayfish (*Austropotamobius pallipes*) from the River Galey.

During a walkover survey undertaken in June 2020 as part of the main FRS, the River Galey was checked for its fisheries value by a river habitat survey and a kick sample by Ryan Hanley ecologists. From this survey, it was determined that the River Galey has a meandering spate riverine profile that is a slow flowing with low water levels. The substrata of the river is mainly composed of cobble and gravel. Trees are present along each bank.

The river in the vicinity of the proposed works consists of a riffle and glide/pool which provides potential spawning habitat for salmonids and lamprey species, though there are no silt beds suitable for lamprey ammocoetes.

4.1.3 WFD Waterbody Status

The Water Framework Directive (WFD) database www.catchments.ie presents the following for the Galey Catchment study area:

- Waterbodies quality for the period 2013 -2018;
- Waterbodies Risk for the period 2013 -2018;
- Environmental Pressures including Abstraction and Hydromorphological Pressures; and
- Programmes of Measure Action Areas.

A review of the study area's waterbodies relative to the WFD status and Risk has been undertaken. Table 4-1 presents the status and risk for the River Galey.

Table 4-1: WFD status and risk for River Galey at Athea Bridge

Waterbody	WFD Name	SAC	SPA	Overall Water Quality Status 2013-2018	Ecological Status or Potential	Chemical Surface Water Status	Risk of not obtaining Good Status by 2027
River Galey	Galey_010	Y	N	Good	Good	N/A	At Risk

5 DESCRIPTION OF THE PROPOSED PROJECT

5.1 DESCRIPTION OF THE PROPOSAL

The proposal includes the removal of approximately 240m³ of silt, sand and gravel deposits, as well as vegetation, from the River Galey to 300mm above summer-low water levels in the vicinity of Athea bridge. The works are essential to reduce the potential risk of flooding along the proposed section of the river. The works will be undertaken as per the OPW method statement. Details of the proposal are given below and the OPW method statement is included in Appendix B - OPW Method Statement of this report.

5.1.1 General Description

Large silt and sediment deposits have built up within two arches of Athea bridge and a stretch up and downstream of these arches. It is proposed that the OPW, in conjunction with LCCC, will undertake the works to remove the silt and sediment deposit and associated vegetation from the effected arches of the bridge and up and downstream of the bridge, using a 6t excavator and 6t dumper to extract the material. This material will be removed off-site using a tractor and dump trailer to a dedicated LCCC facility (Gortadroma landfill, subject to EPA approval or other appropriate LCCC facility) for ongoing treatment, due to the existence of the invasive plant material and seeds of Himalayan Balsam (*I. glandulifera*) within these sediments.

5.1.2 Site Establishment

The OPW foreman, site supervisor and excavator operators will walk the site in advance of the works to assess ground conditions, determine suitability of the area for the placement of machinery, location of any services or if there is a requirement for specific measures

A small site compound will be set up by the OPW outside of the flood level of the river channel, with a mobile welfare unit including health and safety/first aid kit to service the works (See Figure 5-1). Public access to the river will be closed at the access point during the works and the works area will be fenced off.

Silt curtains and floating booms will be set up prior to works commencing. The silt curtains will extend along the bank upstream and downstream of the gravel deposit. The silt curtains will be left in situ for the duration of the works. Once the gravel has been removed and the machinery has left the works area, the silt curtains will be dismantled.

5.1.3 In Channel Works

Works will be undertaken by the OPW in the region of a two-week period between July and September, depending on flow conditions in the channel and weather conditions being suitable.

Trees adjacent to the river access point may need to be pruned to allow for access depending on foliage at the time of the works.

An excavator and site dumper will enter the works area from the right bank upstream of Athea bridge (Figure 5-2). All works to be carried out in channel will be undertaken when the River Galey is at a low level allowing for access in almost dry conditions.

In order for the dumper and excavator to access the gravel deposit, it is proposed to form a temporary access ramp from the existing gravel material, which will be removed once works are complete.

The 6t excavator will excavate gravel from the river channel to just above low flow levels and load to the awaiting 6t dumper. Excavation will commence on the downstream extremity leaving approximately 500mm of gravels between deposition and flowing channel to act as a buffer and filter any run-off prior to entering the channel. This 500mm strip of gravels will be removed once all other gravel removal works have been completed.

A loaded 6t dumper will transport material to the upstream end of the bridge and tip at the foot of the riverbank at the green area location, where a 14t excavator situated on the riverbank will load this material to an awaiting tractor-dump trailer for removal to LCCC facility (Gortadroma landfill, subject to EPA approval or other appropriate LCCC facility).

All plant movements will take place along deposited material, where feasible, and safe to do so to minimise contact with flowing waters and prevent suspended solids entering the channel.

Fuelling of machinery will be carried out a minimum 50m away from the river channel on a hard standing surface at a safe location and all machines will have spill kits in accordance with OPW re-fuelling protocols.

5.1.4 Reinstatement

Following the completion of the works, the surrounding area shall be reinstated to a condition similar to, or better than the pre-works situation.

Any areas of bank that may be disturbed due to works will be reinstated with a 360° excavator, sealed and seeded. All footpaths/ street furniture that may be removed will be reinstated.

Temporary fencing and site welfare facilities will be removed post works.

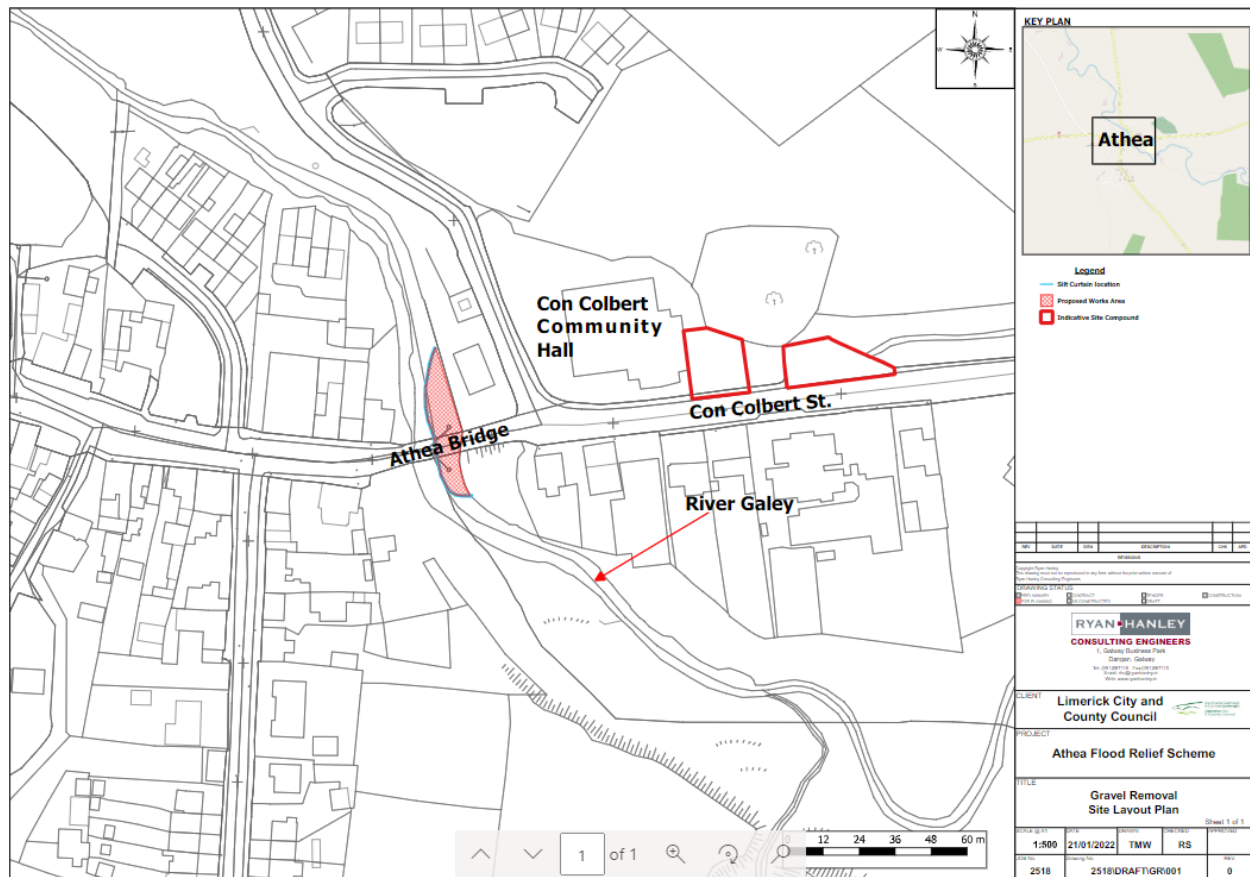


Figure 5-1: Proposed works area for gravel removal works at Athea bridge

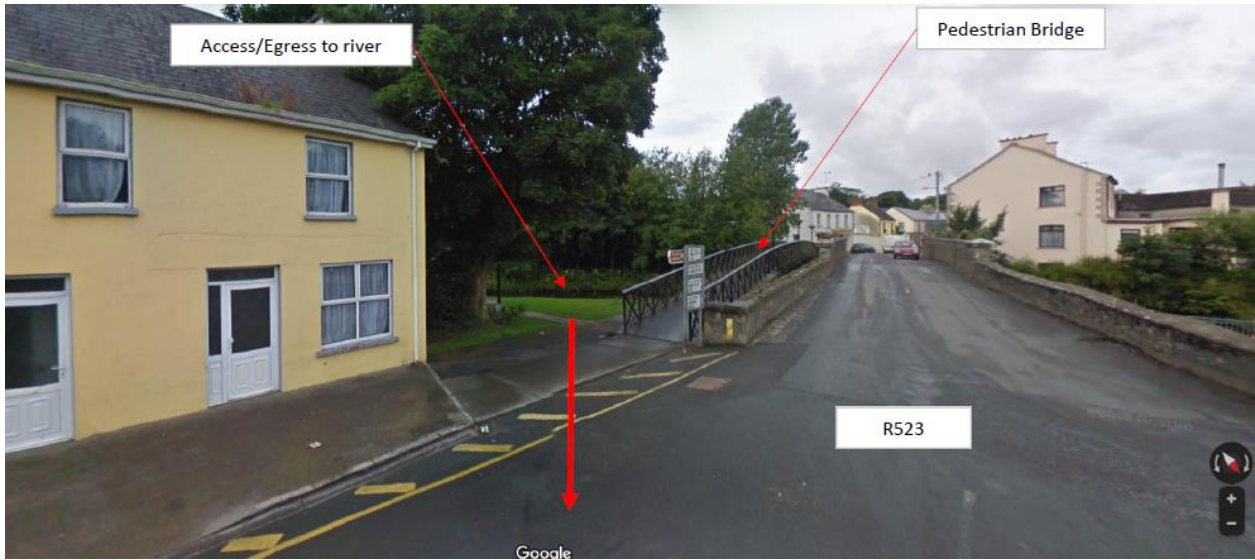


Figure 5-2: Proposed access to works area in the River Galey from the R523

6 SCREENING FOR APPROPRIATE ASSESSMENT

6.1 DESIGNATED SITES IN THE VICINITY OF THE PROJECT

Section 3.2.3 of the Guidance for Planning Authorities (DoEHLG, 2010) states a screening assessment should include any European site within or adjacent to the project area and any European site within the likely Zone of Influence (Zol) of the project. A distance of 15km is recommended in the case of plans (derived from UK guidance; (Scott Wilson et al., 2006)). For projects, the Guidance states this distance could be much less than 15km and in some cases less than 100m (DoEHLG, 2010), 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. European Sites at distances greater than 15km from the proposed works were also considered at this screening stage. For the purpose of this assessment, no potential habitat connection that could provide a pathway for effect to European Sites more than 15km from the proposed works was identified which included coastal regions within European Site boundaries. No pathway for likely significant effect was identified given the location and scale of the proposed works, the natural attenuation capacity of the intervening water course and the distance between the proposed development and the European Sites concerned.

Using the Source » Pathway » Receptor approach (OPR, 2021) and having regard for the location, the nature of this project and the proposed gravel removal methodology, it is considered for the purpose of this screening exercise that the likely Zol is the zone immediately around the construction site and any connected sites downstream of the works, where distances would be dependent on the Qualifying Interests (QI's) of the site. European sites within 15km of the works have also been reviewed. Figure 6-1 displays European sites within a 15km buffer zone of the proposed works. Each European Site was assessed to determine potential interactions with the proposed works (Table 6-1). Any connectivity (e.g., hydrological or ecological linkage) with other sites not within the 15km radius was also considered in this assessment.

QI's highlighted in bold were screened in for Stage 2 Appropriate Assessment (AA). QI's in normal font were screened out as no pathway for significant effect was identified given the location and scale of the proposed works, the natural attenuation of the intervening watercourse and the distance between the proposed works and the receptors (EC, 2021).

Table 6-1: European Sites within 15km of the proposed works and their potential for significant effects

European Site Name and Code	Qualifying Interests (QI's)	Distance	Potential for Significant Effect and nature of potential impacts
Lower River Shannon SAC (002165)	<ul style="list-style-type: none"> ▪ Sandbanks, which are slightly covered by seawater all the time; ▪ Estuaries, mudflats and sandflats not covered by seawater at low tide; ▪ Coastal lagoons; ▪ Large shallow inlets and bays; ▪ Reefs, Perennial vegetation of stony banks; ▪ Vegetated sea cliffs of the Atlantic and Baltic coasts; ▪ <i>Salicornia</i> and other annuals colonising mud and sand; ▪ Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>); ▪ Mediterranean salt meadows (<i>Juncetalia maritime</i>); ▪ <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel); 	Proposed works are located within the SAC.	<p>Likely Significant Effects predicted.</p> <p>Deterioration of water quality and or pollution has the potential to effect sensitive water dependent species, along with the possible loss of habitat and disturbance during the removal of silt, gravels and boulders from the river.</p> <p>QI's screened out as no pathway for significant effect identified.</p> <p>QI's screened in for Stage 2 AA</p>

	<ul style="list-style-type: none"> ▪ <i>Tursiops truncatus</i> (Common Bottlenose Dolphin); ▪ Watercourses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation; ▪ Molinia meadows on calcareous, peaty or clayey-silt laden solids (<i>Molinion caeruleae</i>); ▪ Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incane</i>, <i>Salicion albae</i>); ▪ <i>Petromyzon marinus</i> (Sea Lamprey); ▪ <i>Lampetra planeri</i> (Brook Lamprey); ▪ <i>Lampetra fluviatilis</i> (River Lamprey); ▪ <i>Salmo salar</i> (Salmon); and ▪ <i>Lutra lutra</i> (Otter). 		
Monaveanlagh Bog SAC (002351)	<ul style="list-style-type: none"> ▪ Active raised bogs; ▪ Degraded raised bogs still capable of natural regeneration; and ▪ Depressions on peat substrates of the Rhynchosporion. 	7.6km West of proposed works	<p>No Likely Significant Effects predicted.</p> <p>Due to the distance, small-scale nature of the proposed works, and the fact that no hydrological connection exists between the works site and this SAC. No significant effects are foreseen on the Qualifying Interests of this SAC.</p>
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	<ul style="list-style-type: none"> ▪ Hen Harrier (<i>Circus cyaneus</i>). 	171m	<p>Possible Significant Effect predicted.</p> <p>Works may result in disturbance to any potential nest sites within the zone of influence.</p>
River Shannon and River Fergus Estuaries SPA (004077)	<ul style="list-style-type: none"> ▪ Cormorant (<i>Phalacrocorax carbo</i>); ▪ Whooper Swan (<i>Cygnus cygnus</i>); ▪ Light-bellied Brent Goose (<i>Branta bernicla hrota</i>); ▪ Shelduck (<i>Tadorna tadorna</i>); ▪ Wigeon (<i>Anas penelope</i>); ▪ Teal (<i>Anas crecca</i>); ▪ Pintail (<i>Anas acuta</i>); ▪ Shoveler (<i>Anas clypeata</i>); ▪ Scaup (<i>Aythya marila</i>); ▪ Ringed Plover (<i>Charadrius hiaticula</i>); ▪ Golden Plover (<i>Pluvialis apricaria</i>); ▪ Grey Plover (<i>Pluvialis squatarola</i>); ▪ Lapwing (<i>Vanellus vanellus</i>); ▪ Knot (<i>Calidris canutus</i>); ▪ Dunlin (<i>Calidris alpina</i>); ▪ Black-tailed Godwit (<i>Limosa limosa</i>); 	12.3km North of proposed works	<p>No Likely Significant Effects predicted.</p> <p>Due to the large distance, small-scale nature of the proposed works, and the fact that no hydrological connection exists between the works site and this SPA. No significant effects are foreseen on the Qualifying Interests of this SPA.</p>

	<ul style="list-style-type: none"> ▪ Bar-tailed Godwit (<i>Limosa lapponica</i>); ▪ Curlew (<i>Numenius arquata</i>); ▪ Redshank (<i>Tringa totanus</i>); ▪ Greenshank (<i>Tringa nebularia</i>); ▪ Black-headed Gull (<i>Chroicocephalus ridibundus</i>); and ▪ Wetland and Waterbirds. 		
--	--	--	--

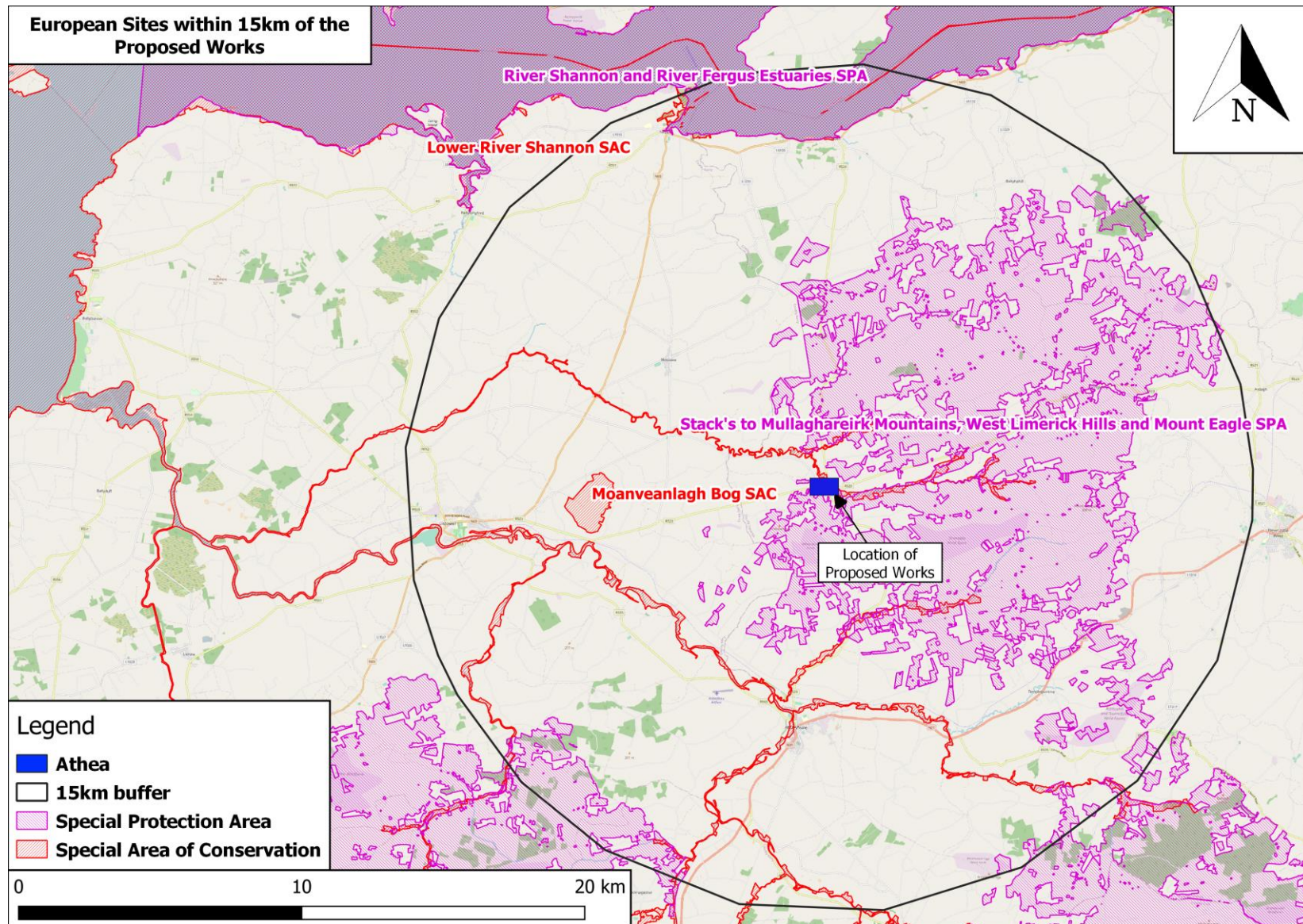


Figure 6-1: European sites within 15km of the proposed works area

6.2 DESCRIPTION OF EUROPEAN SITES AND CURRENT TRENDS IN THE ABSENCE OF THE PROPOSED SCHEME

Lower River Shannon SAC Site Synopsis (NPWS, 2013)

The Lower River Shannon SAC is a very large site within the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus estuaries, the lower freshwater reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. The extent of the SAC includes the section of the River Galey, within which the works are proposed. The River Galey is within the sub-catchment of the River Feale, which flows into the Shannon/Fergus Estuary south of Ballybunion, Co. Kerry. Semi-natural habitats such as wet grassland, wet woodland and marsh occur by the rivers, but improved grassland is the most common habitat type. One grassland type of particular conservation significance, Molina meadows, occurs in several parts of the SAC and the examples at Worldsend, Castleconnell, Co. Limerick on the River Shannon are especially noteworthy. This habitat type comprises wet meadow dominated by rushes and sedges, and supports a diverse and species-rich vegetation, including species such as blue-eyed grass and pale sedge.

This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive, including the priority habitats lagoon and alluvial woodland, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species.

Floating river vegetation characterised by species of water-crowfoot, pondweeds and the moss (*Fontinalis antipyretica*) are present throughout the major river systems within the site.

Five species of fish listed on Annex II of the EU Habitats Directive are found within the SAC including lamprey species (Sea, Brook and River), Twaite shad and Atlantic salmon. The three lamprey species and salmon have all been observed spawning in the lower Shannon or its tributaries. Twaite shad is not thought to spawn within the site. There are few other river systems in Ireland which contain all three species of lamprey. Fishing is a main tourist attraction on the Shannon and there are a large number of angler associations, some with a number of beats. The River Feale is a designated Salmonid Water under the E.U. Freshwater Fish Directive.

There is a wide range of land uses within the site. The most common use of the terrestrial parts is grazing by cattle, and some areas have been damaged through over-grazing and poaching. Much of the land adjacent to the rivers and estuaries has been improved or reclaimed and is protected by embankments (especially along the Fergus estuary). Further, reclamation continues to pose a threat, as do flood relief works (e.g. dredging of rivers). Gravel extraction poses a major threat on the Feale. Domestic and industrial wastes are discharged into the Shannon, but water quality is generally satisfactory, except in the upper estuary where it reflects the sewage load from Limerick City.

Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA [004161] Site Synopsis (NPWS, 2015)

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is a very large site centred on the borders between the counties of Cork, Kerry and Limerick. The site consists of a variety of upland habitats, though almost half is afforested. The coniferous forests include first and second rotation plantations, with both pre-thicket and post-thicket stands present. Substantial areas of clear-fell are also present at any one time. A substantial part of the site is unplanted blanket bog and heath, with both wet and dry heath present. The remainder of the site is mostly rough grassland that is used for hill farming. This varies in composition and includes some wet areas with rushes and some areas subject to scrub encroachment.

This site is an SPA under the EU Birds Directive, of special conservation interest for Hen Harrier which is listed on Annex I of the EU Birds Directive. The SPA is a stronghold for Hen Harrier and supports the largest concentration of the species in the country. A survey in 2005 resulted in 40 confirmed and 5 possible breeding pairs, which represents over 29% of the national total. A similar number of pairs has been recorded

in the 1998-2000 period. The mix of forestry and open areas provides optimum habitat conditions for this rare bird with the early stages of new and second-rotation conifer plantations for this species with the early stages of new and second-rotation conifer plantations being the most frequently used nesting sites, though some pairs may still nest in tall heather of unplanted bogs and heath. Hen Harriers will forage up to 5km from the nest site, utilising open bog and moorland, young conifer plantations and hill farmland that is not too rank. Birds will often forage in openings and gaps within forests. In Ireland, small birds and small mammals appear to be the most frequently taken prey.

6.3 AA SCREENING CONCLUSION

Table 6-1 shows the European Sites within 15km of the proposed works. In addition, the potential for the proposed works to result in significant effects on European Sites at distances greater than 15km from the proposed development was also considered in this initial assessment. In this case, no Source » Pathway » Receptor was identified in relation to any European Site that was located more than 15km from the proposed development thus, the associated receptors were determined to be outside the Zol (EC, 2021).

The table has identified that there are potential pathways for impacts to the conservation objectives of the Lower River Shannon SAC and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA in the absence of avoidance and mitigation measures. Direct impacts may arise via the release of suspended solids or hydrocarbons during the removal of instream gravels from Athea bridge, which could have a negative impact on qualifying habitats and species of these sites. There is also potential for impacts due to disturbance to species and spread of invasive species during instream works. It is not considered that there is any potential for significant effects on any other European Sites beyond the Lower River Shannon SAC and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA.

Therefore, applying the Precautionary Principle and in accordance with Article 6(3) of the Habitats Directive, the proposed gravel removal works at Athea bridge have the potential to impact on the Qualifying Interests of European Sites and should therefore be subject to a Stage 2 Appropriate Assessment (NIS).

Table 6-2 identifies whether there is a potential Source » Pathway » Receptor (OPR, 2021) link with the proposed works for each of the Qualifying Interests of the Lower River Shannon SAC and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. The table summarises the finding of the screening process in accordance with Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC. This allows for a focused Natura Impact Statement assessing the impact on those Qualifying Interests for which a potential Source » Pathway » Receptor link with the proposed works was identified (EC, 2021).

Table 6-2: European Sites and their Qualifying Interests within the Zone of Influence of the proposed worked Screened for NIS

Site	CO Code	Qualifying Interests and Conservation Objectives	Potential Presence within the Zone of influence	Potential Connectivity/ Source » Pathway » Receptor Link	Screened in for NIS?
Lower River Shannon SAC 002165	1110	To maintain the favourable conservation condition of Sandbanks which are slightly covered by sea water all the time.	No sandbanks which are slightly covered by sea water are located within the zone of influence of the works. This habitat consists of sandy sediments that are permanently covered by shallow sea water, typically at depths of less than 20m below chart datum. This habitat has been recorded approximately 47km downstream of the proposed gravel removal and approximately 2.5km off the coast from Ballybunion in the mouth of the Shannon Estuary coastal waterbody.	There is a hydrological link between the works and this habitat as the River Galey discharges into the Cashen Estuary which then discharges to the mouth of the Shannon. However, due to the significant distance from the proposed works and the high level of dilution provided in the downstream coastal waterbodies the proposed gravel removal works will not result in any potential impacts on this Annex I habitat within the Lower River Shannon SAC.	No
	1130	To maintain the favourable conservation condition of Estuaries.	Estuaries are habitat complexes which comprise an interdependent mosaic of subtidal and intertidal habitats. No estuaries are located within the zone of influence of the works. This habitat type has been located approximately 30km downstream of the proposed gravel removal works within the Cashen Estuary.	There is a hydrological link between the works and estuary habitats as the River Galey discharges into the Cashen Estuary. However, due to the significant distance from the proposed works and the high level of dilution in this downstream coastal waterbody the proposed gravel removal works will not result in any potential impacts on this habitat within the Lower River Shannon SAC.	No
	1140	To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide.	Intertidal mudflats and sandflats are submerged at high tide and exposed at low tide. Intertidal flats have been recorded within the Cashen Estuary approximately 38km downstream of the proposed gravel removal site. No intertidal mud and sandflats are located within the works area or in the zone of influence of the works.	There is a hydrological link between the works and mudflat habitats as the River Galey discharges into the Cashen Estuary. However, due to the significant distance from the proposed works and the high level of dilution in this downstream coastal waterbody the proposed gravel removal works will not result in any potential impacts on this habitat within the Lower River Shannon SAC.	No

Site	CO Code	Qualifying Interests and Conservation Objectives	Potential Presence within the Zone of influence	Potential Connectivity/ Source » Pathway » Receptor Link	Screened in for NIS?
	1150	To restore the favourable conservation condition of Coastal lagoons.	No coastal lagoons are located within the zone of influence of the works. Coastal lagoons are areas of shallow, coastal saltwater, wholly or partially separated from the sea by sandbanks, shingle or less frequently rocks. Four coastal lagoons have been identified within this SAC, all of which are located in the main channel of the Shannon Estuary.	There is no direct hydrological link between the works and coastal lagoon habitats as the River Galey discharges into the Cashen Estuary which then discharges to the mouth of the Shannon downstream of the four known lagoon locations. The proposed gravel removal works will not result in any potential impacts on this Annex I habitat within the Lower River Shannon SAC. No potential Source-Pathway-Receptor links to this habitat, therefore no potential impact.	No
	1160	To maintain the favourable conservation condition of Large shallow inlets and bays.	Shallow inlets and bays are indentations of the coastline that have no freshwater input or only a low level i.e. small streams and/or local rainfall runoff. They experience coastal salinities continuously. These habitats have been identified in the mouth of the Shannon coastal waterbody approximately 43km downstream of the proposed gravel removal. No large shallow inlets and bays are located within the zone of influence of the works.	There is a hydrological link between the works and this habitat as the River Galey discharges into the Cashen Estuary which then discharges to the mouth of the Shannon. However, due to the significant distance from the proposed works and the high level of dilution in the downstream coastal waterbodies the proposed gravel removal works will not result in any potential impacts on this Annex I habitat within the Lower River Shannon SAC.	No
	1170	To maintain the favourable conservation condition of Reefs.	No reefs in proximity to the gravel removal works or within the zone of influence. Reefs are rocky marine habitats or biological concretions that rise from the seabed. They are generally subtidal but may extend as an unbroken transition into the intertidal zone, where they are exposed to the air at low tide. Reef habitats have been identified in the mouth of the Shannon coastal waterbody approximately 43km downstream of the proposed gravel removal. No reef habitats are located within the zone of influence of the works.	There is a hydrological link between the works and this habitat as the River Galey discharges into the Cashen Estuary which then discharges to the mouth of the Shannon. However, due to the significant distance from the proposed works and the high level of dilution in the downstream coastal waterbodies the proposed gravel removal works will not result in any potential impacts on this Annex I habitat within the Lower River Shannon SAC.	No

Site	CO Code	Qualifying Interests and Conservation Objectives	Potential Presence within the Zone of influence	Potential Connectivity/ Source » Pathway » Receptor Link	Screened in for NIS?
	1220	To maintain the favourable conservation condition of Perennial vegetation of stony banks.	This habitat occurs along the coast where shingle (cobble and pebbles) and gravel have accumulated to form elevated ridges or banks above the high tide mark with vegetation dominated by perennial species. The full extent of this habitat within the SAC is unknown, however nine shingle beach sites have been identified to contain perennial vegetation to stony banks. The closest mapped location is located approximately 45km downstream at Ballybunion. No perennial vegetation in proximity to the works or in the zone of influence.	This is a terrestrial coastal habitat that has no potential Source-Pathway-Receptor links to the proposed gravel removal. Therefore, there is no potential impact on this Annex I habitat within the Lower River Shannon SAC.	No
	1230	To maintain the favourable conservation condition of Vegetated sea cliffs of the Atlantic and Baltic coasts.	A sea cliff is a steep or vertical slope located on the coast. Sea cliffs support a range of plant communities such as grassland, heath, scrub and bare rock communities. Sea cliffs are concentrated around the mouth of the Shannon from Kilcredaun Point in Co Clare to Kilconly Point in Co Kerry approximately 43km downstream of the proposed gravel removal works. No vegetated sea cliffs in proximity to the works or in the zone of influence.	This is a terrestrial coastal habitat that has no potential Source-Pathway-Receptor links to the proposed gravel removal. Therefore, there is no potential impact on this Annex I habitat within the Lower River Shannon SAC.	No
	1310	To maintain the favourable conservation condition of <i>Salicornia</i> and other annuals colonizing mud and sand.	<i>Salicornia</i> and other annual colonising mud and sand is a pioneer saltmarsh community that may occur on muddy sediment seaward of established saltmarsh, or from patches within other saltmarsh communities where the elevation is suitable and there is regular tidal inundation. Within the SAC the areas of <i>Salicornia</i> habitat was recorded to be limited to six sites all of which are located in the main channel of the Shannon Estuary. No <i>Salicornia</i> and other annuals in proximity to the works or in the zone of influence.	There is no direct hydrological link between the works and this habitats as the River Galey discharges into the Cashen Estuary which then discharges to the mouth of the Shannon downstream of the six known <i>Salicornia</i> habitat locations. The proposed gravel removal works will not result in any potential impacts on this Annex I habitat within the Lower River Shannon SAC. No potential Source-Pathway-Receptor links to this habitat, therefore no potential impact.	No
	1330	To restore the favourable conservation condition of Atlantic salt meadows	Atlantic salt meadows develop when halophytic vegetation colonises soft intertidal sediments of mud and sand in areas protected from strong wave action. This vegetation forms the	There is a hydrological link between the works and Atlantic salt meadows as the River Galey discharges into the Cashen Estuary. However,	No

Site	CO Code	Qualifying Interests and Conservation Objectives	Potential Presence within the Zone of influence	Potential Connectivity/ Source » Pathway » Receptor Link	Screened in for NIS?
		(<i>Glauco-Puccinellietalia maritimae</i>).	middle and upper reaches of saltmarshes, where tidal inundation still occurs but with decreasing frequency and duration. Atlantic salt meadows are the dominant saltmarsh habitat within the SAC, being recorded at ten sub-sites. This habitat has been recorded as potentially present within the Cashen Estuary approximately 38km downstream of the proposed gravel removal. No Atlantic salt meadows in proximity to the works or in the zone of influence.	due to the significant distance from the proposed works and the high level of dilution in the downstream coastal waterbody the proposed gravel removal works will not result in any potential impacts on this habitat within the Lower River Shannon SAC.	
	1410	To restore the favourable conservation condition of Mediterranean salt meadows (<i>Juncetalia maritimi</i>).	Mediterranean salt meadows occupy the upper zone of saltmarshes and usually occur adjacent to the boundary with terrestrial habitats. This habitat is distinguished from Atlantic salt meadows by presence of rushes such as sea rush and/or sharp rush. Mediterranean salt meadows are restricted in their distribution and size, being recorded at eight sub-sites within the SAC. This habitat has been recorded as potentially present within the Cashen Estuary approximately 40km downstream of the proposed gravel removal. No Mediterranean salt meadows in proximity to the works or in the zone of influence.	There is a hydrological link between the works and Mediterranean salt meadows as the River Galey discharges into the Cashen Estuary. However, due to the significant distance from the proposed works and the high level of dilution in the downstream coastal waterbody the proposed gravel removal works will not result in any potential impacts on this habitat within the Lower River Shannon SAC.	No
	3260	To maintain the favourable conservation condition of Watercourses of plain to montane levels with <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation.	Floating river vegetation has a broad definition, covering river habitats as diverse as upland, flashy, oligotrophic, bryophyte and algal dominated stretches, to tidal reaches dominated by high plants. Three sub-types of this habitat have been recorded in the Lower River Shannon SAC. Two of these sub-types are associated with tidal reaches of rivers and the third sub-type is found in fast-flowing stretches of unmodified streams and rivers. Six rivers have been identified as high conservation value areas for this habitat including the Shannon, the Cloon, the Fergus, the Mulkear, the Maigue and the Feale. The River Galey had very little submerged or emerged vegetation in the vicinity of the proposed gravel removal works and no <i>Ranunculus</i> sp. were recorded in the	There is a potential Source-Pathway-Receptor link between the proposed gravel removal works and areas of floating river vegetation in the downstream reaches of the River Galey. Potential impacts due to sediment runoff and impact on water quality.	Yes

Site	CO Code	Qualifying Interests and Conservation Objectives	Potential Presence within the Zone of influence	Potential Connectivity/ Source » Pathway » Receptor Link	Screened in for NIS?
			area. However, it is likely that this habitat is present in patches along the River Galey downstream of the works area.		
	6410	To maintain the favourable conservation condition of <i>Molina</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>).	<i>Molinia</i> meadows are found mainly on moist, moderately base-rich, peats and peaty gley soils, often with fluctuating water tables. They usually occur as components of wet pastures or fens and often from mosaics with dry grassland, heath, mire and scrub communities. This habitat has been recorded on the eastern bank of the Shannon, north of Castleconnell, Co. Limerick. No <i>Molina</i> meadows recorded in proximity to or within the works area but there is potential for it to occur in the floodplains of the River Galey downstream.	There is a potential Source-Pathway-Receptor link between the proposed gravel removal works and areas of potential <i>Molina</i> meadows habitats via sediment run off and impacts on water quality.	Yes
	91E0	To restore the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>).	Alluvial forests comprise woods dominated by alder (<i>Alnus glutinosa</i>) and willow (<i>Salix</i> sp.) on flood plains in a range of situations from islands in river channels to low-lying wetlands alongside the channels. Within the SAC, five sites have been identified for alluvial woodlands and have been described as small stands, restricted to narrow bands where the ground is subject to flooding or flushing. While the total extent of alluvial woodland within the SAC is considered to be greater than the five sites identified it is noted that there is an absence of suitable terrain for extensive alluvial woodland to occur. There is potential for alluvial woodlands to occur along the banks of the Galey in proximity to and downstream of the proposed gravel removal.	There is a potential Source-Pathway-Receptor link between the proposed gravel removal works and areas of potential alluvial woodland habitats via sediment run off and impacts on water quality.	Yes
	1029	To restore the favourable conservation condition of Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>).	Freshwater pearl mussel are a large, long-lived, bivalve mollusc found in clean, fast-flowing rivers. The habitat for freshwater pearl mussel in Ireland is restricted to near natural, clean flowing waters, with stable cobble and gravel substrate with very little below pea sized gravel. The freshwater pearl mussel conservation objectives for the Lower River Shannon SAC relates specifically to the Cloon River population in Co.	There is no direct hydrological link between the works and freshwater pearl mussel as the River Galey discharges into the Cashen Estuary which then discharges to the mouth of the Shannon downstream of the Cloon River site. The proposed gravel removal works will not result in any potential impacts on	No

Site	CO Code	Qualifying Interests and Conservation Objectives	Potential Presence within the Zone of influence	Potential Connectivity/ Source » Pathway » Receptor Link	Screened in for NIS?
			Clare which is located within a different river catchment approximately 20km across the Lower Shannon Estuary transitional waterbody from the proposed gravel removal works. The River Galey previously held records of freshwater pearl mussel, however an assessment of pearl mussel populations in the River Galey undertaken in 2009 by the NPWS did not record the species within the catchment and this species is thought to be extinct in this river.	freshwater pearl mussel within the Lower River Shannon SAC. No potential Source-Pathway-Receptor links to this species, therefore no potential impact.	
	1095	To restore the favourable conservation condition of Sea lamprey (<i>Petromyzon marinus</i>).	The life cycle of the sea lamprey contains both a marine phase and a freshwater phase. Adult lamprey migrate in spring into freshwater to excavate redds or spawning nests in gravelled areas of large rivers. Artificial barriers can block or cause difficulties to Lamprey's upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas. There are specific barriers constraining the upriver migration of Sea Lamprey. The upper extent of the Lower River Shannon SAC in the River Fergus is delineated by a barrier to migration and there are also barriers in the Mulkear and Feale. The River Galey is the largest tributary of the Feale. This area has been surveyed for the presence of Sea Lamprey previously and no lamprey were detected between the Feale confluence and Athea village (O'Connor 2006). The River Galey underwent intensive arterial drainage during the 1970's and the riverbed was deepened up to 5m in places. The River Galey in the vicinity of the proposed gravel removal works is considered to provide suitable habitat for sea lamprey during their freshwater phase.	Due to the potential presence of Sea Lamprey in close proximity to the proposed gravel removal works a potential Source-Pathway-Receptor link has been identified via potential sediment runoff and impact on water quality and disturbance to suitable spawning habitats.	Yes

Site	CO Code	Qualifying Interests and Conservation Objectives	Potential Presence within the Zone of influence	Potential Connectivity/ Source » Pathway » Receptor Link	Screened in for NIS?
	1096	To maintain the favourable conservation condition of Brook lamprey (<i>Lampetra planeri</i>).	Brook and River Lamprey juveniles are indistinguishable in the field so they are considered together here. Artificial barriers can block or cause difficulties to Brook and River Lampreys' migration, both up and downstream, thereby possibly limiting the species to specific stretches and creating genetically isolated populations. The nearest recorded weir in the Feale catchment is at Finuge, located approximately 18km downstream of Athea. Brook and River Lamprey may not therefore travel upstream across the weir. This area has been investigated for the presence of Brook and River Lamprey previously and none were detected between the Feale confluence and Athea village (O'Connor 2006). The River Galey underwent intensive arterial drainage during the 1970's and the riverbed was deepened up to 5m in places. The River Galey in the vicinity of the proposed gravel removal works is considered to provide suitable habitat for these lamprey species.	Due to the potential presence of lamprey species in close proximity to the proposed gravel removal works a potential Source-Pathway-Receptor link has been identified via potential sediment runoff and impact on water quality and disturbance to suitable spawning habitats.	Yes
	1099	To maintain the favourable conservation condition of River lamprey (<i>Lampetra fluviatilis</i>).			
	1106	To restore the favourable conservation condition of Atlantic salmon (<i>Salmon salar</i>).	Salmon is an anadromous species (i.e. adults migrate from the sea to breed in freshwater). Spawning takes place in shallow excavations called redds, found in shallow gravelly areas in clean rivers and streams. Artificial barriers can block Salmon's upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas. Weirs on the Shannon main channel restrict access to spawning areas for Salmon. The weir at Finuge (18km downstream) had a fish pass installed in recent years which allows for salmonid passage within the river network. The River Galey in the vicinity of the proposed gravel removal works is considered to provide suitable spawning and nursery habitats for Salmon.	Due to the potential presence of salmon in close proximity to the proposed gravel removal works a potential Source-Pathway-Receptor link has been identified via potential sediment runoff and impact on water quality and disturbance to suitable spawning habitats.	Yes
	1349	To maintain the favourable conservation	Bottlenose dolphins are primarily inshore species, with most sightings within 10km of land, but they can also occur offshore,	There is a hydrological link between the works and the mouth of the Shannon as the River	No

Site	CO Code	Qualifying Interests and Conservation Objectives	Potential Presence within the Zone of influence	Potential Connectivity/ Source » Pathway » Receptor Link	Screened in for NIS?
		condition of Bottlenose Dolphin (<i>Tursiops truncatus</i>).	often in association with other cetaceans. Bottlenose dolphins occur within the mouth of the Shannon coastal waterbody approximately 43km downstream of the proposed gravel removal. No suitable habitats for bottlenose dolphins in proximity to the works or in the zone of influence.	Galey discharges into the Cashen Estuary which then discharges to the mouth of the Shannon. However, due to the significant distance from the proposed works and the high level of dilution in the downstream coastal waterbodies the proposed gravel removal works will not result in any potential impacts on this species within the Lower River Shannon SAC.	
	1355	To restore the favourable conservation condition of Otter (<i>Lutra Lutra</i>).	Otter are a semi-aquatic mammal, which occurs in a wide range of ecological conditions, including inland freshwater and coastal areas. Evidence of otter in the form of spraint and potential mammal tracks on the river banks along the Galey were recorded in the vicinity of the proposed gravel removal area and it is considered that the river at this point is suitable otter habitat.	Due to the potential presence of otter in close proximity to the proposed gravel removal works a potential Source-Pathway-Receptor link has been identified via potential sediment runoff and impact on water quality which could impact on otter prey species and disturbance to suitable holt and rest sites.	Yes
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	A082	To maintain or restore the favourable conservation condition of Hen Harrier (<i>Circus cyaneus</i>).	The SPA is a composite site which comprises a variety of upland habitats, much of which is afforested and has been designated solely for the protection of Hen Harrier. Hen Harrier are predominately ground nesting birds and tend to breed in mainly upland and bog areas as well as open moorland. They also use conifer plantations for nesting and hunting in this SPA. Hen Harriers forage up to 5km from the nest site where they mainly hunt small ground nesting birds and mammals. The species is more widespread in the winter and is found in open low-lying countryside and along the coast. The proposed gravel removal works are not located in any suitable breeding habitats for Hen Harriers; however, the River Galey floodplains and surrounding farmland may provide suitable foraging habitat for this species.	Due to the close proximity of the SPA to the proposed gravel removal works a potential Source-Pathway-Receptor link has been identified via potential disturbance impacts on Hen Harrier foraging habitats.	Yes

7 NATURA IMPACT STATEMENT

The Natura Impact Statement shall identify, in light of the best scientific knowledge in the field, all aspects of the works that have the potential, either individually or in combination with other plans or projects, to adversely affect integrity of the Lower River Shannon SAC and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA in the context of their Conservation Objectives. In order to facilitate the Competent Authority in its Appropriate Assessment of the proposed gravel removal works, the Natura Impact Statement must contain complete, precise and definitive findings and include an examination, analysis, evaluations, findings and conclusions.

8 TYPES OF IMPACTS ARISING FROM THE WORKS

Potential significant impacts on habitats and species of conservation importance for European sites screened in during Stage 1 are examined, analysed and evaluated in this section. The types of impact identified, e.g. direct and indirect impacts, short and long-term impacts, construction and operational phase impacts etc. arising from the project are assessed in light of the Conservation Objectives set out for the Qualifying Interests of those European sites. Overall, with the exception of Hen Harrier, which is a terrestrial bird of prey, the habitats and species considered to have potential to be impacted by the proposed gravel removal works are mostly aquatic or semi-aquatic habitats and species.

8.1 LOWER RIVER SHANNON SAC (002165)

The proposed gravel removal works are within the footprint of the Lower River Shannon SAC. The SAC could potentially be impacted by the proposed works via direct loss of habitats at Athea bridge via surface water runoff pathways e.g. silt laden runoff or other pollutants in the River Galey arising from instream gravel removal. Other potential impacts include disturbance to species during instream works and direct loss of species as a result of habitat removal. The following mechanisms by which an adverse effect on the Conservation Objectives of the SAC might potentially occur during instream works, when considering a precautionary approach, as follows:

- Destruction and or loss of habitat due to the removal of substrates;
- Production of suspended solids within the water column during the works due to machinery traversing the site and the movement of silt and sediments;
- Release of hydrocarbons from machinery working instream;
- The spread of invasive species due to the removal of silts that contain invasive species and also the movement of machinery to and from site; and
- Disturbance/displacement of aquatic species from increased noise and vibration during instream working.

8.2 STACK'S TO MULLAGHAREIRK MOUNTAIN, WEST LIMERICK HILLS AND MOUNT EAGLE SPA (004161)

The Stack's to Mullaghareirk Mountain, West Limerick Hills and Mount Eagle SPA is designated for Hen Harrier and no works are proposed directly within the site. The SPA could potentially be impacted by the proposed works via disturbance to Hen Harrier foraging sites in proximity to the proposed works area.

Taking a precautionary approach to assessment the following mechanisms by which an adverse effect on the Conservation Objectives of the SPA might potentially occur during gravel removal works:

- Disturbance/displacement of Hen Harrier from foraging areas due to increased noise and vibration during instream works.

Loss of Habitat

There is potential for the loss and destruction of habitats suitable for breeding aquatic species or resting mammals and birds along the stretch of the River Galey due to the removal of the gravel deposit from the riverbed. A river habitat survey was undertaken in June 2020 on the River Galey to check its fisheries value as part of baseline environmental studies for the FRS. The Galey was identified as a high-quality river with good holding pools for brown trout and good habitat for salmonids with evidence of redds within proximity to the bridge. Three spine sticklebacks were recorded during the survey and suitable habitat for river and brook lamprey were identified. Bird species such as mallard and rook were also recorded resting and foraging on the island.

Suspended Solids

There is the potential for the release of high levels of suspended solids due to disturbance as a result of gravel and silt removal activities proposed onsite. The deposit built up around the bridge comprises of cobble, gravel and fine sands, silts and mud. The removal of these deposits from around the bridge pose a risk of silt mobilisation. High levels of suspended solid concentrations in waterbodies can affect the feeding and health of individual species through increased turbidity and increased siltation affecting composition of riverbed substrate and affecting spawning beds. Small amounts of debris entering a section of river important for vulnerable life stages of salmonids and lamprey species can have negative impacts, even in the short term, on juvenile survival and habitat utility. Similarly, aquatic invertebrates may be smothered by excessive deposits of silt from suspended solids. Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted and photosynthesis may be reduced.

Hydrocarbons and pollutants

Release of hydrocarbons as a result of fuel spills have the potential to impact on water quality through the introduction of chemicals into the aquatic environment and could result in a reduction of oxygen, affecting salmon and lamprey populations that require good oxygen supplies. The release of even small amounts of hydrocarbons into watercourses adjacent to the site, has the potential to result in significant impacts on the downstream populations of salmon, lamprey species and otter within the SAC. Hydrocarbons released due to inappropriate storage or dispensing of fuel could have detrimental effects on the habitats and species of interest. As juvenile lamprey can live for a number of years in sediments, any contamination of sediments with hydrocarbons would be detrimental to juvenile populations.

Invasive Species and Biodiversity

Invasive species can quickly spread further downstream using the river as a pathway and colonise habitats and out-compete natural species at a faster rate. Himalayan balsam was identified growing on the gravel deposit proposed for removal during the 2020 growing season and it is assumed that the seeds from this season, which are viable for two years, are present and viable within the gravel deposit. The removal of this material without the implementation of appropriate biosecurity measures has the potential to spread this species to other locations. In addition, the use of equipment that has been used in other areas has the potential to spread new species into the works area.

9 ASSESSMENT OF THE EFFECTS OF THE PROPOSED FLOOD RELIEF SCHEME ON EUROPEAN SITES

Appropriate Assessment Screening identified a number of habitats and species as potentially impacted by the proposed works. As part of the assessment undertaken for this NIS, each conservation objective is examined in turn to determine its zone of influence regarding the gravel removal works and the nature of the conservation objective and to determine whether there was a potential Source » Pathway » Receptor link with the proposed works. An analysis of impact assessment typically requires the identification of the type and magnitude of potential impacts; direct and indirect; short and long term; construction, operational and decommissioning effects; and isolated, interactive and cumulative effects. In this instance, the assessment requires the identification of the instream removal of gravel deposits related impacts on Qualifying Interests that were screened in as part of the AA Screening Report. As a result of this process screened in Qualifying Interests are identified in Section 6 of this report for the Lower River Shannon SAC and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. Qualifying Interests identified in this section that will require mitigation will be further discussed in Section 11 Avoidance and Mitigation Measures.

9.1 LOWER RIVER SHANNON SAC

9.1.1 *Watercourses of plain to montane levels with Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]*

This is a broadly defined habitat, found in most watercourses in Ireland over a wide range of physical conditions, from acid, oligotrophic, flashy upland streams dominated by bryophytes to more eutrophic, slow flowing streams dominated by *Ranunculus* and *Callitriche* species. While the former will be sensitive to diffuse pollution the latter, especially in shallow streams, will be relatively more resistant. Three sub-types of high conservation value are known to occur in this SAC namely; Opposite-leaved Pondweed (*Groenlandia densa*), Triangular Club-rush (*Schoenoplectus triquetus*) and Bryophyte-rich streams and rivers (NPWS, 2012). The first two sub-types are associated with tidal reaches of rivers, while the latter sub-type is found in fast-flowing stretches of unmodified streams and rivers. In addition to these three sub-types, it is likely that other high conservation value sub-types exist within the site.

The site-specific conservation objective for [3260] is to maintain the favourable conservation condition of subtypes with high conservation value. Specific attributes and targets are:

- Habitat area stable or increasing and no decline in habitat distribution subject to natural processes;
- Maintain appropriate river flow, tidal influence and freshwater seepage hydrological regimes;
- Maintain appropriate substratum particle size range, appropriate to the habitat sub-type;
- Maintain concentrations of nutrients in a sufficiently low level in the water column to prevent changes in species composition or habitat condition;
- Typical species of the relevant habitats sub-type should be present and in good condition;
- Active floodplain area at the upstream of the habitat should be maintained; and
- Maintain the area of riparian woodland at and upstream of the bryophyte-rich sub-type.

The main pressures and threats to this habitat are: Diffuse pollution to surface waters due to agricultural and forestry activities; pollution to surface waters by industrial plants; mechanical removal of peat; and modification of hydrographic functioning.

This habitat type was not identified within the works area footprint during site walkover surveys. However, there is potential for the Bryophyte-rich streams and rivers sub-type to occur in the River Galey downstream of the works and therefore, there is a potential impact on this habitat.

9.1.1.1 Direct Effects

There will be no works within or adjacent to this habitat. The only physical works within the SAC will be during the period when the accumulated gravel is being removed from the bridge arches. No habitat [3260] exists at this location thus, there will be no loss in the area covered or changes to the distribution of this habitat within the SAC as a result of the works.

9.1.1.2 Indirect Effects

The potential for indirect effects on this habitat via a number of pathways was considered. Effects were considered in respect of the site-specific conservation objectives for the habitat. The potential for effects was considered in relation to construction and operation on the proposed flood relief scheme.

Construction

There is potential for the release of sediments or hydrocarbons which may lead to an increase of nutrients in the water column. Water quality would be reduced immediately downstream of the works area. An increase in silt levels in the water column and resuspension of riverbed sediments may result in changes to particle size range within the substrate where this habitat occurs.

Mitigation measures provided within this report during the prevent the runoff of sediment and/or hydrocarbons to ensure that there is no potential impact on this habitat type downstream of the works.

Operational

The removal of the gravel berm substrate has potential to alter river flow during high flow conditions. The scheme has been designed so there is no effect on the functioning of the River Galey in all but high flow conditions. Bank full flow will be restored following the removal of the berm and the exposed habitat is likely to be colonised with aquatic species which are currently present in the river.

9.1.2 *Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]*

Molinia meadow habitats have been recorded on the eastern bank of the Shannon, just north of Castleconnell, Co. Limerick. This Annex I habitat is found mainly on moist, moderately base-rich, peats and peaty gley soils, often with fluctuating water tables. They usually occur as components of wet pastures or fens, and often form mosaics with dry grassland, heath, mire and scrub communities.

The site-specific conservation objective for [6410] is to restore the favourable conservation condition of subtypes with high conservation value. Specific attributes and targets are:

- Habitat area stable or increasing and no decline in habitat distribution subject to natural processes;
- Maintain the broadleaf herb: grass ratio structure between 40 and 90%;
- Maintain sward height between 10 and 80cm;
- Maintain the vegetation composition of typical species including no decline of notable species subject to natural processes;
- Absence or control of negative indicator species, particularly non-native invasive species and moss species;
- Cover of woody species and bracken not more than 5% cover; and
- Not more than 10% bare ground.

The main pressures and threats to this habitat are agricultural intensification, application of fertiliser, ploughing and land abandonment.

This habitat type was not identified within the works area footprint during site walkover surveys. However, there is potential for *Molinia* meadows to occur in the floodplains of the River Galey downstream of the works and therefore, there is a potential impact on this habitat.

Potential impacts on *Molinia* meadows resulting from the removal of the gravel deposit include:

- Water quality impacts resulting from sediment runoff and pollution spillages; and
- Spread of non-native invasive species to areas previously free of infestation.

9.1.1.1 Direct Effects

There will be no works within or adjacent to this habitat type. The only physical works within the SAC will be during the period when the accumulated gravel is being removed from the bridge arches.

9.1.1.2 Indirect Effects

The potential for indirect effects on this habitat via a number of pathways was considered. Effects were considered in respect of the site-specific conservation objectives for the habitat. The potential for effects was considered in relation to construction and operation phases of the proposed flood relief scheme.

Construction

Firstly, the release of sediments or hydrocarbons may result in an increase of nutrients in the water column that could reduce downstream water quality and/or an increase in silt levels in the water column and resuspension of riverbed sediments resulting in alteration to the flood depths.

Secondly, gravel disturbance may result in the release of Himalayan balsam seeds from the substrate into the river downstream which could result in the spread of balsam to areas of *Molinia* meadow where previously absent.

Mitigation measures provided within this report during gravel removal works will prevent the runoff of sediment and hydrocarbons and will ensure that there is no potential effect to *Molinia* habitat downstream of the works. During construction works, strict biosecurity guidelines will be adhered to in order to avoid the spread of non-native invasive species and other noxious weeds.

Operational

The removal of the gravel berm substrate has potential to alter river flow during high flow conditions. The scheme has been designed so there is no effect on the functioning of the River Galey in all but high flow conditions. Bank full flow will be restored following the removal of the berm and the exposed habitat is likely to be colonised with aquatic species (flora and fauna) currently present in the stream's ecosystem.

9.1.3 *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicon albae) [91E0]*

The Lower River Shannon SAC lies mostly within an intensively managed agricultural region and it contains only a small amount of woodland. Alluvial woodlands occur along the Shannon, in the valley bottoms of the tributaries and on seepage zones on valley sides. The principal woodland communities within the SAC consist of; Riparian woodlands (WN5) habitats dominated by tree willows forming small, narrow stands on river banks and islands where trees are subject to frequent flooding and/or have their roots permanently in water and Wet willow-alder-ash woodlands (WN6) in valley bottoms and locally in flushed areas on the side of steep valleys in the upper reaches of tributaries. Periodic flooding or constant flushing is essential for the maintenance of alluvial woodlands.

The site-specific conservation objective for [91E0] is to restore the favourable conservation condition of subtypes with high conservation value. Specific attributes and targets are:

- Habitat area stable or increasing and no decline in habitat distribution and woodland size subject to natural processes;
- Maintain appropriate cover and height, community diversity and extent, dead wood, and natural regeneration of woodland structure;
- Maintain appropriate hydrological regime (flooding depth/height of water table) necessary for alluvial vegetation;
- No decline in veteran trees and indicators of local distinctiveness of woodland structure;
- No decline of native tree cover vegetation composition;
- Maintain the vegetation composition of a variety of the typical native species present; and
- Absence or control of negative indicator species, particularly non-native invasive species.

The main pressures and threats to this habitat are grazing pressure being too high or too low negatively effecting the herb layer; agricultural and forestry activities including clear-felling; infrastructural development; and pollution to surface waters.

There is a small pocket of wet woodland upstream of and adjacent to Athea bridge on the left bank of the river, which may be categorised as alluvial woodlands and there is potential for alluvial woodlands to occur in the floodplains of the River Galey downstream of the works. Potential impacts on alluvial forests resulting from the removal of the gravel deposit include:

- Water quality impacts resulting from sediment runoff and pollution spillages; and
- Spread of non-native invasive species to areas previously free of infestation.

9.1.3.1 Direct Effects

There are sections of wet woodland upstream of the works area and along the left bank adjacent to Athea Bridge. Physical works within the SAC will be during the period when the accumulated gravel is being removed from the bridge arches. No alluvial woodland is present in this section. There will be no loss or destruction of this habitat in the area covered or changes to its distribution within the SAC.

9.1.3.2 Indirect Effects

The potential for indirect effects on this habitat via a number of pathways was considered. Effects were considered in respect of the site-specific conservation objectives for the habitat. The potential for effects was considered in relation to construction and operation phases of the proposed flood relief scheme.

Construction

Firstly, the release of sediments or hydrocarbons may result in an increase of nutrients in the water column that could reduce downstream water quality and/or an increase in silt levels in the water column and resuspension of riverbed sediments resulting in alteration to the flood depths. Silt deposition where may impact community diversity and extent through smothering of coarser substrate.

Secondly, gravel disturbance may result in the release of Himalayan balsam seeds from the substrate into the river downstream which could result in the spread of Himalayan balsam to areas of Alluvial forest habitat. The spread of balsam would result in a decline of habitat distribution and change native vegetation composition.

Mitigation measures provided within this report will ensure the species diversity and hydrological regime are not impacted during construction works. Strict biosecurity guidelines will be adhered to in order to avoid the spread of non-native invasive species and other noxious weeds.

Operational

The removal of the gravel berm substrate has potential to alter river flow during high flow conditions. The scheme has been designed so there is no effect on the functioning of the River Galey in all but high flow conditions. Bank full flow will be restored following the removal of the berm and the exposed habitat is likely to be colonised with aquatic species (flora and fauna), currently present in the stream's ecosystem.

No significant effects have been predicted to occur during the operational phase of the scheme in view of the site-specific conservation objectives.

9.1.4 Sea Lamprey (*Petromyzon marinus*) [1095]

Sea lamprey life cycle contains both marine and freshwater phases. Adult Sea Lamprey (60-100 cm length) live at sea as external parasites on host fish and migrate in spring to freshwater to excavate redds or spawning nests in gravelled areas of large and small rivers. Once hatch, the larvae called ammocoetes swim out of the nest and are washed downstream, where they accumulate in areas with slower water currents where they burrow into fine river sediments e.g., backwaters, current eddies or behind big stones on the riverbed. They favour partially shaded areas, and the presence of aquatic plants. Larvae live as filter feeders and may remain in fine sediments for several years before transforming into adults. The seaward migration of young adults occurs in the autumn/winter months.

The site-specific conservation objective for [1095] is to restore to favourable conservation condition. Specific attributes and targets are:

- River accessibility from estuary >75% of main stem length; of rivers accessible from estuary;
- > three age/size groups present and mean catchment juvenile density at least 1/m²;
- No decline in extent and distribution of spawning beds; and
- >50% sample sites positive and >four positive sites (5 km apart) in a catchment.

The main pressures and threats to sea lamprey are Migration barriers; pollution; bait digging/ collection.

Potential Impacts

An assessment of lamprey populations within the Feale catchment conducted in 2005 on behalf of NPWS (O'Connor, 2006) did not record any Sea Lamprey within the River Galey. However, the River Galey in the vicinity of the proposed gravel removal works is considered to provide suitable habitat for Sea Lamprey during their freshwater phase. Potential impacts resulting from the removal of the gravel deposit include:

- Water quality impacts resulting from sediment runoff and pollution spillages;
- Direct loss of habitat or species as a result of the removal of the gravel deposit; and
- Temporary disturbance/displacement of species during works.

9.1.4.1 Direct Effects

The potential impacts may result in changes to Sea lamprey distribution and their composition in the vicinity of the proposed works area. No barriers to natural migration will be created during the gravel removal works as instream works will be undertaken outside the migration/spawning season. There will be no loss of spawning habitats as the gravel will be removed to summer water levels. On completion of works, habitats will be comparable to those present before the gravel deposition build up.

9.1.4.2 Indirect Effects

The potential for indirect effects on this habitat via a number of pathways was considered. Effects were considered in respect of the site-specific conservation objectives for the habitat. The potential for effects was considered in relation to construction and operation phases of the proposed flood relief scheme.

Construction

The release of sediments or hydrocarbons may result in an increase of nutrients and/or pollutants in the water column that could reduce downstream water quality and/or an increase in silt levels in the water column. Mitigation measures provided within this report will ensure no decline in extent and distribution of spawning habitat occurs.

Operational

The removal of the gravel berm substrate has potential to alter river flow during high flow conditions. The scheme has been designed so there is no effect on the functioning of the River Galey in all but high flow conditions. Bank full flow will be restored following the removal of the berm and the exposed habitat is likely to be colonised with aquatic species (flora and fauna), currently present in the stream's ecosystem. Upstream river access will not be affected for adults migrating upstream.

9.1.5 Brook Lamprey (*Lampetra planeri*) [1096]

Brook Lamprey (15-18cm length) is non-parasitic and non-migratory as an adult, living its entire life in freshwater. Adults spawn in spring, excavating shallow nests in relatively small sized gravels in areas of reduced flow. Its overall status is 'favourable' (NPWS, 2012).

The site-specific conservation objective for [1096] is to maintain their favourable conservation condition. Specific attributes and targets are:

- Access to all watercourses down to first order streams and >three age/size groups present;
- Mean catchment juvenile density at least 5/m² and >50% of sample sites positive; and
- No decline in extent and distribution of spawning beds and spawning habitat is not a limiting feature.

The main pressures and threats to this species are bait digging; point source and diffuse pollution to surface water; dredging; siltation and invasive non-native species.

Potential Impacts

An assessment of Lamprey populations within the Feale catchment conducted in 2005 on behalf of NPWS (O'Connor, 2006) did not record any Brook Lamprey within the River Galey. However, the River Galey in the vicinity of the proposed gravel removal works is considered to provide suitable habitat for lamprey species. Potential impacts resulting from the removal of the gravel deposit include:

- Water quality impacts in the form of sediment runoff and pollution spillages;
- Direct loss of habitat or species as a result of the removal of the gravel deposit; and
- Temporary disturbance/displacement of species during works.

9.1.5.1 Direct Effects

Potential impacts may result in displacement of Brook lamprey and changes to their distribution and composition in the vicinity of the proposed works area. There will be no decline in extent or distribution of spawning beds as the gravel will be removed to summer water levels and works will be undertaken outside the spawning season. On completion of works, habitats will be comparable to those present before the gravel deposition build up.

9.1.5.2 Indirect Effects

The potential for indirect effects on these species via a number of pathways was considered. Effects were considered in respect of the site-specific conservation objectives for the species. The potential for effects was considered in relation to construction and operation phases of the proposed flood relief scheme.

Construction

The release of sediments or hydrocarbons may result in an increase of nutrients and/or pollutants in the water column that could reduce downstream water quality and/or an increase in silt levels in the water column. Mitigation measures provided within this report will ensure no decline in the extent and distribution of spawning habitat occurs.

Operational

No barriers to natural migration will be created during the gravel removal works as instream works will be undertaken outside migration/spawning season. There will be no loss of spawning habitats as the gravel will be removed to summer water levels. On completion of works, habitats will be comparable to those present before the gravel deposition build up.

The removal of the gravel berm substrate has potential to alter river flow during high flow conditions. The scheme has been designed so there is no effect on the functioning of the River Galey in all but high flow conditions. Bank full flow will be restored following the removal of the berm and the exposed habitat is likely to be colonised with aquatic species (flora and fauna), which are currently present in the stream's ecosystem. River access upstream will not be affected for migrating adults.

Mitigation measures provided within this report during gravel removal works to prevent the runoff of sediment and hydrocarbons will ensure that there is no potential impact on Brook Lamprey and their habitats.

9.1.6 River Lamprey (*Lampetra fluviatilis*) [1099]

River Lamprey reproduces in freshwater rivers and streams. Adults spawn in spring, excavating shallow nests in gravels and stones. After hatching, the ammocoetes drift or swim downstream to areas of riverbed with a fine silt composition. They burrow into this bed material and live as filter feeders over a period of years before transforming into young adult fish. As adults they are parasitic, attaching to and feeding on larger fish in coastal waters.

The site-specific conservation objective for River Lamprey is to maintain the favourable conservation condition. Specific attributes and targets are:

- Access to all watercourses down to first order streams and >three age/size groups present;
- Mean catchment juvenile density at least 5/m² and >50% of sample sites positive; and
- No decline in extent and distribution of spawning beds and spawning habitat is not a limiting feature.

The main pressures and threats to this species are bait digging; point source and diffuse pollution to surface water; dredging; siltation and invasive non-native species.

Potential Impacts

An assessment of Lamprey populations within the Feale catchment conducted in 2005 on behalf of NPWS (O'Connor, 2006) did not record any River Lamprey within the River Galey. However, the River Galey in the vicinity of the proposed gravel removal works is considered to provide suitable habitat for lamprey species. Potential impacts resulting from the removal of the gravel deposit include:

- Water quality impacts in the form of sediment runoff and pollution spillages;
- Direct loss of habitat or species as a result of the removal of the gravel deposit; and
- Temporary disturbance/displacement of species during works.

9.1.6.1 Direct Effects

The most recent available assessment data shows no records for River lamprey in the adjacent area. However, the river channel is deemed suitable habitat for the species. There will be no decline in extent or distribution of spawning beds as the gravel will be removed to summer water levels and works will be undertaken outside the spawning season. On completion of works, habitats will be comparable to those present before the gravel deposition build up.

9.1.6.2 Indirect Effects

The potential for indirect effects on these species via a number of pathways was considered. Effects were considered in respect of the site-specific conservation objectives for the species. The potential for effects was considered in relation to construction and operation phases of the proposed flood relief scheme.

Construction

The release of sediments or hydrocarbons may result in an increase of nutrients and/or pollutants in the water column that could reduce downstream water quality and/or an increase in silt levels in the water column. Mitigation measures provided within this report will ensure no decline in the extent and distribution of spawning habitat occurs.

Operational

No barriers to natural migration will be created during the gravel removal works as instream works will be undertaken outside migration/spawning season. There will be no loss of spawning habitats as the gravel will be removed to summer water levels. On completion of works, habitats will be comparable to those present before the gravel deposition build up.

The removal of the gravel berm substrate has potential to alter river flow during high flow conditions. The scheme has been designed so there is no effect on the functioning of the River Galey in all but high flow conditions. Bank full flow will be restored following the removal of the berm and the exposed habitat is likely to be colonised with aquatic species (flora and fauna), which are currently present in the stream's ecosystem. Access to habitat upstream will not be affected for migrating adults.

Mitigation measures provided within this report during gravel removal works to prevent the runoff of sediment and hydrocarbons will ensure that there is no potential impact on River Lamprey and their habitats.

9.1.7 *Atlantic salmon (Salmo salar) [1106]*

Salmon use rivers to reproduce and as nursery areas during their juvenile phase. The Irish population generally comprises fish that spend two winters in freshwater before going to sea in spring as smolts. The smolts migrate to sea mainly from April to June. The majority of Irish fish spend one winter at sea before returning to their natal rivers, mainly during the summer as grilse. Smaller numbers spend two winters at sea. No artificial barriers causing significant fish passage issues for salmon have been identified on the Feale.

The site-specific conservation objective for [1106] is to restore the favourable conservation condition. Specific attributes and targets are:

- No significant decline and 100% of river channels (2nd order) accessible from estuary;
- Conservation limit (CL) for each system consistently exceeded. The main channel of the Shannon is significantly below its CL while the Feale and Mulkear rivers are above their CL;
- Maintain/ exceed 0+ fry mean catchment-wide abundance (17 salmon fry/5 minutes sampling);
- No decline in number and distribution of spawning redds due to anthropogenic causes; and
- At least Q4 water quality status at all sites sampled by EPA.

The main pressures and threats to this species are agricultural intensification (incl. fish farming); fertilisation; forestry activities; peat extraction; surface water pollution; invasive non-native species; poaching; surface water abstractions; predation; and modification of hydromorphology and hydrographic functioning of habitat.

Potential Impacts

Suitable habitats for salmonids were identified within the footprint of the works area during site walkover surveys. Potential impacts resulting from the removal of the gravel deposit include:

- Water quality impacts in the form of sediment runoff and pollution spillages;
- Direct loss of habitat or species as a result of the removal of the gravel deposit; and
- Temporary disturbance/displacement of species during gravel removal works.

9.1.7.1 Direct Effects

The section of river channel is classed Rosgen Stream Order 3 at Athea and is considered an important spawning and nursery habitat for the species. There will be no decline in extent or distribution of spawning beds as the gravel will be removed to summer water levels and works will be undertaken outside the spawning season. Any impacts on migration will be temporary and insignificant due to the short duration of the works. On completion of works, habitats will be comparable to those present before the gravel deposition build up.

9.1.7.2 Indirect Effects

The potential for indirect effects on these species via a number of pathways was considered. Effects were considered in respect of the site-specific conservation objectives for Atlantic salmon. The potential for effects was considered in relation to construction and operation phases of the proposed flood relief scheme.

Construction

The release of sediments or hydrocarbons may result in an increase of nutrients and/or pollutants in the water column that could reduce downstream water quality and/or an increase in silt levels in the water column. Good water quality status (Q4, EPA) will be maintained during the construction phase.

Mitigation measures provided within this report will ensure no decline in the extent and distribution of spawning habitat occurs. Pollution control measures will ensure no potential impact on water quality, i.e., siltation, hydrocarbon release from the proposed works.

Operational

No barriers or decline to natural migration will be created as instream works will be undertaken outside migration/spawning season. There will be no loss of spawning habitats as the gravel will be removed to summer water levels. On completion of works, habitats will be comparable to those present before the gravel deposition build up.

The removal of the gravel berm substrate has potential to alter river flow during high flow conditions. The scheme has been designed so there is no effect on the functioning of the River Galea in all but high flow conditions. Bank full flow will be restored following the removal of the berm and the exposed habitat is likely to be colonised with aquatic species (flora and fauna), which are currently present in the stream's ecosystem. Access to habitat upstream will not be affected for migrating adults.

Mitigation measures provided within this report during gravel removal works to prevent the runoff of sediment and hydrocarbons will ensure that there is no potential impact on Atlantic salmon and their habitats.

9.1.8 Otter (*Lutra lutra*) [1355]

Ireland is a strong-hold for Otter owing to plentiful aquatic prey and safe refuges. Found along clean rivers and lakes, the otter is an opportunistic predator with a broad and varied diet (fish, crayfish, frogs, and infrequently, birds and mammals are taken). Favourable Conservation Status target, based on 1980/81 survey findings, is 88% in SACs. Current range in the Shannon is estimated at 70.5% (Bailey and Rochford, 2006). Otters are largely solitary animals, occurring at low population densities. They are highly territorial towards members of the same sex, so although this means ranges of males and females can overlap; it has implications for the number of otters which will potentially occupy a given stretch of waterway. Home ranges can comprise 20km of watercourse for females and in excess of 32km for males. A key requirement of potential territory is a sufficient source of prey. Otters feed primarily on fish and the amount of time spent in different parts of their home-range is related to the abundance of prey. Otters are mainly nocturnal creatures and so require safe refuges, known as holts, in which they rest during the day. These holts are the main den sites and area often situated underground along a river bank or under tree roots. An otters territory will typically contain several holts as well as resting sites, known as couches. These are above-ground lying-up areas concealed within vegetation and often linked to a nearby watercourse by a regularly used track.

The site-specific conservation objective for [1355] is to maintain the favourable conservation condition. Specific attributes and targets are:

- No significant decline in distribution, extent of terrestrial and freshwater habitats and couching sites and holts; and
- No significant decline in fish biomass available and no significant increase in barriers to connectivity.

The main pressures and threats to the otter are transport routes; fishing, surface water pollution and net entanglement. Diffuse and point source pollution of freshwaters and coastal waters is likely to have indirect effect on otters through impacts on prey abundance.

Potential Impacts

Suitable feeding and commuting habitat for otter occurs within proximity to and downstream of the proposed works, although breeding holts in the vicinity of the works is limited due to the urban nature of the area. Otter surveys conducted along the stretch of the Galey identified signs of otter using the area for commuting and foraging. The level of use by otter in this part of the SAC is likely to be minimal as this area of the river is used for amenity purposes, which would cause a disturbance to otter. Potential impacts include:

- Water quality impacts in the form of sediment runoff and pollution spillages impacting on prey species availability;
- Direct loss of foraging and resting habitat as a result of the removal of the gravel deposit; and
- Temporary disturbance/displacement of species during works.

These potential impacts may result in changes to otter distribution and prey species composition in the vicinity of the proposed works. Impacts on water quality could result in a reduction of prey availability for otter to feed on. Potential impact on water quality is localised and temporary in nature.

9.1.8.1 Direct Effects

The section of river channel is in an urban setting where existing disturbance impacts have been predicted. The removal of gravel berm may result in increased levels of disturbance, however, there were no resting places found in proximity of the works and there will be no loss of otter holts or couches. On completion of works, habitats will be comparable to those present before the gravel deposition build up.

9.1.8.2 Indirect Effects

The potential for indirect effects on otter via a number of pathways was considered. Effects were considered in respect of the site-specific conservation objectives for the species. The potential for effects was considered in relation to construction and operation phases of the proposed flood relief scheme.

Construction

The release of sediments or hydrocarbons may result in an increase of nutrients and/or pollutants in the water column that could reduce downstream water quality and/or an increase in silt levels in the water column. Impacts to water quality may disperse or reduce the number of fish prey species available to otters along the river. Mitigation measures provided within this report prevent the runoff of sediment and hydrocarbons during the gravel removal works.

Removal of the instream gravel deposit at Athea bridge will require otter to travel up and downstream via the river channel or around the gravel removal works, however there is sufficient space around the works to ensure that otter are not forced onto the R524 during works. Furthermore, otters are largely nocturnal animals and will be largely active outside of the working day. There will be no permanent loss of habitat suitable for otter as a result of the instream gravel removal.

Operational

There will be no significant or permanent disruption for otter commuting as they can remain within the river channel, post works completion.

9.2 STACK'S TO MULLAGHAREIRK MOUNTAINS, WEST LIMERICK HILLS AND MOUNT EAGLE SPA

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA [A082] is a very large site centred on the border between the counties of Cork, Kerry and Limerick. The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Hen Harrier.

The boundary of the SPA was defined to include a variety of upland habitats including forestry and open areas of blanket bog and heath and the objectives include to maintain the permanent extent of these habitats which constitute an important nesting and foraging habitat for breeding Hen Harrier.

The site-specific conservation objective for [A082] is to maintain or restore the favourable conservation condition. The favourable conservation status of Hen Harrier is achieved when:

- Population dynamics data on Hen Harrier indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitat;
- The natural range of Hen Harrier is neither being reduced nor is likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain Hen Harrier populations on a long-term basis.

Threats and pressures to the SPA include silviculture, all paved/tarred roads, irrigation, paths, tracks and cycling tracks including non-paved forest roads, dispersed habitation and peat extraction.

Potential Impacts

Hen Harrier predominantly breed within heather and moorland and young forestry plantations, where they nest on the ground. The areas of the SPA within and adjacent to the works do not contain suitable breeding habitats and are more likely to be used for foraging. The SPA is located approximately 171m from the proposed works and it is considered that any increased noise generated during gravel removal works will not have any impact on breeding Hen Harrier within the SPA. Hen Harriers that are foraging close to the

proposed works may be temporarily disturbed due to increased noise, however, it is considered that any localised temporary disturbance to any foraging Hen Harriers will not have a significant adverse effect on maintaining or restoring their favourable conservation condition.

9.2.1 Assessment of potential for adverse effects

9.2.1.1 Direct Effects

No works will be undertaken within approximately 171m of the SPA. As noted above the habitat around Athea is likely foraging ground. Disturbances of a temporary nature may occur due to increase levels of noise and vibration. However, it is considered that any localised temporary disturbance to foraging Hen Harriers will not have a significant adverse effect on maintaining or restoring their favourable conservation condition. The adjacent building may also act as a buffer to the noise generated during the proposed works.

9.1.8.2 Indirect Effects

The measure that are in place to prevent and mitigate pollution and silt run off have been mentioned above and are described in the list of mitigation measures in the Section 11.

10 CUMULATIVE ASSESSMENT OF THE EFFECTS OF THE PROPOSED FRS WITH OTHER PLANS/ PROJECTS

Cumulative and/or in-combination impacts are changes in the environment that result from numerous anthropogenic impacts. In order to fully assess the potential impact of the proposed development on European Sites, the project must be assessed alone or in combination with existing activities and proposed plans for the region. This step aims to identify at this early stage any possible significant in-combination or cumulative impacts.

Potential impacts of the proposed project relate to direct and indirect impacts on the Lower River Shannon SAC and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA in combination with other plans and projects as a result of the gravel removal works from the Athea bridge on the River Galey.

10.1 DEVELOPMENT PLANS

10.1.1 Limerick County Development Plan 2010-2016 (extended)

The Limerick County Development Plan 2010-2016 (extended) has included a suite of environmental policies and objectives to protect designated sites and the aquatic environment in County Limerick. All policies and objectives within the plan were assessed as part of a Natura Impact Report with amendments made to ensure that with mitigation in place there would be no significant adverse effects on the integrity of European sites.

Some key environmental protection policies and objectives include the following:

“EH01: It is the objective of the council to maintain the conservation value of those sites as defined by the Planning and Development Acts 2000-2010 (SPAs, SACs) or lands proposed for inclusion by the Department of Environment, Heritage and Local Government, as well as any other sites that may be so designated during the lifetime of this plan. Ensure that development projects and development plans likely to have significant effects on European Sites (individually or in combination with other plans or projects) are subject to an appropriate assessment and will not be permitted under this plan unless they comply with article 6 of the Habitats Directive.”

“EH02: It is the objective of the council to seek to protect plant, animal and bird species that have been identified by the Habitats Directive, Birds Directive, Wildlife Act and the Flora Protection Order in line with national and EU legislation.”

“EH019: It is the objective of the council to implement the programmes of measures developed by the River Basin District Projects under the Water Framework Directive in relation to; Surface and groundwater interaction, Dangerous substances, Hydro-morphology, Forestry, On site wastewater treatment systems, Municipal and industrial discharge, Urban pressure and Abstractions.”

“SE01: It is the policy of the council to support and implement the interjurisdictional Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary in conjunction with the other relevant local authorities and agencies. All proposed developments shall be in accordance with regional and national priorities and the SEA Directive, Birds and Habitats Directive, Water Framework Directive, Shellfish Waters Directive, Flood Directive and EIA Directive. All proposed developments shall be informed by the mitigation measures for ensuring the integrity of European Sites outlined within the Limerick County Development Plan 2010-2016 (extended).”

The development of the gravel removal works from the River Galey at Athea bridge complies with the objectives and policies of the Limerick County Development Plan. Any negative impact to the environment including the spread of invasive species, reduction in water quality in the River Galey or disturbance to protected species could lead to a conflict with objectives and policies listed above. However, the strict

adherence to the environmental control and protection measures and biosecurity measures, as detailed in Section 11 below, will ensure compliance with the environmental policies and objectives of the Limerick County Development Plan.

10.1.2 River Basin Management Plan for Ireland 2018-2021 (2nd Cycle)

The Water Framework Directive (WFD) sets out the environmental objectives which are required to be met through the process of river basin planning and implementation of those plans. Specific objectives are set out for surface water, groundwater and protected areas. A key purpose of the River Basin Management Plan (RBMP) is to set out priorities and ensure that implementation is guided by those priorities. The second cycle of the RBMP aims to build on the progress made during the first cycle. Overall, RBMP assesses the quality of water in Ireland and presents detailed scientific characterisation of our water bodies. The characterisation process also takes into account wider water quality considerations, such as the special water-quality requirements of protected areas.

Approximately 800 waterbodies encompass protected European sites with water-dependent habitats and species. At present, 195 of these are not meeting the required water supporting conditions. Agriculture is a significant pressure in 41% of these waterbodies, followed by hydro morphological pressures in 30% of these waterbodies. Other accounts for 20% of waterbodies and includes abstractions, anthropogenic pressures, invasive species, historically polluted sites and unknown pressures. Some key environmental protection policies and objectives include the following:

- *“To protect, enhance and restore surface waters, with the aim of achieving good status (ecological and chemical) for all waterbodies”;*
- *“To achieve compliance with objectives and standards under which the individual protected areas have been established”;*
- *“Ensure full compliance with relevant existing EU legislation”;* and
- *“Prevent deterioration”.*

The objectives for the River Basin Management Plan (2018-2021) is to prevent deterioration, restore the good status and achieve water related protection area objectives. The RBMP is in compliance with the EU Water Framework and ensures that only development's that can clearly demonstrate that the proposal would not have unacceptable impact on the water environment may proceed. The proposed gravel removal works is compliant with the recommendations of the RBMP.

Strict adherence to the environmental control and protection measures and biosecurity measures, as detailed in Section 11 below, will ensure compliance with the environmental policies and objectives of the RBMP. The implementation of the RBMP will not contribute to in-combination or cumulative impacts with the proposed gravel removal works.

10.1.3 National Biodiversity Action Plan 2017-2021

Ireland's third iteration of the National Biodiversity Action Plan (BAP), for conserving and restoring Ireland's biodiversity covering the period 2017 to 2021. The aims are to achieve Ireland's Vision for Biodiversity through addressing issues ranging from improving the management of protected areas to increasing awareness and appreciation of biodiversity and ecosystem services. Some key policies and objectives include the following:

- *“Objective 6: Expand and improve management of protected areas and species”;*
- *“Target 6.1.7: Implement the conservation measures necessary to achieve the published conservation objectives of European sites. Develop and implement additional measures as necessary to achieve favourable conservation status both nationally and at site level”;*

- **“Target 6.3.3:** *Develop, adopt and implement restoration programmes for Lamprey, Shad species, Salmon, Sea trout and Eels. Improve passage of migratory fish species and review effectiveness of existing passes and impacts of existing and potential hydroelectric dams and address other barriers to fish movement.”; and*
- **“Target 6.3.4:** *Implement species action plans, including for: Red Squirrel, Red Grouse, Grey Partridge, Hen Harrier and reintroduced raptors and initiate further management actions as necessary”.*

The development of the gravel removal works from the River Gale at Athea bridge complies with the objectives and policies of the BAP. Any negative impact to the environment including the spread of invasive species, reduction in water quality in the River Gale or disturbance to protected species could lead to a conflict with objectives and policies listed above. However, the strict adherence to the environmental control and protection measures and biosecurity measures, as detailed in Section 11 below, will ensure compliance with the environmental policies and objectives of the Plan.

10.2 OTHER DEVELOPMENTS

A review of the Limerick City and County Council Planning Enquiry Webpage identified a number of approved applications in Athea. Limerick City and County Council, as the Competent Authority, would have screened each of these applications for Appropriate Assessment. In relation to current and future planning applications, Limerick City and County Council or An Bord Pleanála, as the competent authorities, will screen each application for Appropriate Assessment. Any new applications will be examined and the requirement for Screening or Appropriate Assessment will be determined on a case-by-case basis to comply with the requirements of Article 6 of the Habitats Directive. Therefore, it is not considered that there will be any significant adverse in combination effects with the proposed gravel removal works and any other development.

It is considered that with the implementation of specific environmental protection and control measures (Section 11) to avoid/negate any potential adverse impacts, there will be no cumulative impacts arising in combination with any other plans or project which would be of significance in respect to impacts affecting the conservation objectives of integrity of the Lower River Shannon SAC and the Stack’s to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA.

11 AVOIDANCE AND MITIGATION MEASURES

Section 9 identifies a number of potential impacts on a number of protected habitats and species associated with the proposed gravel removal works that require mitigation. All required mitigation is set out below as a full suite of actions required in order to ensure that the proposal does not adversely impact on the conservation objectives of the Lower River Shannon SAC and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA or any Qualifying Interests that may occur onsite.

11.1 GENERAL MITIGATION

All works proposed for the removal of gravel from Athea bridge will be conducted as identified in Section 6 of this report. In addition, the following mitigation measures are proposed:

- A suitable qualified Ecological Clerk of Works (ECoW) shall be appointed for part time attendance for the full duration of the works and will supervise all aspects of the gravel removal process:
 - The ECoW will hold a minimum University degree in Environmental Science, (NFQ Level 8);
 - Minimum of 5 years' post-graduate experience in ecological assessment, appraisal techniques and mitigation monitoring;
 - The ECoW will be responsible for biodiversity monitoring elements and providing toolbox talks; and
 - The ECoW will be responsible for monitoring water quality throughout the works duration for the removal of gravels from the bridge area. This includes the authority to cease works immediately if alarmed sondes are triggered (see Section 11.5 on Water Quality Monitoring).
- All personnel involved with the project shall be informed of the requirement for protection of designated habitats including the aquatic environment, i.e. Lower River Shannon SAC, and best practice methodologies to be employed via toolbox talks or formal presentation from the ECoW;
- The ECoW shall be onsite part time until all works have finished and all machinery has been demobilised and has left the site;
- The access location to the proposed works shall be clearly marked out prior to the commencement of works. No works will be permitted outside of this works area;
- Appropriate fencing shall be installed and maintained for the duration of the works to prevent the public from entering the works site;
- Clearance of vegetation from the gravel deposit shall be undertaken as early as possible prior to the commencement of works and maintained until work commences to prevent bird nesting. In the event that vegetation clearance is not possible before the commencement of works, upon agreement by the NPWS, a check to confirm the absence of nesting birds should be carried out by a suitably experienced ecologist no more than 48 hours prior to works;
- Works shall only be carried out in dry, low flow conditions. Met Eireann five-day forecasts will be monitored on a daily basis prior to works commencing and no gravel removal will be carried out during prolonged wet weather;
- Works shall be carried out during day time hours only (08:00-18:00);

- Excavated material shall not be stored beyond the working day, however in the event that this is not practical, appropriate precautions in relation to the material will be taken. These precautions will include appropriate storage and covering;
- Full method statements and Risk Assessments shall be provided and approved prior to the commencement of works;
- All works shall be undertaken in accordance with OPW's Environmental Management Protocols & Standard Operating Procedures; and
- The guidelines provided by Inland Fisheries Ireland shall be adhered to in order to ensure that there is a neutral impact on the water environment during the gravel removal works of the proposed development.

11.2 SUSPENDED SOLIDS AND HYDROCARBONS MITIGATION

Suspended solids, hydrocarbons and other pollutants must be controlled by minimising the creation of sediment-laden run off and by the control of hydrocarbons and other pollutants.

11.2.1 Silt curtains and Floating Booms

Silt movement within the working area will be managed through the use of silt curtains and floating booms that will provide instream sediment control by isolating sediment-laden waters behind the curtain from passing river flows thus allowing sedimentation of disturbed waters within the enclosed area, while the booms capture and prevent any floating hydrocarbons from escaping downstream. Silt curtains comprise a linear float and load-line/ rope, a curtain skirt which hangs from the linear float, and a ballast weight (e.g. chain) at the base of the curtain, and possible anchors. The curtain skirt generally comprises of woven geotextile, canvas / tarp material or nylon reinforced PVC. The following measures are proposed:

- Silt curtains will be installed as part of in stream works before machinery enter the watercourse and will be removed once the works have been completed and will be disposed of off-site;
- Silt curtains will be positioned instream at the downstream end of the grave deposit and extend from the riverbank in a semi-circle around the gravel deposit for the length of the deposit as identified in Figure 5-2. They will prevent potential sediment-laden waters from the works area entering the River Galey;
- The project contractor will ensure that the silt curtains are fit for purpose and that it achieves the prevention of sediment-laden water generated from instream works from entering the River Galey and prevents degradation of water quality;
- The contractor shall carefully choose the type and depth of silt curtain in agreement with the ECoWs to ensure it is not damaged/swept away during flood conditions. Maintenance will be conducted daily; and
- In the event of a significant flood warning, silt curtains will be removed to manage and limit the potential for generation of sediment and mobilisation of both sediment and pollutants downstream.

11.2.2 Hydrocarbon control

Accidental release of hydrocarbons within the working area during refuelling or machinery working in the river channel will be managed through the use of silt curtains and floating booms. The following measures are proposed:

- An emergency-operating plan will be established to deal with incidents or accidents during in channel works that may give rise to pollution within the river. This will include means of containment

in the event of accidental spillage of hydrocarbons or other pollutants (including oil booms, soakage pads etc.);

- Fuels, oils, greases and hydraulic fluids will be fully bunded (110% bunding) and will be located in a designated hard standing area located within a minimum distance of 50m from any watercourse/waterbody linked to the designated sites. Refuelling of machinery will be carried out off site or in a contained bunded area on a hard surface;
 - All machinery operating within and adjacent to the river use biodegradable hydraulic oil; and
 - All plant and machinery are regularly maintained and serviced to minimise the release of hydrocarbons.
- Spill kits will be made available close to the works area and all staff will be trained in the correct use. Any waste oils or hydraulic fluids shall be collected, stored in appropriate containers and disposed of offsite in an appropriate manner;
 - Appropriate training will take place prior to the commencement of works. Training will be provided by the ECoW.
- All machinery and plant used will be regularly maintained and serviced and will comply with appropriate standards to ensure that leakage of diesel, oil and lubricants is minimised;
- Biodegradable fuels will be used in all machinery on site; and
- Machinery will never be washed in watercourses. The location for any washing of machinery will be agreed with the ECoW prior to the commencement of works.

11.3 MITIGATION FOR WORKS IN CHANNEL

The following methodology details the mitigation to be implemented for in stream works during the gravel removal works on the River Galey:

- To reach the gravel deposit within the channel a defined access route will be created and agreed by the relevant authorities. The access route will use existing exposed material from the deposit and will prevent machinery entering the watercourse directly, avoiding the mobilisation of silts and minimising the potential for hydrocarbon release into the watercourse;
- Access will only take place along the defined route once silt curtains and floating booms are in place;
- Riparian vegetation near the access point should be left intact where possible. If areas have to be disturbed, all practicable measures should be taken to prevent soil from entering the River Galey;
- The removal of silts and sediments will be to a dumper vehicle with a toothless bucket excavator. All sediments not cleared for beneficial use on-site will be transported off site for appropriate disposal;
- There will be no removal of gravel below the 300mm summer-low water levels;
- The proposed works will not be undertaken during the salmonid spawning season. Gravel removal works will be undertaken between July 1st to September 30th, to protect spawning salmonids and the times during the early life stages of salmonid fish;
- At no time will the river be completely dammed as a result of the works. The works will be carried out in a dry section on one side of the river, with the other side of the river being allowed to flow normally. This will allow fish passage through the River Galey at all times during the works;

- No machinery will be left overnight in the river. All machinery will be taken offsite and stored on a hard standing surface within a bunded area to ensure that, in the event of a hydraulic failure or fuel leak when unattended, there is no risk to the river;
- All in-stream works will comply with current best practice, including Inland Fisheries Ireland Guidance on protection of fisheries during construction works in and adjacent to waters (IFI, 2016); and
- At least one week's notice will be sent to the NPWS and IFI of the commencement of works.

11.4 BIOSECURITY MEASURES

The desktop study and site visits have identified a number of invasive species within the Athea gravel clearance area, including stands of Himalayan balsam on the gravel deposit. Invasive species have the potential to spread to other locations via machinery used on site or via the river itself if plant material is disturbed. The following biosecurity measures will be put in place to ensure no spread of invasive species:

- A pre-construction survey for invasive species will be conducted at the earliest stage possible to update and inform on the status of invasive plant species in or near the works area. Particular attention should be given to identifying those invasive species identified on the Third Schedule of the Birds and Natural Habitats Regulations 2011 (as amended). This survey should be undertaken during the appropriate botanical season (April to September);
- All plant machinery and construction related vehicles arriving and leaving site will be checked for the presence of plant material e.g. leaves roots and rhizomes from non-native invasive species;
- All staff will be trained by the ECoWs in the identification of invasive species and noxious weeds and the associated biosecurity measures required when working on site;
- Non-native invasive species will be managed or avoided where they occur throughout the works area, in line with the NRA Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road Schemes (NRA, 2010), and any other best practice guidance which may be available in the interim;
- Any Himalayan balsam identified during the site survey on the gravel deposit will be hand-pulled prior to the commencement of the works. Hand pulling must only take place before the plant goes to seed around mid-June depending on the growing season;
- Contaminated material will be stockpiled off site. The area will be clearly marked, lined with a root barrier membrane and be of sufficient size to hold all the material to be excavated; and
- Seeds may survive in the excavated material for up to 18 months. A two-year programme of control, which will extend beyond the works period will be required.

11.5 WATER QUALITY MONITORING

An additional mitigation measure to monitor the potential suspension and transfer of sediment and pollutants downstream will be implemented using a standard scientific methodology, given the sensitivity of the SAC site, as follows:

Alarmed sondes will be employed to measure turbidity in the river channel upstream and downstream of the works area during gravel removal works. These will continuously measure turbidity for a suitable time ahead of the works to gather baseline data from the River Galey. They will continuously measure turbidity throughout the gravel removal works period. If there is a 20% or greater difference between upstream and downstream turbidity, works will be ceased immediately until the cause of the difference is identified and rectified (if caused by the gravel removal works). The relevant statutory authorities (NPWS, IFI & EPA) will

also be notified. If necessary, water sampling and monitoring of the River Galey can also be completed to test for Total Suspended Solids (TSS) and hydrocarbon concentrations. The suitably trained ECoW will be responsible for all water quality monitoring during the gravel removal works. The most appropriate locations for the proposed turbidity monitors will be determined by the ECoW on site.

11.6 POST CONSTRUCTION WORKS / REINSTATEMENT

Following completion of the gravel removal works, the riverbed will be reinstated as far as is practicable. The following measures are proposed:

Where opportunity exists, enhancement measures may be employed. This will be carried out in liaison with IFI and the ECoW;

- Silts/ sediment which have collected behind the silt curtain will be removed and disposed of offsite;
- Upon completion of the site works, all plant and machinery will be removed. The adjacent grasslands to the site will be left to regenerate naturally or reinstated to its original condition and site fencing will be removed; and
- Any reinstatement of breaches in hedgerows and tree lines will be carried out in consultation with a suitably qualified ecologist. Local strains of native species shall be planted and hedge management shall reflect local traditional styles. However, it is unlikely that hedgerow will be damaged or removed as a result of the works and the removal of woody vegetation will be limited to isolated sections of scrub and occasional riparian trees.

12 CONCLUSIONS

This Natura Impact Statement (NIS) to inform Appropriate Assessment has been prepared for the proposed gravel removal works from Athea bridge in advance of the main Athea FRS. The assessment investigates, in view of best scientific knowledge and applying the precautionary principle, the potential adverse effects on the Qualifying Interests of the Lower River Shannon SAC and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA arising from the proposed gravel removal from the River Galey, in combination with other plans / projects affecting the environment.

The assessment considers whether the proposed works, alone or in combination with other projects or plans, will have adverse effects on the integrity of European Sites. The potential direct and in-direct impacts of the proposed works were examined in view of each European sites conservation objectives and a Stage 2 Habitats Directive Assessment provides mitigation measures to avoid and minimise these potential impacts so that the structure and function of these sites are not adversely affected.

Issues that have been considered as part of the NIS includes the potential for habitat loss, spread of invasive species, disturbance of species and water quality impacts. There will be no removal of gravels/silts below the waterline and so no significant change to river hydrology or river bank structure is foreseen.

It is therefore concluded, beyond reasonable scientific doubt, that with the implementation of the mitigation measures specified in this report, the proposed gravel removal works alone or in combination with other plans and/ or projects will have no adverse effects on the integrity and extent of European Sites: Lower River Shannon SAC and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA.

Accordingly, the Proposed Development will not adversely affect the integrity of any relevant European Site.

13 REFERENCES

- Bailey, M & Rochford, J., (2006) Otter survey of Ireland 2004/2005. Irish Wildlife Manual, No 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin.
- Chanin, P.R.F. (2003). Ecology of the European otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.
- CJEU Case C 164/17 Edel Grace Peter Sweetman v An Bord Pleanála
- DEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. Produced by the National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.
- Fossitt, J. A. (2000). A Guide to Habitats in Ireland. The Heritage Council of Ireland Series
- King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O’Grady, M.F., Poole, R., Roche, W.K., Cassidy, D. (2011). Red Lists Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- Lenton, E.J., Chanin, P.R.F. & Jefferies, D.J. (1980). Otter Survey of England, 1977-79. Nature Conservancy Council, London
- NPWS (2012) Conservation Objectives: Lower River Shannon SAC 002165. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2012) Lower River Shannon SAC (002165) Conservation objectives supporting document-water courses [Version 1]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2012) Lower River Shannon SAC (002165) Conservation objectives supporting document-woodland habitats [Version 1]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2013) Article 17 Habitat Conservation Assessments (Vol. 2) Version 1.1. The Status of EU Protected Habitats and Species in Ireland.
- NPWS (2013) Article 17 Species Conservation Assessments (Vol. 3) Version 1.1. The Status of EU Protected Habitats and Species in Ireland.
- NPWS (2021) Conservation objectives for Stack’s to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA [004161]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
- NRA (2008) Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road Schemes.
- O’Connor W. (2006) A baseline survey of juvenile Lamprey populations in the River Feale catchment. *Irish Wildlife Manuals*, No. 22. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- OPR (2021) Practice Note: Appropriate Assessment Screening for Development Management. Office of the Planning Regulator Fourth Floor (West Wing), Park House, Grangegorman, 191-193A North Circular Road, Dublin 7, D07 EWW4
- Reid, N., Hayden, B., Lundy, M.G., Pietravalle, S., McDonald, R.A. & Montgomery, W.I. (2013) National Otter Survey of Ireland 2010/12. Irish Wildlife Manuals No. 76. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Rooney, S.M., O’Gorman, N.M., Greene, F., King, J.J. (2013) Aspects of brook lamprey (*Lampetra planeri* Bloch) spawning in Irish waters. Proc R Irish Acad B 113:13–26

APPENDIX A - OTTER SURVEY





APPENDIX B - OPW METHOD STATEMENT

Client:	Limerick City & County Council
Project:	Athea Gravel Removal
Site Location:	Athea, Galey River

1 OUTLINE OF PROPOSED WORKS

This Method Statement refers to proposed works at Athea Co. Limerick on the river Galey.

This method statement is specific to removal of in-stream deposited materials only.

The proposed work includes the removal of deposited gravels from within the river channel in the vicinity of the R523 road bridge.

Works will comprise of, 1x 6t excavator and 1x 6t dumper extracting gravels from river channel, excavated material will be moved to the south side of the bridge where a second 14t excavator situated on the river bank will load to tractor and dump trailer for removal off-site to dedicated Limerick City & County council waste facility.

There is open access to the subject and no requirement to alter any approach routes.

Works on site will typically be carried out during standard hours re: 08:00 – 18:00.

It is intended to carry out works in summer months.

Please Note: This method statement should be read in parallel with the completed Project Risk Assessment Form and all relevant project drawings, specifications, schedule of commitments, construction & environmental management plan etc.

TBT Covid-19 Site Safety Induction Shall also be carried out before work commences.

Site Location

Galey River @ R523 Bridge Athea

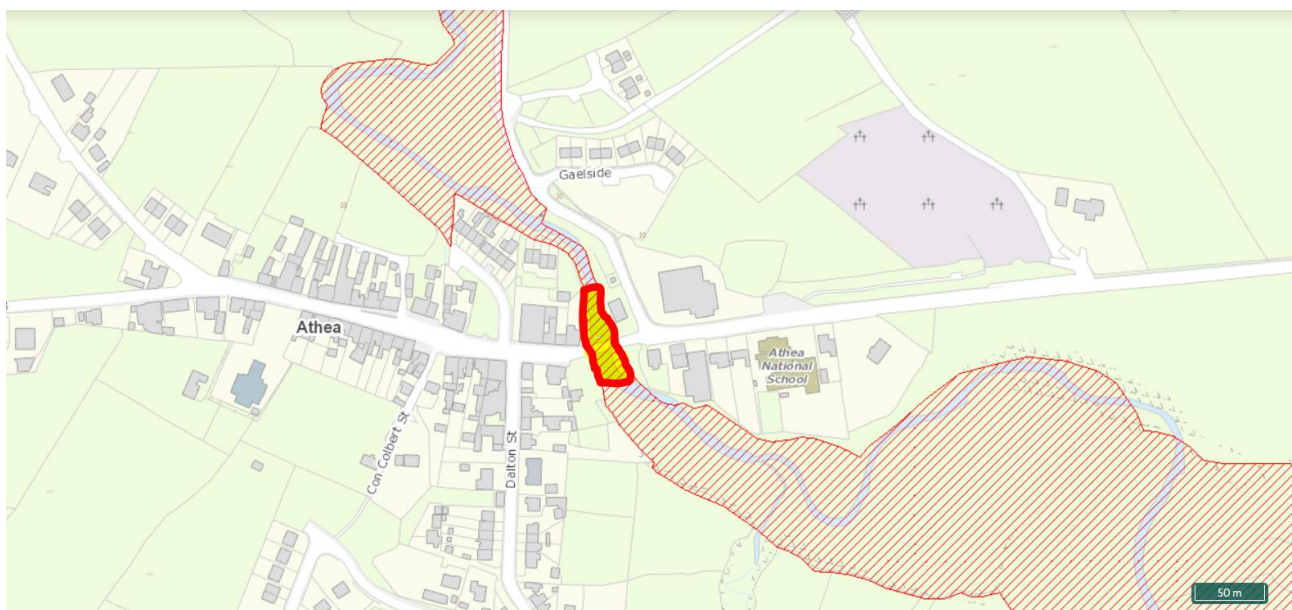


Figure 1: Location Map showing SAC and Site location Included - SAC Included

Client:	Limerick City & County Council
Project:	Athea Gravel Removal
Site Location:	Athea, Galey River



Figure 2: Location Map With Access Route & Proposed Works Area Denoted

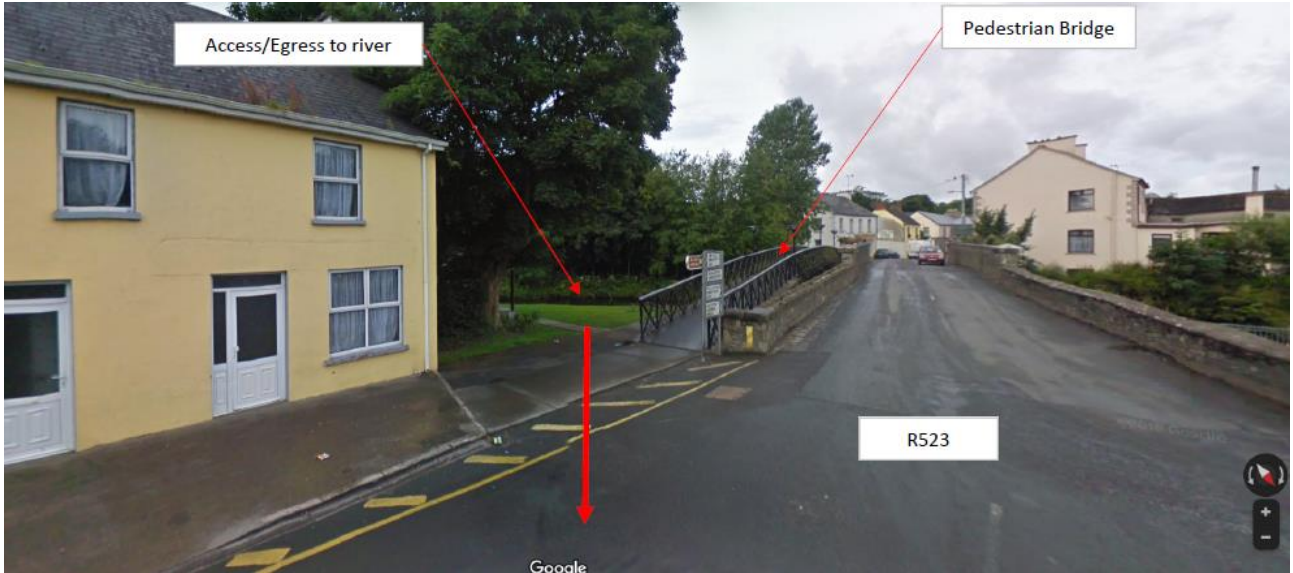


Figure 3: Picture of works access area

Client:	Limerick City & County Council
Project:	Athea Gravel Removal
Site Location:	Athea, Galey River

2 RESPONSIBILITY FOR CONTROL ON SITE		
Project Foreman:	TBC	Phone: TBC
Site Supervisor:	TBC	Phone: TBC
Safety Rep:	TBC	Phone: TBC
Safety Officer:	TBC	Phone: TBC
Site Engineer:	TBC	Phone: TBC

3 EQUIPMENT REQUIRED				
Major Plant	Quantity	Description		Hired
	1	14T Hydraulic Excavator		✓
	1	Site Dumper		✓
	1	8T Hydraulic Excavator (2.5m height restriction)		✓
	4	Tractor Dump Trailer		✓
Other Essential Equipment	Life Rings/Buoys Lifting Chains / Slings			

4 MATERIALS REQUIRED		
Quantity	Description	Notes

5 HEALTH & SAFETY
<p>All site operatives must read, and sign, the specific Project Risk Assessment & Safety Plan relating to this project.</p> <p>The Foreman will advise of any other relevant Health & Safety issues or procedures which must be followed during the construction works.</p> <p>All works carried out on this project and site are to be carried out in accordance with the relevant Risk Assessments and Safety Procedures. A copy of these documents will be available in the Site Office. All operatives are to ensure they are familiar with all of these procedures prior to commencing works.</p> <p>Mechanical plant used on site during these works is restricted to plant approved in advance by staff and may vary depending on requirements.</p>

Client:	Limerick City & County Council
Project:	Athea Gravel Removal
Site Location:	Athea, Galey River

Should any member of staff observe a Health and Safety issue during the course of this construction project, they must immediately inform their supervisor of their concern.

5.1 Establishment of Health & Safety Controls

The site will be prepared initially to ensure the security and safety of the site. This will include preparation of the access route, installation of fencing, gates, safety barriers & environmental barriers, where required.

A small site compound containing a mobile welfare unit including H&S/first aid kit will be used to service works.

Designated areas within the Site Compound will be established for welfare facilities, and plant storage min. (8m from river channel outside of flood level)

It is envisaged that existing area adjacent to Con Colbert Community Hall will be used as site compound Location TBC by LCCC.

All health and safety controls identified in the Project Risk Assessment & Safety Plan shall be established **BEFORE** any construction works commence. This will include signage, fencing, access/egress route, secure access ladders, barriers etc.

All operatives, and visitors to site, are required to wear appropriate PPE at all times.

All personnel to be familiar with **COVID-19** risk assessments/toolbox talks and HSE guidelines and to implement all control measures to mitigate risk of spread on site. The identification of any new working systems or observations is to be highlighted to foreman immediately with additional controls to be implemented.

Visitors to site shall inform the Site Foreman/Supervisor of their presence. Operatives working on the site shall escort any visitors to the Site Foreman/Supervisor immediately upon observing a visitor to the site. The Foreman will deliver a site induction to any visitors upon their arrival to site.

Good housekeeping procedures on the site shall be followed at all times. Materials will be stored tidily in a designated area, as instructed by the Site Foreman.

All potential hazards should be identified and where possible removed or appropriate mitigation measures put in place. All work to be carried out in accordance with appropriate safe working practices.

5.2 Safety Procedures & Risk Assessments

The following Safety Procedures and Risk Assessments, not exclusively, shall be examined and adhered to in the planning and execution of the works.

TMP to be completed prior to works commencing.

Risk Assessments (Project Specific)

TBC

Non-Exhaustive

Safety Procedures (Project Specific)

Client:	Limerick City & County Council
Project:	Athea Gravel Removal
Site Location:	Athea, Galey River

Non-Exhaustive

COVID-19 Compliance Warden TBT
 COVID-19 Onsite Warden Checklist.

5.3 Working Adjacent to Water

The “RA29 Working in or Adjacent to Water” Risk Assessment and “SP32 Working Adjacent to Water” Safety Procedure must be followed by all operatives.

Life Vests to be worn by all operatives.

Throw bags to be present on site.

Guard rails shall be erected to segregate hazards where reasonably practicable.

Life-rings shall be erected at intervals not exceeding 50m along the proposed works areas.

Weather forecasts shall be consulted to ensure no potential large rainfall events are due to occur.

Plant to be stored in adjacent compound outside of flood level.

5.4 Working alongside Utilities

An examination of the GIS-Demo ESB layer network indicates that there does not appear to be overhead or underground assets in the vicinity of the works area.

A safe system of work shall be adopted at all times in relation to works taking place in the vicinity of overhead and underground power lines should they be observed to be present at this site location.

ESB Networks Code of Practice Avoiding Danger from Overhead Lines and HSA Code of Practice Avoiding Danger from Underground Services documents relating to these hazards shall be consulted prior to works being carried out. Copies of these documents are available in the Site Office. Any controls and mitigation measures identified in these documents shall be put in place and adhered to by all operatives.

LCCC to provide information on any known u/g services in the works area. A ground survey (CAT & Genny) by a trained/competent operative will be carried out before any excavation takes place.

5.5 Lifting Operations

Any lifting operations required during this project must be conducted with due regard to the OPW Risk Assessment procedure.

The weights of all objects to be lifted shall be ascertained prior to lifting and all lifting appliances shall be recorded with their assigned Safe Working Load.

Lifting operations shall be undertaken in the presence of a trained slinger/signaller, with the driver of the lifting appliance having also completed slinger/signaller training.

All operatives who will be working in the vicinity of lifting operations will be informed of the lifting plan prior to any works commencing.

Client:	Limerick City & County Council
Project:	Athea Gravel Removal
Site Location:	Athea, Galey River

Ground conditions shall be assessed prior to lifting operations to ensure the lifting appliance has a suitable bearing. If there is a doubt over the ground conditions, timber matting shall be used underneath the lifting appliance.

5.6 Personal Protective Equipment

In addition to the standard PPE, operatives shall be provided with the following equipment for this project:

- Safety Goggles
- Ear Defenders
- Gloves
- Life Jacket
- *Non-Exhaustive*

6 ENVIRONMENTAL PROTECTION & MITIGATION

All works carried out during this project will be undertaken in accordance with OPW’s Environmental Management Protocols & Standard Operating Procedures. (Refer to “OPW Environmental Guidance: Drainage Maintenance & Construction 2019”).

LCCC to advise OPW on environmental mitigation measures prior to commencement of works.

Floating silt curtains can be installed downstream of works if required. Environmental consultant/NIS to advise on specific mitigation required.

Environmental Drainage Maintenance (EDM) Guidelines will be followed at all times. It should be noted these works **are** being carried out within an Environmentally sensitive area re: SAC, SPA or NHA.

Existing GIS habitat mapping will be analysed in advance of works to identify and flag any known sensitive areas. This information will be made available and briefed to the site team in advance of works.

6.1 Specific Environmental Management Procedures & Controls

Fuelling of machines will be carried out in accordance with OPW Protocols, machines will be kept away from the channel (min. 8m) and fuelled at a safe location with all machines provided with spill kits.

All OPW plant use bio-degradable lubricants as OPW environmental protocols.

The jeep delivering fuel is certified in accordance with regulations and double banded.

No re-fuelling to take place within 8m of river bank and to strictly adhere OPW re-fuelling procedures.

No fuels to be stored on site.

Client:	Limerick City & County Council
Project:	Athea Gravel Removal
Site Location:	Athea, Galey River

Any other measures which are deemed necessary by the LCCC Environmental Section will be carried out in a timely manner as is reasonably practicable.

Construction methodology will be such that disturbance along the water side of the bank will be kept to a minimum hence access/egress point at single location only.

6.2 Invasive Species

Himalayan balsam identified within the works area to be managed by LCCC prior to commencement of works.

In the event that any invasive species are encountered on site during the project, LCCC and OPW Environment Section, Invasive Species Ireland or the National Biodiversity Data Centre will be contacted immediately to advise on the procedures to be followed.

The OPW SOP for the management of invasive species will be adhered to and all procedures carried out will be recorded in the Safety File.

6.3 Biosecurity

All staff to refer to OPW Environmental Guidance: Drainage Maintenance and construction 2019 re: EP’S 18A and 18B.

7 METHOD OF WORKS

7.1 Site Management

Prior to works beginning, a site compound shall be established with designated areas for:

- Welfare Facilities
- Plant Storage
- Vehicle Parking (across R523 in public carpark)

7.2 Site Preparation

The works area shall be fenced off to provide safety, security and segregation form public.

7.3 Works Plan

The Foreman, Site Supervisor and excavator operators shall walk the site in advance of any works proceeding to assess ground conditions, determine suitability of the area for the placement of machinery, location of any services, such as overhead/underground power-lines or if there is a requirement for specific measures.

Duration works will be in the region of 2 weeks. This will depend on Flow conditions in the channel and weather conditions being suitable.

Tree adjacent to access point may need to be pruned to allow for access depending on foliage at time of works.

It is envisaged to undertake works in summer months at times of low flow.

The deposition is located in an area where flow in summer months is expected to be low for the duration of the works.

Client:	Limerick City & County Council
Project:	Athea Gravel Removal
Site Location:	Athea, Galey River

Plant items i.e. excavator and site dumper will enter the works area from the right bank upstream of the bridge where deposited gravel causeway protrude above summer water levels and allow for access in almost dry conditions. Existing river gravels will be used to create a temporary access ramp for plant and will be removed as works conclude.

6t excavator will excavate gravels from river channel to just above low flow levels and load to awaiting 6t dumper. Excavation will commence on the downstream extremity leaving approx. 500mm of gravels remaining between deposition and flowing channel to act a buffer and filter any run-off prior to entering channel, note that this should also allow excavator to work in dry conditions by segregating deposition from flowing channel.

Loaded 6t dumper will transport material to upstream end of bridge and tip at foot of river bank at green area location where 14t excavator situated on river bank will load material to awaiting tractor-dump trailers for removal to LCCC dedicated waste facility at Gortadroma.

all plant movements will attempt to take place along deposited material where feasible and safe to do so to mitigate contact with flowing waters and prevent suspended solids entering channel.

Any areas of bank that may be disturbed due to works will be reinstated with 360° excavator, sealed and seeded. LCCC will reinstate all footpaths/street furniture that may be removed due to works.

Discussion must take place between the excavator operator and the operatives working in the vicinity of the plant Operatives must not enter the danger zone of the excavator unnecessarily. Excavator operator is to liaise with the appointed slinger/signaller at all times.

7.4 De-watering of Works Area/Excavations

See 7.3 above.

7.5 Demolition of Existing Structure

No demolition work will be required on the project.

8 COMPLETION OF WORKS

Following the completion of the construction works, the surrounding area shall be reinstated to a condition similar to, or better than the pre-works situation.

A photographic survey of the completed works shall be carried out by the Site Foreman.

Records of any utility diversions and their locations shall be maintained and filed appropriately.

A final inspection of the completed works shall be carried out by the Site Foreman and Engineer to ensure satisfaction with the quality of the works and allow sign-off on Project Risk Assessment / Safety Plan.

LCCC will reinstate all footpaths/street furniture/planting that may be removed due to works.

Temporary fencing and site welfare facilities will be removed post works.

Client:	Limerick City & County Council
Project:	Athea Gravel Removal
Site Location:	Athea, Galey River

9 SCHEDULE OF APPENDICES / DOCUMENTS ATTACHED

Main Documentation:

- Site Location Maps
- Design Risk Assessment
- Project Risk Assessment
- OPW Design Drawings:

OPW Forms:

- Incident Report Form
- Contractors Rules

Statutory Forms:

- TBT Covid-19 Site Safety Induction
- AF3
- AF4
- GA2
- GA3