P2288

ENVIRONMENTAL IMPACT ASSESSMENT REPORT
VOLUME 3: APPENDICES

CHAPTER 8 APPENDICES

RIVERINE COMMUNITY PARK

LIFFORD-STRABANE

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Appendix 8-1

Screening for Appropriate Assessment

Lifford and Strabane Proposed Riverine Community Park

Screening for Appropriate Assessment

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Screening for Appropriate Assessment

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1. INTRODUCTION

The Riverine Community Park project, under the auspices of Donegal County Council proposes to create thirty acres of new community park space and infrastructure at Lifford and Strabane. This project proposes to create a neutral, shared space by utilising agricultural land and wetland lying along either side of the border. It will span both sides of the River Foyle and be connected by a new pedestrian and cycle bridge.

The location of the proposed development site is presented in **Figure 1-1** while the site layout and Design Concept is presented in **Appendix A**.

It is intended that the information contained within this document will inform Article 6(3) Appropriate Assessment process completed by the Competent Authority; i.e. An Bord Pleanála.

1.1 Legislative Context for Appropriate Assessment

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

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

The Habitats Directive has been transposed into Irish law by Part XAB of the Planning and Development Act, 2000 - 2015 and the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011) as amended.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to adversely affect the integrity of European Sites (Annex 1.1).

Article 6(3) establishes the requirement for Appropriate Assessment (AA):

Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan 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(3) of the Habitats Directive, transposed into Irish Law relevant to this project includes Part XAB of the Planning and Development Act, 2000-2019 and the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

Natura 2000 sites in Ireland (herein referred to as European sites) that form part of the Natura 2000 network of protected sites include Special Areas of Conservation (SACs) designated due to their significant ecological importance for species and habitats protected under Annexes I and II respectively of the Habitats Directive, and Special Protected Areas (SPAs), designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/409/EEC). Features for which SACs and SPAs are designated are termed Qualifying Interests and Special Conservation Interests respectively. Collectively, Qualifying Interests and Special Conservation Interests are herein referred to as Qualifying Features.

As this project is not necessary for the management of any European Site, An Bord Pleanála as the competent authority, is obliged to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with other plans or projects, is likely to have a significant effect on European Sites.

The staged assessment process undertaken to meet Article 6(3) obligations is described in **Section 2** below.

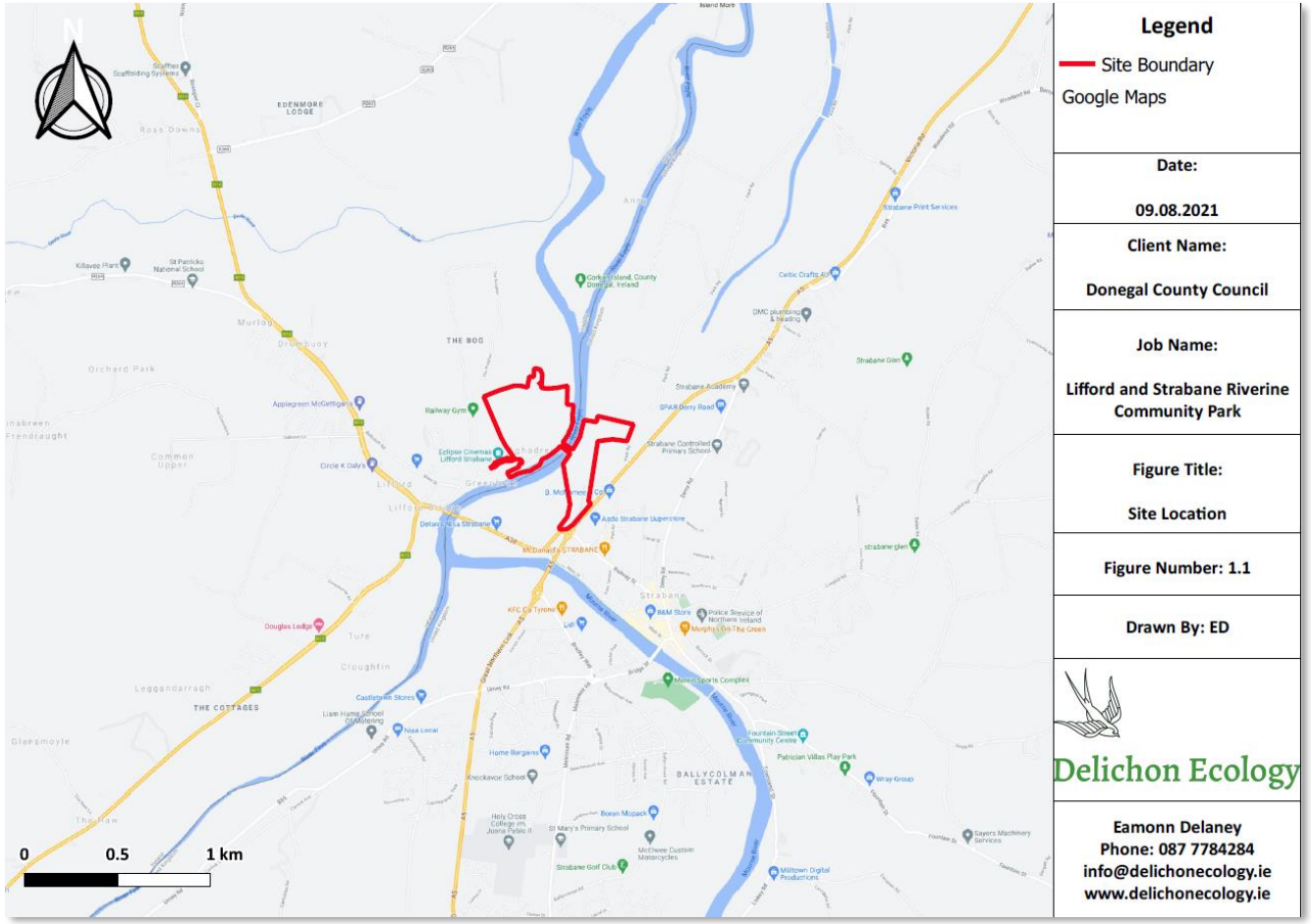

Figure 1-1: Location of Proposed Riverine Community Park

2 METHODOLOGY

2.1.1 Stage 1 – Screening for Appropriate Assessment

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

Whether a plan or project is directly connected to or necessary for the management of the site, and whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a European site in view of its conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be 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. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.

2.1.2 Stage 2 – Appropriate Assessment (Natura Impact Statement)

The aim of Stage 2 of the AA process is to identify any adverse impacts that the plan or project might have on the integrity of relevant European sites. As part of the assessment, a key consideration is 'in combination' effects with other plans or projects. Where adverse impacts are identified, mitigation measures can be proposed that would avoid, reduce or remedy any such negative impacts and the plan or project should then be amended accordingly, thereby avoiding the need to progress to Step 3.

This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement, i.e. the report of a targeted professional scientific examination of the plan or project and the relevant European sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in-combination effects. This should provide information to enable the public authority to carry out the AA.

The information required in a Natura Impact Statement, is outlined in Regulation 42(5) (a) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) as amended, as follows:

A Natura Impact Statement shall, in addition to addressing the issues referred to in the interpretation contained in Regulation 2(1), include such information or data as the public authority considers necessary, and specifies in a notice given under paragraph (3), to enable it to ascertain if the plan or project will affect the integrity of the site.

Where appropriate, a Natura Impact Statement shall include, in addition—

i. the alternative solutions that have been considered and the reasons why they have not been adopted,

ii. the imperative reasons of overriding public interest that are being relied upon to indicate that the plan or project should proceed notwithstanding that it may adversely affect the integrity of a European site,

iii. the compensatory measures that are being proposed.

If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 3, or the plan or project should be abandoned. The competent authority must make a determination to that effect before proceeding to the next stage.

2.1.3 Guidance

This Screening for AA and NIS report has been prepared with regard to the relevant provisions of the EU Council Directive 92/43/EEC and Ireland's EU (Birds and Natural Habitats) Regulations 2011 (as amended).

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

- Dodd A.M., Cleary B.E., Dawkins J.S., Ferry C.D. and Williams G.M. (2008) The Appropriate Assessment of Plans in Northern Ireland: a guide to why, when and how to do it. The RSPB, Sandy.
- DoEHLG (2009, rev. 2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government;
- Section 4, Part 1 of Volume 11 of the DMRB (HD44/09).
- European Commission (EC) (2018), Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats Directive' 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission;
- EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission;
- EC (2007a) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission;
- EC, (2007b), Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. European Commission;
- EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission;
- Chartered Institute of Ecology and Environmental Management (CIEEM) Version 1.1 (September 2019), Guidelines for Ecological Impact Assessment in the UK and Ireland;
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report;
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report;

- Office of the Planning Regulator (OPR) (2021) Practice Note PN01 - Appropriate Assessment Screening for Development Management.
- The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 as amended;
- The European Communities (Birds and Natural Habitats) Regulations 2011 as amended;
- The Planning and Development Act 2000-2019;
- The Planning and Development Regulations 2001-2019; and
- Recent Irish, Northern Irish and European case law on the Habitats Directive.

2.1.4 Information Consulted for this Report

This assessment has been informed by the following sources of data:

- Information on the location, nature and design of the proposed project as provided by the client;
- Department of Housing, Planning, Community and Local Government (DHPCLG) online land-use mapping (www.myplan.ie/en/index.html);
- Office of Public Works (OPW) National Flood Hazard Mapping website (www.floodmaps.ie)
- Environmental Protection Agency (EPA) geoportal mapping tool (https://gis.epa.ie/EPAMaps/);
- National Parks and Wildlife Service protected site and species information and data (https://www.npws.ie/protected-sites);
- Department of Agriculture, Environment and Rural Affairs for information and data on designated sites in Northern Ireland https://www.daera-ni.gov.uk/landing-pages/protected-areas;
- National Biodiversity Data Centre (www.biodiversityireland.ie); and
- Ordnance Survey of Ireland mapping and aerial photography (www.osi.ie).

3 STAGE 1 – SCREENING FOR APPROPRIATE ASSESSMENT

This section provides the information required for the competent authority (An Bord Pleanála) to undertake a Screening for AA and determine in view of best scientific knowledge, whether the proposed works, individually or in combination with other plans and projects, is likely to have a significant effect on the European site. Specifically, it aims to:

- Provide information on, and assess the potential for the proposed works to significantly impact on European sites; and
- Determine whether the activities proposed, alone or in combination with other projects, are likely to have significant effects on European sites in view of their Conservation Objectives.

This screening assessment provides information to address the following elements:

1. Description of the plan or project, and local site or plan area characteristics. The description covers the full scope of the proposed plan or project (i.e. deconstruction phase and operational phase).

2. Description of the receiving environment setting of the proposed plan or project and its surrounds.

3. Identification of relevant European sites within the projects the potential zone of influence. A preliminary assessment to determine connectivity between the proposed works and receptors (i.e. European sites and/ or features for which the sites are designated). Where connectivity exists, the receptors in question are brought forward in the screening assessment process.

4. For receptors that exhibit potential connectivity to the proposed work a screening assessment is undertaken to establish whether the plan or project is likely to have a direct, indirect or cumulative effect on receptors based on a consideration of likely impacts (i.e. an assessment of significance of effect).

5. Screening statement with conclusions on whether or not an AA is necessary for the relevant a Qualifying Feature.

3.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns. The site measures approximately 11.69 hectares in total, with approximately 5.73 acres on the Lifford side and 5.96 acres on the Strabane side.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused car park, with the rest of the site consisting of woodland.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

3.2 General Description of Proposed Development

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways and cycleways, wetlands supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of twenty-five acres by utilising agricultural land and wetlands lying along either side of the
border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events.
- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

Ancillary works are also required for pre-construction ground investigations, provision of slipway car parking and associated surface water attenuation and the upgrade and integration of existing and proposed stormwater and drainage services. These elements are as follows:

- Proposals for storm water management accommodation works on the Lifford side of the study area. Site runoff from open grassland areas will be managed via a piped drainage network draining at several points into the Deele_010 watercourse and a contributory drainage channel located near the northern and north-western boundary of the study area.

- Drainage Management for the nearby Three Rivers Complex. The proposed Riverine Park access road will intersect the infiltration area currently associated with the Three Rivers Complex drainage design. Therefore the Riverine project will include a suitable design soakaway / attenuation, and provision of petrol interceptors as part of the access road construction.
- Proposals for three car parking spaces at the proposed slipway on the Lifford side of the study area. The car park will drain to a oil-water interceptor, with the interceptor outfall discharging to the sub surface via a soakaway.
- Ground Investigation - Geotechnical Investigation Boreholes to be drilled at the Lifford Bridge Crossing Site (Crane Platform / Crane Working Pad) during the construction phase to assist in determining foundation designs and associated dimensions.

3.2.1 Proposed Site Design

Sustainable development is central to the design, delivery and implementation ethos of both Donegal County Council (DCC) and Derry City and Strabane District Council (DCSDC). It is proposed to design an iconic park to create a welcoming, person centred environment which will optimise the opportunity for person-to-person interaction.

It is proposed to reuse earth material for landform rather than removal off site in order to reduce carbon emissions and landfill. Sustainable Urban Drainage Design System (SUDS) will be employed to harvest rainwater, allow for containment of run-off and deploy attenuation measures for hard surfaces. Mitigation measures will be put in place, through consultation with Loughs Agency to ensure that the River Foyle remains unaffected throughout the construction and lifespan of the proposed development.

The following elements are to be incorporated into the final design of the proposal in order to minimise environmental impact:

- The use of timber from sustainable sources must be considered.
- The use of loose ground cover to facilitate water percolation and minimal impact on the natural water flow to the River must also be considered.
- Orientation of the pavilion building to maximise solar gain for space heating and use of a green sedum roof or similar for energy efficiency and positive impacts for pollinating insects.
- Use of site contours for new path networks to minimize site impact and the carbon footprint of new path infrastructure.
- Conservation of the wetland areas with proactive biodiversity and environmental training programmes to encourage its enhancement and protection.

The design must primarily optimise the use and mix of space in terms of functional space, circulation space and provision for services both planned at this stage and flexible in terms of future re-designation of areas.

The proposed Park will be developed on lands adjacent to and partially within the River Finn SAC (Site Code: IE0002301) and River Foyle and Tributaries (Site Code: UK0030320). The proposed bridge crossing will be within both SAC's. The site layout and Design Concept is presented in **Appendix A**.

3.3 European Sites within the Project Zone of Influence

This stage of the screening for AA process describes European Sites within the Zone of Influence (ZoI) of the proposed project. A 15km buffer zone of influence (ZoI) has been chosen as a precautionary measure, to ensure that all potentially affected European Sites are included in the screening process, which is in line with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG, 2009, rev. 2010).

The integrity of a European Site (referred to in Article 6.3 of the EU Habitats Directive) is determined based on the Conservation Status of the features (habitats and/ or species) for which SACs and SPAs are designated. The Qualifying Interests (QI) and Special Conservation Interests (SCIs) for protected sites have been obtained through a review of the Conservation Objectives documents available from the NPWS website www.npws.ie.

There are four European sites located within 15km of the proposed works (See **Figure 3.1**), these are as follows:

- River Finn SAC (002301),
- River Foyle and Tributaries SAC (UK0030320),
- Moneygal Bog SAC (UK0030211), and
- Owenkillew River SAC (UK0030233).

The site also supports remote hydrological connectivity (>32km downstream) to two European Sites; i.e. Lough Foyle SPA UK9020031 and Lough Foyle SPA 004087.

In addition, consultation received from Northern Ireland Environment Agency (NIEA) recommended that the following ranges should be used when screening likely significant effects for either Harbour (common) Seal of Grey Seals:

- All SACs within 135km of the project should be screened for Grey Seals (*Halichoerus grypus*), and
- All SACs within 50km should be screened for Harbour Seals (*Phoca vitulina*).

To this end, there are two SACs that support Grey Seal or Harbour Seal as feature of Qualifying Interest within 135km and 50km respectively; i.e. the Maidens SAC (located 108km west) and Donegal Bay (Murvagh) SAC (located 46km west/south-west).

The assessment of connectivity between the European Sites and the proposed works follows the potential source-pathway-receptor model, which identifies the source of likely significant impacts, if any, the pathway (land, air, hydrological, hydrogeological pathways, etc) along which those impacts may be transferred from the source to the receiving environmental receptors (i.e. European Sites and/ or features for which the sites are designated).

Where it is evident that there is no connectivity between the proposed work and receptors (i.e. European Sites and/ or features for which the sites are designated), the receptors are excluded from the AA process. Similarly, where connectivity exists between the proposed work and receptors but is deemed not to result in likely significant effects to the receptor, the receptor can be screened out (i.e. likely significant effects to receptors excluded; receptor not considered further in AA process).

In contrast to the above, where it is not possible to exclude likely significant effects on the basis of best scientific knowledge, a more detailed scientific assessment of the proposed works is required which focuses on the European Sites likely to be affected and the relevant designated feature in question.

Figure 3-1 shows the European sites within the Zone of Influence (ZoI) of the proposed development site while **Figure 3-2** displays the European sites in closer proximity to the study area. **Table 3-1** provides details on the distance and connectivity of European Sites within the Zone of Influence (ZoI) of the proposed works.

Table 3-1: European Sites within the proposed development's Zone of Influence

Site Code	Site Name	Qualifying Features / Special Conservation Interest Species	Distance from Study Area	Connectivity
002301	River Finn SAC	1106 Atlantic Salmon *Salmo salar* 1355 Otter *Lutra lutra* 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) 4010 Northern Atlantic wet heaths with *Erica tetralix* 7130 Blanket bogs (* if active bog) 7140 Transition mires and quaking bogs	The proposed development is partially located within this European Site.	Direct and indirect connectivity as the proposed development is partially located within this European Site.
UK0030320	River Foyle and Tributaries SAC	1106 Atlantic Salmon *Salmo salar* 3206 Water courses of plain to montane levels with the Ranunculus fluitans and Callitricho-Batrachion vegetation 1355 Otter *Lutra lutra*	The proposed development is partially located within this European Site.	Direct and indirect connectivity as the proposed development is partially located within this European Site.
UK0030211	Moneygal Bog SAC	7110 Active raised bog*	This European Site is located 13.6km south-west of the proposed development.	No potential for connectivity due to distance and absence of viable ecological vectors.

Site Code	Site Name	Qualifying Features / Special Conservation Interest Species	Distance from Study Area	Connectivity
UK0030233	Owenkillew River SAC	1029 Fresh Water Pearl Mussel *Margaritifera margaritifera* 3260 Water courses of plain to montane levels with the Ranunculus fluitans and Callitricho-Batrachion vegetation 91A0 Old Sessile Oak woods with *Ilex* and *Blechnum* in the British Isles 91D0 Bog Woodland 1355 Otter *Lutra lutra* 1106 Atlantic Salmon *Salmo salar*	This European Site is located 13.9km south-east of the proposed development.	Located upstream of the works. There is no potential for connectivity due to distance and absence of viable ecological vectors.
UK9020031	Lough Foyle SPA	A037 Bewick's Swan *Cygnus columbianus bewickii* A038 Whooper Swan *Cygnus cygnus* A140 Golden Plover *Pluvialis apricaria* A157 Bar-tailed Godwit Limosa lapponica A046 Light-bellied Brent Goose *Branta bernicla hrota*	>32km downstream via the River Finn.	Potential tenuous hydrological connectivity via the waters of the River Finn.
004087	Lough Foyle SPA	A001 Red-throated Diver *Gavia stellata*	>32km downstream via the River Finn.	Potential tenuous hydrological connectivity via the waters of the River Finn.

Site Code	Site Name	Qualifying Features / Special Conservation Interest Species	Distance from Study Area	Connectivity
		A005 Great Crested Grebe *Podiceps cristatus* A037 Bewick's Swan *Cygnus columbianus bewickii* A038 Whooper Swan *Cygnus cygnus* A043 Greylag Goose *Anser anser* A046 Brent Goose *Branta bernicla hrota* A048 Shelduck *Tadorna tadorna* A050 Wigeon *Anas penelope* A052 Teal *Anas crecca* A053 Mallard *Anas platyrhynchos* A063 Eider *Somateria mollissima* A069 Red-breasted Merganser *Mergus serrator* A130 Oystercatcher *Haematopus ostralegus* A140 Golden Plover *Pluvialis apricaria* A142 Lapwing *Vanellus vanellus*		

Site Code	Site Name	Qualifying Features / Special Conservation Interest Species	Distance from Study Area	Connectivity
		A143 Knot *Calidris canutus* A149 Dunlin *Calidris alpina alpina* A157 Bar-tailed Godwit *Limosa lapponica* A160 Curlew *Numenius arquata* A162 Redshank *Tringa totanus* A179 Black-headed Gull *Chroicocephalus ridibundus* A182 Common Gull *Larus canus* A184 Herring Gull *Larus argentatus* A999 Wetlands		
UK0030384	The Maidens SAC	1170 Reefs 1110 Sandbanks which are slightly covered by sea water all the time 1364 Grey Seal *Halichoerus grypus*	108km east	Very tenuous remote connectivity via coastal and estuarine waters off the Donegal Coast and the Northern Ireland coastline.
000133	Donegal Bay (Murvagh) SAC	1140 Mudflats and sandflats not covered by seawater at low tide 1365 Harbour Seal *Phoca vitulina*	46km west / south-west	Very tenuous remote connectivity via coastal and estuarine waters off the Donegal Coast and the Northern Ireland coastline.

Site Code	Site Name	Qualifying Features / Special Conservation Interest Species	Distance from Study Area	Connectivity
		2130 *Fixed coastal dunes with herbaceous vegetation ('grey dunes') 2190 Humid dune slacks		

3.3.1 Summary of Connectivity Analysis

The proposed development site supports is partially located within / overlaps two European Sites; i.e. River Finn SAC (002301) and River Foyle and Tributaries SAC (UK0030320). The proposed development site does not support connectivity with any other European Sites within the project Zone of Influence.

Two Special Protection Areas, Lough Foyle SPA (Site Code: UK9020031)[1] and Lough Foyle SPA (Site Code: 004087)[2] are located more than 32km downstream of the proposed development site (See Figure 3.3). The proposed riverine community park supports remote and very tenuous connectivity to these European Sites via the River Finn. The distance between the proposed development site and the dilutional capacity of the watercourses, waterbodies and the large transitional waterbody of Lough Foyle are likely to remove the potential any of significant effects, direct or indirect to the SCI species of Lough Foyle SPA as a result of water borne pollutants. In addition, the proposed project also supports remote and very tenuous connectivity to two European Sites that support Grey Seal and Harbour Seal as features of Qualifying Interest. These are the Maidens SAC (UK0030384) and Donegal Bay (Murvagh) SAC (000133).

Due to this remote and tenuous connectivity between the proposed development and these European Sites, the potential effects associated with the proposed development and need for best practice measures and mitigation measures should be considered further.

[1] Designated in Northern Ireland
[2] Designated in the Republic of Ireland

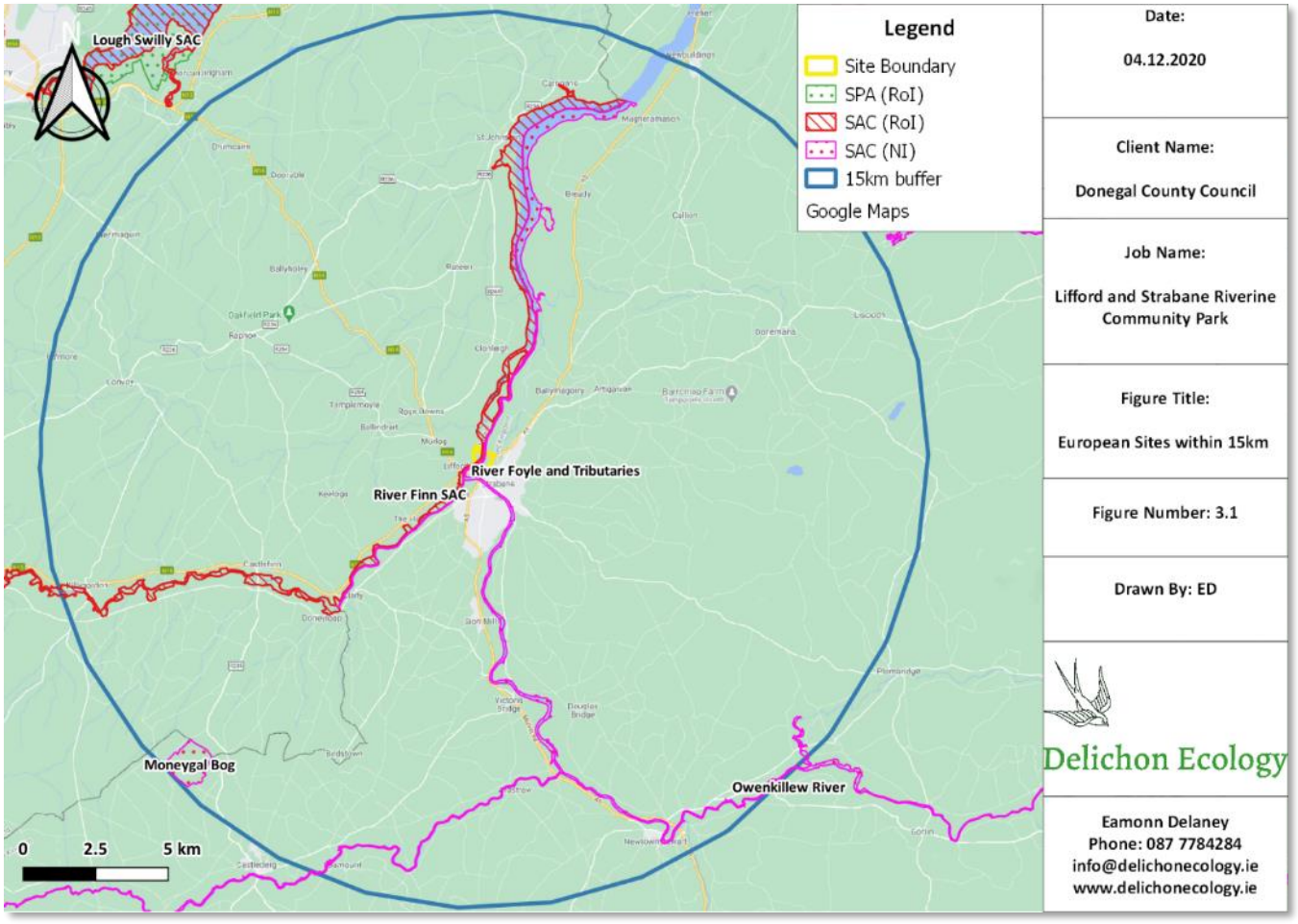

Figure 3-1: European Sites within 15km of the proposed Riverine Community Park

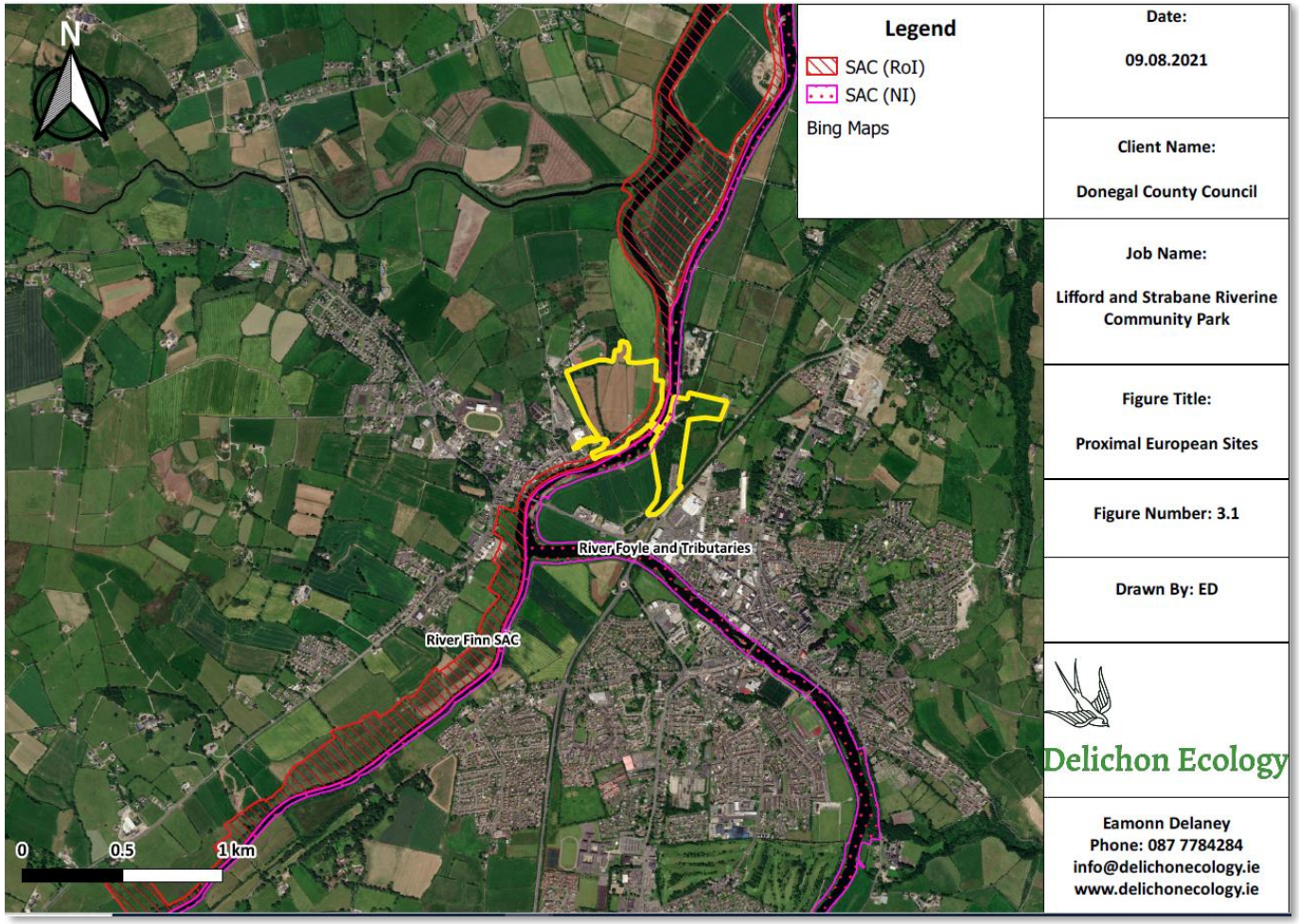

Figure 3-2: European Sites within proximity of the proposed Riverine Community Park

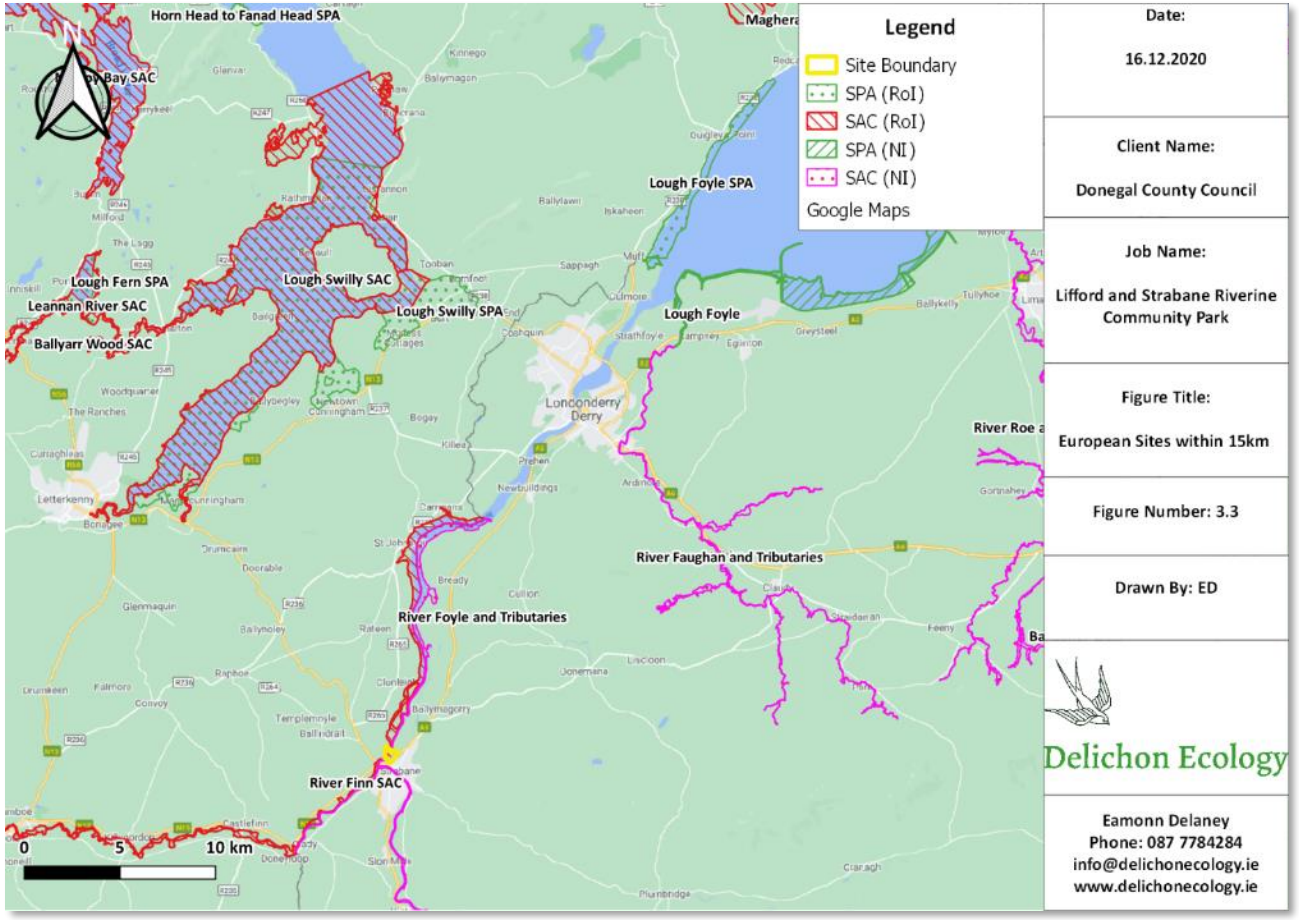

Figure 3-3: Downstream areas of Lough Foyle Special Protection Area (SPA)

3.3.2 European Site Descriptions

Site descriptions for European Site within the project ZoI are presented below.

3.3.2.1 River Finn SAC (Site Code: 002301)

This site comprises almost the entire freshwater element of the River Finn and its tributaries the Corlacky, the Reelan sub-catchment, the Sruhamboy, Elatagh, Cummirk and Glashagh, and also includes Lough Finn, where the river rises. The spawning grounds at the headwaters of the Mourne and Derg Rivers, Loughs Derg and Belshade and the tidal stretch of the Foyle north of Lifford to the border are also part of the site. The Finn and Reelan, rising in the Bluestack Mountains, drain a catchment area of 195 square miles. All of the site is in Co. Donegal. The underlying geology is Dalradian Schists and Gneiss for the most part though quartzites and Carboniferous Limestones are present in the vicinity of Castlefinn. The hills around Lough Finn are also on quartzite. The mountains of Owendoo and Cloghervaddy are of granite felsite and other intrusive rocks rich in silica. There are many towns along the river but not within the site, including Lifford, Castlefinn, Stranolar and Ballybofey (NPWS, 2014).

3.3.2.2 River Foyle and Tributaries SAC (UK0030320)

This area has been designated as a Special Area of Conservation (SAC) because it contains habitat types and/or species which are rare or threatened within a European context. The ASSI citation describes the special interests for which the site was notified in the Northern Ireland context. [NB: not for marine interests below mean low water mark]. The interests for which the site was selected as ASSI may differ from the interests selected in a European context. The habitats and/or species for which this area has been designated as a SAC are listed below. The reasons for their selection are listed, together with a brief description of the habitats and species as they typically occur across the UK. This area contains the interests described although it may not contain all the typical features (EHSNI, 2007).

3.3.2.3 Lough Foyle SPA (004087)

The site comprises a section of the western shore of Lough Foyle from Muff to north of Vances Point in Co. Donegal. The site is part of the larger cross-border Lough Foyle complex which regularly supports in excess of 20,000 wintering waterbirds. The majority of the wintering waterbirds that utilise this site occur along the southern and eastern shoreline of Lough Foyle in Derry, which is also designated as an SPA in Northern Ireland. Lough Foyle SPA is of high ornithological importance as it is part of an internationally important wetland site that regularly supports internationally important populations of Whooper Swan, Light-bellied Brent Goose and Bar-tailed Godwit, and nationally important populations of a further 20 species. Of note is that five of the species which occur regularly, i.e. Red-throated Diver, Bewick's Swan, Whooper Swan, Golden Plover and Bar-tailed Godwit are listed on Annex I of the E.U. Birds Directive (NPWS, 2015).

3.3.2.4 Lough Foyle SPA (UK9020031)

This major sea lough is remarkably shallow, with extensive mud and sand flats exposed at low tide. Though considerably diminished by historical reclamation schemes, notably around Myroe, Ballykelly and Longfield, it hosts the second largest area of inter-tidal habitat in Northern Ireland. The shoreline is generally engineered except around the Roe Estuary and northwards. Adjoining agricultural land is of importance as high tide roosts and in supporting wintering geese and swans (NIEA, 2015).

3.3.2.5 The Maidens SAC (UK0030384)

The Maidens proposed SAC is a group of rocky reefs detached from the coast, north east of Larne, Northern Ireland. The primary reason for the proposed designation of The Maidens as an SAC is for the Annex I habitat Reef. Most of the reef area of The Maidens is bedrock reef with a smaller proportion of stony reef. From the multibeam echo sounding (MBES) survey analysis, combined with video tow ground truthing, some of the area has been classified as 'rock with sand infill'. It is suggested that most of this 'rock with sand infill' should be classed as Annex I Reef as the ground truthing suggests that the mobile sand veneer would cover and uncover that reef area.

A small area to the south of East Maiden island has been shown by diving surveys to be shallow stable sandy gravels (partially sheltered by East and West Maiden islands) that includes maerl and other long lived species and this small area has therefore been classed as Annex I Sandbanks slightly covered by sea water all of the time. Like Annex I Sandbanks slightly covered by seawater all the time, Annex II Grey seals are not the primary feature of The Maidens proposed SAC. However, these relatively remote rocks, islands and the waters surrounding them in the North Channel are important for providing haul-out sites, resting sites and foraging areas for Grey seals, with a maxima count of 70 adults recorded in a July 2000 survey. Recent surveys in 2009 confirmed use of the site for both pupping and breeding (NIEA, 2017).

3.3.2.6 Donegal Bay (Murvagh) SAC (000133)

This site occupies the inner part of Donegal Bay, immediately to the south-west of Donegal Town. It contains the estuary of the River Eske and a number of other significant rivers. The area is underlain by Carboniferous limestone and shale, although blown sand and other recent deposits obscure much of the solid geology. The site is of international importance due to the presence of a wide range of habitats, including four listed on Annex I of the E.U. Habitats Directive, an important seal colony and the occurrence of significant bird populations (NPWS, 2018).

3.3.3 Conservation Objectives of European Sites

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

Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing; and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species 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 its populations on a long-term basis.

The integrity of a European site (referred to in Article 6.3 of the EU Habitats Directive) is determined based on the conservation objectives and of the site. The Qualifying Interests (QI) and Special Conservation Interests (SCI) are obtained through a review of the most recently published (web-published or otherwise) Conservation Objective supporting documents and Site Specific Conservation Objectives documents (where available) for the European site.

3.3.3.1 Conservation Objectives of European Sites within the proposed development's Zone of Influence

The Qualifying habitats and species for those European Sites within the project ZoI are listed in **Table 3-1**. Further details on Conservation Objectives for these European Sites are provided below.

River Finn SAC (Site Code: 002301)

The detailed conservation objectives for River Finn SAC are provided in the Conservation Objectives document available on the NPWS website, as follows; https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002301.pdf.

River Foyle and Tributaries SAC (Site Code: UK0030320)

The detailed conservation objectives for the River Foyle and Tributaries SAC are provided in the Conservation Objectives document available on the DAERA-NI website, as follows; https://www.daerani.gov.uk/sites/default/files/publications/doe/Conservation%20Objectives%20%282017%29.%20%20River%20Foyle%20%26%20Tributaries%20SAC.%20%20Version....pdf

Lough Foyle SPA (Site Code: 004087)

The detailed conservation objectives for Lough Foyle SPA are provided in the Conservation Objectives document available on the DAERA-NI website, as follows; https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004087.pdf

Lough Foyle SPA (Site Code: UK9020031)

The detailed conservation objectives for Lough Foyle SPA are provided in the Conservation Objectives document available on the DAERA-NI website, as follows;

https://www.daera-ni.gov.uk/sites/default/files/publications/doe/lough-foyle-spa-conservation-objectives-2015.pdf

The Maidens SAC (Site Code: UK0030384)

The detailed conservation objectives for The Maidens SAC are provided in the Conservation Objectives document available on the DAERA-NI website, as follows; https://www.daerani.gov.uk/sites/default/files/publications/daera/The%20Maidens%20SAC%20Conservation%20Objectives%202017.PDF

4 EXISTING ENVIRONMENT

4.1 Site Description

The existing environment within the Lifford area comprises improved grassland (GA1[3]), fringed by treelines (WL2), hedgerows (WL1) and woodland areas comprising mixed broadleaved woodland mixed broadleaved / conifer woodland (WD1 & WD2). The northern section of the site also supports a drainage channel which is a tributary of the River Deele (Donegal)_050 (NW_01D010650)

The south-eastern (Strabane) section of the study area is poor draining when compared with the Lifford side of the river and supports rush dominated wet grassland (GS4), improved agricultural grassland (GA1), wet willow-alder-ash woodland (WN6) comprising grey willow (*Salix cinerea*) and hedgerows and treelines. The wet willow-alder-ash woodland supports widespread, but localised occurrences of Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Fallopia japonica*).

Within the study area, the river is a large open watercourse and is classified by the Environmental Protection Agency (EPA) as a transitional waterbody; i.e. the Foyle and Faughan Estuaries (UKGBNI5NW250010). The river is fringed intermittently by reed and large sedge swamp (FS1) and localised areas of exposed fine aggregates. The higher areas of the riverbank support dry meadows and grassy verge habitat (GS2) that comprise stout, dense growing grasses. Both sides of the river bank supports sporadic growth of three invasive species including Himalayan balsam (*Impatiens glandulifera*) which is the most abundant and widespread, in addition to localised areas of Japanese knotweed (*Fallopia japonica*) and Giant Hogweed (*Heracleum mantegazzianum*).

[3] Alphanumeric codes in accordance with '*A Guide to Habitats in Ireland*' (Fossitt, 2000).

Image 1 – Riparian area of River Foyle downstream of N15/A38

Image 2 – Improved grassland on the Lifford site of the proposed Riverine Community site

Image 3 – Wet woodland / scrub on the Strabane side of the River Foyle

Image 4 – Wet grassland located on the Strabane side of the River Foyle

	
Image 5 – River Finn at the vicinity of the proposed crossing point	**Image 6 - Drainage channel near the site's northern boundary supporting connectivity to the Deele River**

4.2 Flooding

The Flood Info database (www.floodinfo.ie) was also consulted to identify Predictive Flood Risk Areas (PFRA) mapped as part of the Catchment Flood Risk Assessment and Management (CFRAM) programme for the study area. Interrogation of the mapping database confirms that the study site is located within an area currently mapped as a PFRA.

4.3 Geology, Hydrology and Hydrogeology

The Geological Survey of Ireland (GSI) online database[4] was consulted for available edaphic, geological and hydrological information of the site and its environs. On the Lifford side of the study area, the underlying bedrock is part of the Claudy formation which supports Psammite, pebbly grit, quartzite and marble. The groundwater vulnerability of the site is classified "H – High". There GSI online mapviewer and Geographical Information System datasets do not identify karst features within Lifford study area or its immediate surrounds. At the Strabane side of the study area, the underlying bedrock is part of the Dungiven formation comprising quartzite. Groundwater vulnerability is classified as 4e; i.e. where superficial aquifers are present.

The study site is located within the 'Foyle Gravels' (IE_NW_G_075) and 'Claudy' (GBNI4NW003) GroundWater Bodies (GWB).

The Foyle Gravels groundwater body is a Locally Important Sand and Gravel Aquifer (Lg) which is generally unproductive except for local zones (PI). The sand/gravel aquifer overlies bedrock aquifers which are Moderately Productive only in Local Zones (Ll) and Generally Unproductive except for Local Zones (Pl). Both GroundWater Bodies are classified as Good Status in 2018[5]. Groundwater and surfacewater interactions of the Foyle Gravels groundwater body is described as follows '*In general groundwater from sand/gravel deposits located in river valleys discharges to the streams/rivers flowing through the valley. The hydraulic connection between the groundwater in the aquifer and the stream is expected to be variable due to spatially varying subsoil permeabilities. Water may be able move into and out of the aquifer from the river in certain locations depending on the river stages and permeability of the subsoils*[6].

[4] GSI Online database: https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx
[5] Ground Waterbody WFD Status 2013-2018 https://gis.epa.ie/EPAMaps/
[6] Source: https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/FoyleGravelsGWB.pdf

5 SCREENING FOR APPROPRIATE ASSESSMENT

Table 5-1 presents Screening Assessment Criteria considering the proposed development.

Table 5-1: Screening Assessment Criteria

Screening Assessment Criteria Screening Questions	Impacts
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Sites.	The proposed works support direct connectivity to two European sites; River Finn SAC and River Foyle and Tributaries SAC. Therefore there is the potential for direct effects to European Sites as a result of the proposed project. Such effects may include habitat loss and disturbance and disturbance of mobile QI species. The proposed works may also contribute towards indirect effects to the in-situ and adjacent SACs in the form of run-off of construction phase pollutants and the spread of in-situ invasive plant species in the absence of best practice construction measures of targeted mitigation. In addition, the proposed project may contribute to indirect and ex-situ effects to European Sites supporting remote hydrological connectivity; i.e. Lough Foyle SPA.
Likely direct, indirect or secondary impacts of the project on the European Sites:	
• Size and Scale	The size and scale of the proposed works are small and localised when compared with the surrounding environment and the size of European Sites within the project Zone of Influence.
• Land Take	The proposed development is partially located within the River Finn SAC and River Foyle and Tributaries SAC. Therefore, there is the potential for land-take to these European Sites.
• Distance from European Sites or Key Features of the Site	The proposed development site is partially located within two European Sites; River Finn SAC and River Foyle and Tributaries SAC. Potential impacts include land-take and disturbance to in-situ and nearby habitats and species of Qualifying Interest.
• Resource Requirements	The proposed development site will require use of standard construction methods. Given the location of the proposed development site, which is partially located within the footprint of two European Sites, the use of these materials has the potential to contribute to significant negative effects to these European Sites in the absence of best practice construction measures of targeted mitigation.
• Emissions	Depending on the time of construction, there may be dust and / or waterborne emissions as a result of the proposed construction works. The project's operational phase may

Screening Assessment Criteria Screening Questions	Impacts
	also contribute surface water run-off from built surfaces to the receiving environment and the in-situ / adjacent European Sites in the absence of best practice construction measures of targeted mitigation.
• Excavation Requirements	Excavations (such as topsoil regrading and storage) will be required during the project's construction phase. There will be no excavation requirements during the project's operational phase. Potential impacts as a result of excavations include run-off to the receiving environment and the in-situ / adjacent European Sites.
• Transport Requirements	Transport requirements as part of the proposed development will utilise the existing road and access track network. Transport of construction materials will be ad-hoc, intermittent and restricted to working hours during the project's construction phase. Given the location of the proposed works partially within and adjoining two European Sites, it is possible that transport requirements could present disturbance effects to habitats and species within the project Zone of Influence in the absence of best practice construction measures of targeted mitigation.
• Duration of construction, operation and decommissioning	Duration of construction will be short term; i.e. 9-12 months. The project's operational phase will be medium to long term; i.e. > 25 years.
• Cumulative impact with other plans and projects in the area	As part of the Appropriate Assessment, in addition to the proposed development, other relevant projects and plans in the area must also be considered at this stage. These plans and projects are considered further in this respect in **Table 5-2** below.

Table 5-2: In-combination Effects associated with the proposed development

Programmes, Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Potential for In-combination Effects
Donegal County Development Plan 2018-2024	**NH-P-1:** It is a policy of the Council to ensure that development proposals do not damage or destroy any sites of international or national importance, designated for their wildlife/habitat significance in accordance with European and National legislation including: SACs, Special SPAs, NHAs, Ramsar Sites and Statutory Nature Reserves. **NH-P-2:** It is the policy of the Council to protect the habitats of species listed for protection through the prevention and management of the spread of invasive plant and animal species in the County in accordance with European and National legislation. **NH-P-4:** It is a policy of the Council to require the consideration of Freshwater Pearl Mussel and any relevant Freshwater Pearl Mussel Sub-basin Plans in all development proposals that fall within their basin of catchment. **NH-P-5:** It is a policy of the Council to require consideration of the impact of potential development on habitats of natural value that are key features of the County's ecological network and to incorporate appropriate mitigating biodiversity measures into development proposals. **NH-P-18:** It is the policy of the Council to ensure that an ecological assessment (including where necessary EIA) is carried out at the appropriate level in relation to proposals for drainage or reclamation of wetlands.	A number of strategies, policies and objectives are set out in the ***Donegal County Development Plan 2018-2024*** with the aim of protection of the counties natural heritage and biodiversity. A number of policies and objectives provide for the protection of the integrity of sites designated under European and National legislation and ecological works. In particular and with reference to European Sites and Appropriate Assessment Natural Heritage objective (NH-P-1) highlights the council's policy to ensure that development proposals do not damage or destroy any sites of international or national importance, designated for their wildlife/habitat significance in accordance with European and National legislation including: SACs, Special SPAs, NHAs, Ramsar Sites and Statutory Nature Reserves. The adherence and implementation of this plan within the Development Plan area will ensure that European Sites are protected, and that Appropriate Assessment is undertaken for all plans, projects or programmes that have the potential for significant effects to European Sites.

Programmes, Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Potential for In-combination Effects
Derry City & Strabane District Council Local Development Plan (LDP) 2032 – Extracts from Preferred Options Paper (POP)	**Natural and Built Heritage Proposals** - To protect and enhance the natural and built environment to achieve biodiversity, quality design and promote health and well-being; - Protect areas of high scenic value, development pressure, undeveloped coastline and wetlands form inappropriate development. **Connectivity and Infrastructure Proposals** - Improve connectivity to existing and new urban soft and hard spaces to achieve enhanced place-making; - To enhance transport linkages across the North West particularly between Derry, Strabane and Donegal. - Promote resilient design for a low carbon District; - Consider all aspects of flood risk and future development; - Support appropriate renewable energy. **Open Space, Sport and Recreation Proposals** - Protect and enhance the network of open spaces in the North West; - Enhance the network of pedestrian paths, cycleways and ecological corridors within the District.	These proposals encourages the protection of natural heritage and the expansion of recreational and amenity resources. Specific and targeted policies and objectives for the consideration and protection of European Sites should also be incorporated into this LDP. Potential for in-combination effects associated with policies and objectives of the LDP, in the absence of adequate policy provision for European Sites.
Lifford Local Area Plan 2007-2013	**Natural Heritage** **NH1** The Rivers Finn and Foyle have been identified under a European Union Directive, as candidate Special Area of Conservation (cSAC), i.e. prime wildlife conservation areas. The plan seeks to protect this important conservation area, from inappropriate developments, which would adversely affect wildlife. N.B. These areas are also prone to flooding. (See Appendix II for Site Synopsis). **Community Recreation and Education Policies** **CRE5**	The adherence and implementation of this plan (and the further development of these policies in subsequent planning applications) within the Development Plan area will ensure that European Sites are protected, and that Appropriate Assessment is undertaken for all plans, projects or programmes that have the potential for significant effects to European Sites.

Programmes, Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Potential for In-combination Effects
	- **Facilitate the development of formal new public open spaces, including the development of a town park with interconnecting pedestrian linkages on all reserved amenity lands, Sites MR1 and 3.** **CRE6** - **Require that a minimum of 15% of the total site area remain as quality public open space. The public space should be a formal landscaped area, centrally located within the development, as opposed to incidental and poorly maintained and unplanted grass verges, which although in themselves are important to soften the built environment, have little or no recreational value.** **CRE7** - **Require that all areas of open space shall be clearly defined, incorporating specific functions, well overlooked and highly accessible.** **CRE8** - **Provide for the provision of interconnecting amenity walkways throughout developments, and along the former railway embankment as identified on the land-use zoning map.** **CRE9** - **Facilitate the development of a formal recreation area/play facilities within community lands.** **CRE10** - **Facilitate and enhance the development of existing and proposed sporting/recreational and ancillary infrastructure.**	
River Basin Management Plan	Public Consultation on the River Basin Management Plan (RBMP) for Ireland (2018 – 2021), began in February 2017, and the final plan was published on	The implementation of the RBMP seeks compliance with the environmental objectives set

Programmes, Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Potential for In-combination Effects
for Ireland 2018 – 2021	17th April 2018. The document (Chapter 4) sets out the condition of Irish waters and a summary of status for all monitored waters in the 2013 – 2015 period, including a description of the changes since 2007 – 2009. Nationally, both monitored river water bodies and lakes at high or good ecological status, appear to have declined by 3% since 2007 – 2009; nevertheless, this figure does not reflect a significant number of improvements and dis-improvements across these waters since 2009. Provisional figures from the EPA suggest that approximately 900 river water bodies and lakes have either improved or dis-improved. In addition, the previously observed long term trend of decline in the number of high-status river sites has continued. Chapter 5 of the RBMP presents results of the catchment characterisation process, which identifies the significant pressures on each water body that is *At Risk* of not meeting the environmental objectives of the WFD. Importantly, the assessment includes a review of trends over time to see if conditions were likely to remain stable, improve or deteriorate by 2021. This work was presented in the RBMP for water bodies nationally, which had been characterised. 1,460 water bodies were classed *At Risk* out of a total of 4,829, or 30%. An assessment of significant environmental pressures found that agriculture was the most significant pressure, accounting for 53% of the water bodies that are *At Risk*. Urban waste water, hydromorphology and forestry were also significant pressures amongst others.	under the plan, which will be documented for each water body. This includes compliance with the European Communities (Surface Waters) Regulations S.I. No. 272 of 2009 (as amended). The implementation of the RBMP and achievement or maintenance of environmental objectives which will be set for the receiving water bodies will have a positive impact on water dependent habitats and species within European sites.
Inland Fisheries Ireland Corporate Plan 2016 -2020 **The Inland Fisheries Act 2010.**	• To ensure that Ireland's fish populations are managed and protected to ensure their conservation status remains favourable. That they provide a basis for a sustainable world class recreational angling	The implementation and compliance with key environmental issues and objectives of this corporate plan will result in positive in-combination effects to European sites. The implementation of this corporate plan will have a positive impact for biodiversity of inland fisheries

Programmes, Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Potential for In-combination Effects
	product, and that pristine aquatic habitats are also enjoyed for other recreational uses. • To develop and improve fish habitats and ensure that the conditions required for fish populations to thrive are sustained and protected. • To grow the number of anglers and ensure the needs of IFI's other key stakeholders are being met in a sustainable conservation focused manner. EU (Quality of Salmonid Waters) Regulations 1988. All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems and protect spawning salmon and trout.	and ecosystems. It will not contribute to in-combination or cumulative impacts with the proposed development.
Proposed National Road Scheme Developments	• N15 Letterkenny to Lifford • A5 Western Transport Corridor	Potential for in-combination effects given the scale and proximity of these road schemes.
Local Planning Applications	A search of Donegal County Council's and online planning enquiry database[7] and Northern Ireland's Planning Portal[8] was undertaken to identify other projects and plans consented within the past five years that are proximal or within the proposed development area. A small number of applications for commercial building, dwellings, dwelling extensions, water infrastructure, playing pitches have been granted planning permission in the past five years.	Adherence to the policies and objectives of the Donegal County Development Plant an the Derry and Strabane District Council Local Area Plan will ensure that local planning applications and subsequent grant of planning comply with the core strategy of proper planning and sustainability and with the requirements of relevant EU

[7] http://donegal.maps.arcgis.com/apps/webappviewer/index.html?id=8be91e332a8f47bfbbe83add1550c666
[8] https://planningportalni.com/map

Programmes, Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Potential for In-combination Effects
		Directives and environmental considerations, there is no potential for adverse in-combination effects on European Sites.

5.1.1 Conclusion of Cumulative Impact Assessment

Provided adherence to the overarching policies and objectives of the plans and programmes and best practice and mitigation measures are implemented for individual projects, there is no potential for the mentioned plans and projects to have a cumulative impact to European sites, in combination with the proposed development.

Screening Assessment Criteria is further assessed in **Table 5-3** below.

Table 5-3: Screening Assessment Criteria

Screening Assessment Criteria **Screening Questions**	
Describe any likely changes to the site arising as a result of the following	
Reduction of Habitat	As the proposed works are partially located within the River Finn SAC and River Foyle and Tributaries SAC, they may contribute to reduction of habitat within the SAC. The proposed works may also contribute towards indirect effects to the in-situ and adjacent SACs in the form of run-off of construction phase pollutants and the spread of in-situ invasive species in the absence of best practice construction measures of targeted mitigation.
Disturbance to Key Species	As the proposed works are partially located within the River Finn SAC and River Foyle and Tributaries SAC, they may contribute disturbance effects to species associated with the SAC; in particular volant / mobile species such as Otter in the absence of best practice construction measures of targeted mitigation. In addition, the proposed works have the potential to effect downstream or remotely connected European Sites, such as Lough Foyle SPA. Other European Sites, for which Grey Seal (sites within 135km) and Harbour Seal (sites within 50km) are features of Qualifying Interest may also experience disturbance effects. To this end, The Maidens SAC is located 108km east of the site and is designated for Grey Seal, while Donegal (Murvagh) Bay SAC is located 46km west/south-west and is designated for Harbour Seal. Indirect ex-situ disturbance effects may be realised to these species during the project construction phase should they use the River Finn waterbody for foraging / feeding purposes.
Habitat or Species Fragmentation	As the proposed works are partially located within the River Finn SAC and River Foyle and

Screening Assessment Criteria Screening Questions	
	Tributaries SAC, they may contribute to habitat or species fragmentation to these European Sites in the absence of best practice construction measures of targeted mitigation.
Reduction in Species Diversity	As the proposed works are partially located within the River Finn SAC and River Foyle and Tributaries SAC, they may contribute to a reduction in species diversity within these European Sites in the absence of best practice construction measures of targeted mitigation.
Changes in Key Indicators of Conservation Value	Potential changes in key indicators of Conservation Value may include ongoing disturbance of mobile QI species, the spread of invasive species or a deterioration in water quality of the receiving watercourse; i.e. the River Finn in the absence of best practice construction measures of targeted mitigation.
Climate Change	The proposed development will not result in significant negative effects contributing to climate change that could in turn affect the conservation objectives of those European Sites within the project ZoI; River Finn SAC and River Foyle and Tributaries SAC.
Describe any likely impacts on the European Sites as a whole in terms of Interference with key relationships that define the structure and function of the site;	Potential impacts that may impact European Sites structure and function; may include habitat loss under the project footprint, disturbance of mobile species of Qualifying Interest within the project Zone of Influence and indirect effects such as run-off of construction phase pollutants to the nearby and adjoining parts of the River Finn SAC and River Foyle and Tributaries SAC (and by extension downstream European Sites such as Lough Foyle SPA) in the absence of best practice construction measures of targeted mitigation.
Provide Indicators of Significance as a result of the identification of effects set out above in terms of;	
Loss	As the proposed works are partially located within and adjoin two European Sites, there is the potential for loss, fragmentation, disruption and disturbance of habitats and species of Qualifying Interest associated with these sites in the absence of best practice construction measures of targeted mitigation.
Fragmentation	
Disruption	
Disturbance	

Screening Assessment Criteria Screening Questions	
Changes to Key Elements of the Site	Potential impacts that may change key elements of European Sites within the project Zone of Influence include habitat loss under the project footprint, disturbance of mobile species of Qualifying Interest within the project Zone of Influence and indirect effects such as run-off of construction phase pollutants to the nearby and adjoining parts of the River Finn SAC and River Foyle and Tributaries SAC. The proposed works may also contribute towards indirect effects to the in-situ and adjacent SACs in the form of run-off of construction phase pollutants and the spread of in-situ invasive species in the absence of best practice construction measures of targeted mitigation. In addition, the proposed works have the potential to effect downstream or remotely connected European Sites, such as Lough Foyle SPA. Other European Sites, for which Grey Seal (sites within 135km) and Harbour Seal (sites within 50km) are features of Qualifying Interest may also experience disturbance effects. To this end, The Maidens SAC is located 108km east of the site and is designated for Grey Seal, while Donegal Bay (Murvagh) Bay SAC is located 46km west/south-west and is designated for Harbour Seal. Indirect ex-situ disturbance effects may be realised to these species during the project construction phase should they use the River Finn waterbody for foraging / feeding purposes.
Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts are not known	The scale or magnitude of impacts associated with this project require further consideration. Works within, adjacent to and within proximity to European Sites need to be completed in accordance with best practice construction measures and, as necessary, site specific mitigation measures.

6 Screening for AA Conclusion

This screening for AA identifies and assesses potential significant effects which are likely to occur as a result of the proposed Riverine Community Park. The screening identified eight European sites within 15km of the proposed development. Following screening, it can reasonably be concluded that there is no likelihood of significant effects on the following European sites as a result of the proposed development, either alone or in-combination:

- Moneygal Bog SAC (Site Code: UK0030211); and
- Owenkillew River SAC (Site Code: UK0030233).

For the avoidance of doubt, these European Sites are screened out for further appraisal.

The proposed development is partially located within two European Sites; River Finn SAC and River Foyle and Tributaries SAC. Therefore, there is the potential for direct and indirect effects to these European Sites, in the absence of best practice design, best practice construction and / or mitigation measures being implemented.

In addition, the proposed development supports remote and tenuous connectivity with Lough Foyle SPA which is located more than 32km downstream of the proposed development site. The distance between the proposed development site and the dilutional capacity of the watercourses, waterbodies and the large transitional waterbody of Lough Foyle are likely to remove the potential any of significant effects, direct or indirect to the SCI species of Lough Foyle SPA as a result of water borne pollutants. However, due to this remote and tenuous connectivity, the potential effects associated with the proposed development and need for best practice measures and mitigation measures should be considered further.

Finally, consultation with NIEA advised that European Sites, for which Grey Seal (sites within 135km) and Harbour Seal (sites within 50km) are features of Qualifying Interest should also be considered for likely significant effects. To this end, The Maidens SAC is located 108km east of the site and is designated for Grey Seal, while Donegal Bay (Murvagh) Bay SAC is located 46km west/south-west and is designated for Harbour Seal. Indirect ex-situ disturbance effects may be realised to these species during the project construction phase should they use the River Finn waterbody for foraging / feeding purposes.

Given the risk of impact and associated significant negative effects, best practice construction measures and mitigation measures may be required. **Therefore, the project must be considered under Stage 2 of the Appropriate Assessment process.**

APPENDIX A – CONCEPT DESIGN

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- **Proposed Asphalt** — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- **Vehicular Upstand Kerb** — 125mm upstand. Pre Cast Concrete
- **Vehicular Flush Kerb** — Pre Cast Concrete
- **Pin Kerb** — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	15.02.21	Issued for planning	DM
P02	17.03.21	Issued for planning	DM

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

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Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: LIFFORD LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	ZO	XX	DR	LA	101	DRAFT

Project Number: 1383
Status code & Description: PLANNING

River Foyle

Marsh

Wetland

SUDs

Overhead Electric Lines

Park Road

Barnhill Road

Existing Water Level +(2.00)

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road influences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

N

LEGEND

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SURFACES

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- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
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- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
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MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

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2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of the items in the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

Client
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Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Ghoirtha Báin
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · ZO · XX · DR · LA · 102 · P00

Project Number: 1383

Status code & Description: PLANNING

Appendix 8-2

Natura Impact Statement

APPENDIX 8-2

Natura Impact Statement
Assessment Stage 2

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: July 2021

MCL Consulting Ltd

Unit 5, Forty-Eight North

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Belfast

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CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

In March 2021 MCL Consulting Ltd were appointed by McAdam on behalf of their client to undertake a shadow Habitat Regulations Assessments (sHRA) stage 2 for the proposed development of the new Riverine Community Park. This report looks at the potential of the development to negatively impact on Natura 2000 sites.

Article 6 (3&4) of the Habitats Directive states that a HRA must be undertaken for all implicated plans and projects to determine and assess the nature and significance of all impacts which may arise on the integrity of the Natura 2000 network of sites.

1.1 Site Description

The development location exits across the Northern Ireland and Republic of Ireland border. The red line boundary extends across the River Foyle encompassing lands on both the Lifford (ROI) and Strabane (NI) sides.

The **Lifford** site is situated to lands to the west of Station Road in the Town of Lifford, County Donegal, (IGR 233882, 398765). The Lifford area comprises of semi-improved grassland, improved grassland, hedgerows, treelines, and mixed wooded areas. The improved grassland areas are mainly composed of playing pitches and greyhound racing fields. Further west/south-west lies Lifford town: a heavily urbanised area.

The **Strabane** site is situated at Barnhill Road, in the north western area of Strabane, County Tyrone, BT82 0AN (IGR 234119, 398597). Old railway lines ran through the site but are no longer visible/present, embankments are still present. This site includes Wet willow alder ash woodland, artificial ponds, hedgerows, treelines, agricultural fields and reed and large sedge swamps. To the east of the site exists pasture fields with field drains and hedgerows, further southeast lies Strabane Town.

Figure 1: Site location

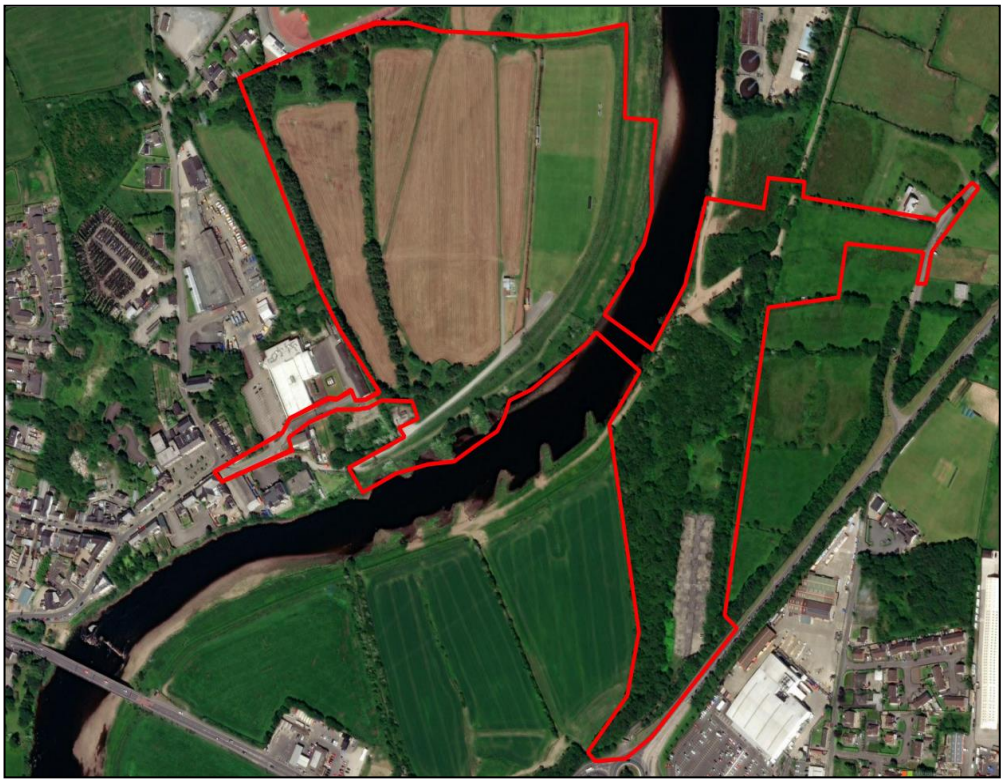

Figure 2: Existing Google Aerial

1.2 Proposed Development

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways and cycleways, wetlands supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of twenty-five acres by utilising agricultural land and wetlands lying along either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities.

- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events.

- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.

- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.

- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane.

- Family Space incorporating unique play experience, designed to support children focused events & related programming.

2.0 APPROPRIATE ASSESSMENT OVERVIEW

This report describes the scope of the shadow Appropriate Assessment (sAA) and, based on the development proposals, the report identifies all relevant designations within a 15km radius of the proposed site.

The AA is carried out by the decision maker as the competent authority under the Habitats Regulations. The developer is required to submit enough scientific evidence to enable the authority to complete the AA and this evidence is submitted in the form of a 'report to inform' or 'shadow' AA.

Habitats Directive Article 6 assessments are required under the Habitats Directive (92/43/EEC) where a plan or project may give rise to significant effects upon a Natura 2000 site (N2K). Natura 2000 sites are those identified as sites of community importance designated under the Habitats Directive (Special Areas of Conservation, hereafter referred to as SACs) or the Birds Directive (Special Protection Areas, hereafter referred to as SPAs).

For the purpose of this assessment, Ramsar sites are also included as Northern Ireland policy affords them the same protection as Natura 2000 sites. It should also be noted that the phrase 'Appropriate Assessment' is sometimes used more loosely to refer to the whole process set out under Articles 6(3) and 6(4) of the Habitats Directive (Dodd et al., 2008). For the purposes of this assessment, the term 'Appropriate Assessment' or the term AA ("Appropriate Assessment") will be used.

Article 6 of the Habitats Directive sets out provisions which govern the conservation and management of Natura 2000 sites. 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).

Article 6(3) establishes the requirement for Appropriate Assessment:

"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 implication 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".

A Habitats Assessment has a narrow focus i.e. the maintenance of the integrity for any given N2K site, and the assessment of the significance of the effects on the designated interest features (qualifying features) along with the conservation objectives of the site. It is a protection led assessment and should be carried out by adopting the precautionary principle.

The assessment of ecological impacts on Natura 2000 sites is conducted utilising a standard source-receptor-pathway model where, for an impact to be established all three elements of this mechanism must be accounted for. The absence or removal of one of the elements is adequate to conclude that any potential impact is insignificant and/or not relevant to the assessment. A hazard does not automatically lead to a harmful outcome, but identification of a hazard does mean that there is a possibility of harm occurring, with the actual harm depending upon the exposure to the hazard and the characteristics of the receptor, the source-receptor-pathway model is applied.

2.1 Appropriate Assessment

Article 6 (3) of the Habitats Directive sets out the first step in the decision-making process for Appropriate Assessment. This article assesses;

- whether the plan or project is connected with the conservation management of the N2K site; and
- whether the plan or project, either alone or in combination with other plans or projects, is likely to have an impact on the conservation value of the N2K site.

If the plan or project is considered to have a potential impact on the N2K site, then it must go through an appropriate assessment, which will consider the potential implications for the N2K site in view of the site's conservation objectives.

Considering the conclusions of the appropriate assessment for the site, the competent authority shall agree to the plan or project only after ascertaining that it will not adversely affect the integrity of the site concerned.

When assessing the potential impacts of the plan or project, the precautionary principle is followed – if it is not possible to rule out a risk of harm on the evidence available, then it must be assumed that the risk still exists and needs to be dealt with through the assessment process. This could be through changes to the plan, through options avoidance or through mitigation.

There may be cases where the assessment indicates a potential impact which cannot be avoided, designed out or mitigated. In such cases, an assessment must be made as to whether there are imperative reasons for overriding public interest (IROPI), which would allow the plan or programme to go ahead. This is covered in Article 6 (4) of the Habitats Directive – only where there is a positive assessment of IROPI, can the plan/programme progress.

The following information outlines the dominant potential pathways, along with potential impacts that can affect local Natura 2000 designated sites.

- Disturbance: Physical, noise, lighting, invasive species etc.

- Noise during construction and operational activities could have adverse impacts on sensitive species.
- Increased human activity close to sensitive habitats and species may cause disturbance that could impact negatively on these features and lead to displacement of sensitive species from certain locations.
- The spread of invasive species may have acute or chronic impacts on sensitive species.

- Alterations to the hydrological cycle including water borne pollutants
  - Chemical contaminants such as transport fuels, clean and waste reaching aquatic environment during construction and operation of development.
  - Surface runoff from surfaces or release from construction works and operational activities can increase nutrient composition of wastewater thereby affecting aquatic systems.

- Aerial pollution
  - Emission of gases.
  - Production of dust.

- Land contamination
  - Waste arising/spilling of chemicals through development/maintenance could cause contamination of land which could cause harmful impacts directly or indirectly on habitats or species.
  -

2.2 Identified sites for stage 2 AA

European sites, also referred to as Natura 2000 (N2K) sites, consist of the following:

- **Special Areas of Conservation (SACs)** – sites designated for flora, fauna and habitats of Community interest under the EU Habitats Directive.

- **Special Protection Areas (SPAs)** – sites designated for rare, vulnerable or migratory birds under the EU Birds Directive.

- Further screening took place to include sites hydrologically linked to those directly impacted by the proposed scheme.

- Further screening took place upon consultation with NIEA to include site's listed as having harbour and grey seals as features up to 180km from proposed site location.

Within Ireland, it is government policy to extend the requirements for potential impacts on sites, to those sites which are yet to be fully declared as N2K sites, namely candidate SACs and potential SPAs. This consideration of impact also covers any proposed additions or extensions to the existing N2K sites.

As this site is a cross border proposal, NI policy also affords Ramsar sites the same protection as N2K sites, which are wetland sites of global importance, listed under the Convention on Wetlands of International Importance. Whilst most Ramsar sites overlap with N2K sites, some have distinct boundary differences. In line with government policy, this sAA will treat Ramsar sites in the same way that it considers N2K sites. In terms of the requirement for assessment, it is also normal practice to assess the additional features of underlying ASSI designations.

For the purposes of this assessment, N2K will be used to cover all the above sites listed under European designated sites.

2.3 Identified Designations

The results for all identified designations are presented and are summarised in Table 1 below. In addition, a descriptive summary for each site has been paraphrased from the NIEA and NPWS designated sites websites

Table 1: Designations within 15km

Designation	Name	Distance	Summary of Features	Site zone of influence
SAC	River Finn	Within, on the Lifford side.	- Atlantic Salmon *Salmor salar* - Otter *Lutra lutra* - Oligotrophic wates containing very few minerals of sandy plains *Littorelletailia uniflorae* - Northern Atlantic wet heath with *Erica tetralix* - Blanket bogs - Transition mires and quaking bogs	Designation overlaps with site's redline boundary.

SAC	River Foyle and Tributaries	Within, on the Strabane side.	- Atlantic Salmon - Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation - Otter	Designation overlaps with site's redline boundary.

Table 2: Additional Designations Screened

Designation	Name	Distance	Summary of Features	Site zone of influence
RAMSAR, SPA & ASSI	Lough Foyle	25.7km	- Wetland complex including intertidal sand and mudflats with extensive seagrass beds, saltmarsh, estuaries and associated brackish ditches - A wetland, which plays a substantial hydrological, biological and ecological system role in the natural functioning of a major river basin which is located in a trans-border position. - Notable fish species: Allis Shad *Alosa alosam,* Twaite Shad *A.fallax fallax,* Smelt *Osmerus eperlanus* and Sea Lamprey *Petromyzon marinus* and Atlantic salmon - Internationally important populations of water fowl	No spatial overlap, no direct land-take. Possible hydrological connection, however, due to setback distance and benign nature of development, negligible pathway predicted.
SAC	Donegal Bay (Murvagh) Bay	46km	-The site includes the estuary of the River Eske, which flows through Donegal town, and the estuary of the River Erne which flows through Ballyshannon. Much of the shoreline is rocky or stony, with well-developed littoral reefs in places. There are also extensive stretches of sandy beach, especially from the Murvagh peninsula southwards to Rossowlagh and at the outer part of the Erne estuary. Shingle or cobble beaches are also represented. There are extensive areas of intertidal flats associated with the Eske Estuary, reflecting the very sheltered conditions in this part of the bay. These have been shown to be biotope rich. Elsewhere a narrow fringe of intertidal flats are exposed at low tides. Salt marshes are found in the sheltered conditions of the innermost part of the bay. A number of small, grassy, islands occur in the innermost part of the bay. The shallow bay waters overlie mostly sandy substrates though reefs occur in places. -Wetlands -Great Northern Diver	No spatial overlap, no direct land-take. Negligible pathway to affect features due to setback distance.

			-Light-bellied Brent Goose -Common Scooter -Sanderling	
SAC	The Maidens	107km	- Reed - Sandbanks which are slightly covered by sweater all the time - Grey seal - Common Seal - Harbour porpoise	No spatial overlap, no direct land-take. Negligible pathway to affect features due to setback distance.

3.0 CONSERVATION OBJECTIVES

This section provides the background information of the Natura 2000 sites which have been screened to require assessment and the underlying reasoning behind this.

The Riverine Project involves development works that partially overlap with the **River Finn SAC** and **River Foyle and Tributaries SAC** boundaries. The site is also hydrologically linked to the **Lough Foyle SPA (on both border sides) and RAMSAR**. Therefore, due to these works within the above designations boundaries a screening process has been applied to this project. Further consultation held between the previous project ecologist and NIEA also highlighted the need for screening regarding sites where harbour and grey seals were an identified feature. Therefore, assessment range was increased to 180km from the proposed site to also include **The Maidens SAC and Donegal Bay SPA**.

3.1 Designated Sites

River Finn SAC (002301)

Distance: Within the sites redline boundary

Descriptive summary:

This site comprises almost the entire freshwater element of the River Finn and its tributaries the Corlacky, the Reelan sub-catchment, the Sruhamboy, Elatagh, Cummirk and Glashagh, and also includes Lough Finn, where the river rises. The spawning grounds at the headwaters of the Mourne and Derg Rivers, Loughs Derg and Belshade and the tidal stretch of the Foyle north of Lifford to the border are also part of the site. The Finn and Reelan, rising in the Bluestack Mountains, drain a catchment area of 195 square miles. All of the site is in Co. Donegal. The underlying geology is Dalradian Schists and Gneiss for the most part though quartzites and Carboniferous Limestones are present in the vicinity of

Castlefinn. The hills around Lough Finn are also on quartzite. The mountains of Owendoo and Cloghervaddy are of granite felsite and other intrusive rocks rich in silica. There are many towns along the river but not within the site, including Lifford, Castlefinn, Stranolar and Ballybofey.

Qualifying features

Table 3: Qualifying features of River Finn SAC

Feature Types	Natura 2000 codes	Count and Season
Habitat	3110	Oligotrophic Water containing very few minerals
Habitat	4010	Wet Heath
Habitat	7130	Blanket Bogs (Active)
Habitat	7140	Transition Mires
Species	1106	Atlantic Salmon *Salmo salar*
Species	1355	Otter *Lutra lutra*

As the Proposed Scheme is not located on the main river body of the River Finn habitat features identified for this site are not suspected to be impacted by the proposed Riverine Scheme as the River Finn flows into the River Foyle where the site is located. However, there is potential for impact to Atlantic salmon and otter.

Table 4: 1106 – Atlantic Salmon – *Salmo salar*

Identified attributes and targets identified by NPWS in order to maintain the favourable conservation of Atlantic salmon in the River Finn

Attribute	Measure	Target	Notes
Distribution: extent of anadromy	Percentage of river accessible	100% of river channels down to second order accessible from estuary	Artificial barriers block salmons' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas
Adult spawning fish	Number	Conservation limit (CL) for each system consistently exceeded	A conservation limit (CL) is defined by the North Atlantic Salmon

			Conservation Organisation (NASCO) as "the spawning stock level that produces long term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship". The target is based on the Standing Scientific Committee on Salmon (SSCS) annual model output of CL attainment levels. See SSCS (2016). Attainment of CL estimates are derived from direct counts of adults (rod catch, fish counter) or indirectly by fry abundance counts
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	The target is the threshold value for rivers currently exceeding their conservation limit (CL)
Out-migrating smolt abundance	Number	No significant decline	Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (*Lepeophtheirus salmonis*)
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Salmon spawn in clean gravel
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	Q values based on triennial water quality surveys carried out by the Environmental Protection Agency (EPA)

Table 5: I355 – Otter – *Lutra lutra*

Identified attributes and targets identified by NPWS in order to maintain the favourable conservation of otters in the River Finn

Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. Favourable Conservation Status (FCS) target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 390ha along river banks/lake shoreline/ around ponds	No field survey. Areas mapped to include 10m terrestrial buffer along river banks and around water bodies identified as critical for otters (NPWS, 2007)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 182.2km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 354ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk and Moorhouse, 1991; Kruuk, 2006)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013)

Barriers to connectivity	Number	No significant increase	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

Further details of the conservation objectives can be found on the NPWS website at: https://www.npws.ie/sites/default/files/protected sites/conservation_objectives/CO002301.pdf

Lough Foyle (004087) – (ROI side of lough)

Distance: 31.1km northeast of site

Descriptive summary:

The site comprises a section of the western shore of Lough Foyle from Muff to north of Vances Point in Co. Donegal. The site is part of the larger cross-border Lough Foyle complex which regularly supports in excess of 20,000 wintering waterbirds. The majority of the wintering waterbirds that utilise this site occur along the southern and eastern shoreline of Lough Foyle in Derry, which is also designated as an SPA in Northern Ireland. The site is selected as a Special Protection Area (SPA) under the E.U. Birds Directive, as it is part of an internationally important wetland site that regularly supports in excess of 20,000 wintering waterbirds. The assemblage of birds that utilise Lough Foyle includes internationally important populations of Whooper Swan (917), Light-bellied Brent Goose (3,765) and Bar-tailed Godwit (2,059), and nationally important populations of a further 20 species: Red-throated Diver (28), Great Crested Grebe (148), Bewick's Swan (43), Greylag Goose (391), Shelduck (468), Wigeon (9,011), Teal (660), Mallard (1,635), Eider (143), Red-breasted Merganser (82), Oystercatcher (3,101), Golden Plover (4,562), Lapwing (4,024), Knot (499), Dunlin (4,991), Curlew (2,265), Redshank (988), Black-headed Gull (2,212), Common Gull (2,846) and Herring Gull (1,261) – all counts are five year mean peaks for the entire Lough Foyle complex during the period 1995/96 to 1999/2000. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. Lough Foyle SPA is of high ornithological importance as it is part of an internationally important wetland site that regularly supports internationally important populations of Whooper

Swan, Light-bellied Brent Goose and Bar-tailed Godwit, and nationally important populations of a further 20 species. Of note is that five of the species which occur regularly, i.e. Red-throated Diver, Bewick's Swan, Whooper Swan, Golden Plover and Bar-tailed Godwit are listed on Annex I of the E.U. Birds Directive.

Qualifying features

Table 6: Qualifying features of Lough Foyle SPA

Feature Types	Natura 2000 codes	Count and Season
Species	A001	Red-throated Diver
Species	A005	Great Crested Grebe
Species	A037	Bewick's Swan
Species	A038	Whooper Swan
Species	A043	Greylag Goose
Species	A046	Light-bellied Brent Goose
Species	A048	Shelduck
Species	A050	Wigeon
Species	A052	Teal
Species	A053	Mallard
Species	A063	Eider
Species	A069	Red-breasted Merganser
Species	A130	Oystercatcher
Species	A140	Golden Plover
Species	A142	Lapwing
Species	A143	Knot
Species	A149	Dunlin
Species	A157	Bar-tailed Godwit
Species	A160	Curlew
Species	A162	Redshank
Species	A179	Black-headed Gull
Species	A182	Common Gull
Species	A184	Herring Gull

Habitat	A999	Wetland and Waterbirds

Due to the site's set back distance, 31.1km, from Lough Foyle and proposed mitigation for riverine habitats, breeding birds, fish and otters it is not considered there will be any impacts upon the Lough Foyle SPA. Although it is hydrologically linked to the proposed Riverine Scheme impacts are considered to be primarily localised further upstream closer to the proposed site location. As the majority of the conservation objectives for Lough Foyle relate to birds which are not confined by specific habitats or borders it is considered that proposed mitigation will encompass bird species which may travel upstream along the avifauna commuting corridor.

Further details of the conservation objectives can be found on the NPWS website at: https://www.npws.ie/sites/default/files/protected sites/conservation_objectives/CO002301.pdf

Donegal Bay (004151)

Distance: 46km west/south-west from site

Descriptive summary:

Donegal Bay SPA is a very large, marine-dominated, site. It extends from Doorin Point to the west of Donegal Town to Tullaghan Point in County Leitrim, a distance of approximately 15 km along its north-east/south-west axis. It varies in width from about 3 km to over 8 km. The site includes the estuary of the River Eske, which flows through Donegal Town, and the estuary of the River Erne, which flows through Ballyshannon. Much of the shoreline is rocky or stony, with well-developed littoral reefs in places. There are also extensive stretches of sandy beaches, especially from the Murvagh peninsula southwards to Rossnowlagh and at the outer part of the estuary of the River Erne. Shingle or cobble beaches are also represented. There are extensive areas of intertidal flats associated with the estuary of the River Eske, reflecting the very sheltered conditions in this part of the bay. These have been shown to be biotope rich, and supporting a range of macro-invertebrates, including polychaete worms (*Hediste diversicolor*, *Arenicola marina* and *Nephtys hombergii*) and bivalves (*Scrobicularia plana*, *Cerastoderma edule* and *Macoma balthica*). Elsewhere, a narrow fringe of intertidal flats is exposed at low tides. Salt marshes are found in the sheltered conditions of the innermost part of the bay. A number of small, grassy, islands occur in the innermost part of the bay. The waters of the shallow bay overlie mostly sandy substrates, though reefs occur in places.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Great Northern Diver, Light-bellied Brent Goose, Common Scoter and Sanderling. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Qualifying features

Table 7: Qualifying features of Donegal Bay SPA

Feature Types	Natura 2000 codes	Count and Season
Species	A003	Great Northern Diver
Species	A046	Light-bellied Brent Goose
Species	A065	Common Scoter
Species	A144	Sanderling
Habitat	A999	Wetland and Waterbirds

Due to the site's set back distance, 46km, from Donegal Bay and proposed mitigation for riverine habitats, breeding birds, fish and otters it is not considered there will be any impacts upon the Donegal Bay SPA. There is no site overlap between the proposed Riverine Scheme and Donegal Bay, it is also not hydrologically linked to the proposed Riverine Scheme separated by constant land mass from the proposed site location. As the majority of the conservation objectives for Donegal Bay relate to birds which are not confined by specific habitats or borders it is considered that proposed mitigation will encompass bird species which may travel upstream along the avifauna commuting corridor.

Further details of the conservation objectives can be found on the NPWS website at: https://www.npws.ie/sites/default/files/protected sites/conservation_objectives/CO002301.pdf

Lough Foyle (UK9020031) – (NI side of lough)

Distance: Within the sites redline boundary

Descriptive summary:

Lough Foyle is situated on the north coast of Northern Ireland immediately downstream and extending to the north-east of the city of Londonderry. The site is comprised of a large

shallow sea lough which includes the estuaries of the rivers Foyle, Faughan and Roe. The site contains extensive intertidal areas of mudflats and sandflats, saltmarsh and associated brackish ditches. The Special Protection Area includes the whole of Lough Foyle Area of Special Scientific Interest (ASSI} and the intertidal area of Magilligan ASSI in Lough Foy le extending south of Magilligan Point. The boundary of the Special Protection Area is entirely coincident with that of the Lough Foyle Ramsar site and it overlaps with Magilligan candidate Special Area of Conservation. The site qualifies under Article 4.1 of EC Directive 79/409 on the Conservation of Wild Birds by regularly supporting, in winter, internationally important numbers of the following 3 species: Whooper Swan Cygnus cygnus (the five year peak mean for the period 1991/92 to 1995/96 was 890, which comprises 5.6% of the international population); Light-bellied Brent Goose Branta bernicla hrota (the five year peak mean for the period 1991/92 to 1995/96 was 3730 which comprises 18.7% of the international population} and Bar-tailed Godwit Limosa lapponica (the five year peak mean for the period 1991/92 to 1995/96 was 1896 which comprises 1.9% of the international population}.

Qualifying Feature (s) & Conservation Objectives:

Table 8: Qualifying features and Conservation Objectives of the River Foyle and Tributaries SAC

Feature Types	Feature	Size/extent/population	Conservation Objectives
Species	Bewick's Swan wintering population	78	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term:

			• Population of the species as a viable component of the site, • Distribution of the species within site, • Distribution and extent of habitats supporting the species, • Structure, function and supporting processes of habitats supporting the species.
Species	Whooper Swan wintering population	890	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the

			species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Species	Golden Plover wintering population	4891	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species

Species	Bar-tailed Godwit wintering population	1896	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Species	Light-bellied Brent Goose wintering population	3730	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained,

			To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Great Crested Grebe wintering population	220	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable

			component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Cormorant wintering population	118	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting

			processes of habitats supporting the species
Assemblage species	Greylag Goose wintering population	67	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Shelduck wintering population	287	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species,

			To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Wigeon wintering population	8107	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term:

			• Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Teal wintering population	751	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species

			• Structure, function and supporting processes of habitats supporting the species
Assemblage species	Mallard wintering population	1694	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Eider wintering population	50	To maintain or enhance the population of the qualifying species, To maintain or enhance the

			range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Red-breasted Merganser wintering population	73	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following

			are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Oystercatcher wintering population	2028	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and

			extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Lapwing wintering population	3084	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Knot wintering population	441	To maintain or enhance the population of the qualifying

			species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Dunlin wintering population	5606	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the

			species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Curlew wintering population	2038	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the

			species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species
Assemblage species	Redshank wintering population	812	To maintain or enhance the population of the qualifying species, To maintain or enhance the range of habitats utilised by the qualifying species, To ensure that the integrity of the site is maintained, To ensure there is no significant disturbance of the species and, To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species

Waterfowl assemblage	Waterfowl Assemblage wintering population a (Component species: Bewick's Swan, Whooper Swan, Golden Plover, Bar tailed Godwit, Light-bellied Brent Goose, Great Crested Grebe, Cormorant, Greylag Goose, Shelduck, Wigeon, Teal, Mallard, Eider, Red-breasted Merganser, Oystercatcher, Lapwing, Knot, Dunlin, Curlew, Redshank)	37310	Maintain species diversity contributing to the Waterfowl Assemblage
Habitat	Habitat extent		Maintain or enhance the area of natural and semi-natural habitats used or potentially usable by Feature bird species. (2056.13 ha intertidal area) subject to natural processes
			Maintain the extent of main habitat components subject to natural processes
Habitat	Roost site locations		Maintain or enhance sites

			utilised as roosts

River Foyle & Tributaries (UK0030320)

Distance: 31.1km northeast of site

Descriptive summary:

The SAC includes the River Foyle and its tributaries i.e. that part of the River Finn which lies within Northern Ireland, the River Mourne and its tributary the River Strule (up to its confluence with the Owenkillew River) and the River Derg, along with two of its sub-tributaries, the Mourne Beg River and the Glendergan River. In total, the area encompasses 120km of watercourse and is notable for the physical diversity and naturalness of the banks and channels, especially in the upper reaches, and the richness and naturalness of its plant and animal communities. Of particular importance is the population of Atlantic Salmon *Salmo salar*, which is one of the largest in Europe. Research has indicated that each sub-catchment within the system supports genetically distinct populations.

The area is also important as a river habitat. In their upper catchments, the rivers are all fast-flowing spate rivers with dynamic flow regimes characterised by sequences of rapid, riffle and run. Although the banks may have been modified in the past, the channels are natural and composed of large cobble substrate with scattered boulders and sandy marginal deposits, while cobble side and point bars Page 5 of 26 and discrete sand deposits are common features. At the top end of the River Derg and its two tributaries, the aquatic flora reflect the highly acidic character of the water, with mosses and liverworts dominant. Beds of Stream Water Crowfoot *Ranunculus penicillatus* var. *penicillatus* occur where the flow is less dynamic. The River Foyle below Strabane is slow-flowing and is influenced by a tidal regime, rising and falling with the tidal cycle. Aquatic plants in the channel are extremely limited, particularly in the more saline areas; here, fucoids make up the main component. Otter *Lutra lutra* is found throughout the system. A small population of the now rare Freshwater Pearl Mussel *Margaritifera margaritifera* was still present in the Mourne River in the mid-nineties.

Qualifying Feature (s) & Conservation Objectives:

Table 9: Qualifying features and Conservation Objectives of the River Foyle and Tributaries SAC

Feature Types	Feature	Size/extent/population	Conservation Objectives
Species	Atlantic Salmon *Salmo salar*	10,001 – 100,00	Maintain and if possible, expand existing population numbers and distribution, and improve age structure of population.
			Maintain and if possible, enhance extent and quality of suitable Salmon habitat – particularly chemical and biological quality of the water and the condition of the river channel and substrate.
Species	Otter *Lutra lutra*	C*	Maintain and if possible, increase population numbers and distribution
			Maintain extent and quality of suitable Otter habitat, particularly chemical and biological quality of the water and all associated wetland habitats
Habitat	Water courses of plain to montane levels with the *Ranunculus flultans* and *Callitricho-Batrachion*	16.44 ha	Maintain and if possible, enhance extent and composition of community.
			Improve water quality.
			Improve channel substrate quality by reducing siltation.
			Maintain and if feasible enhance river morphology.

The Maidens (UK0030384)

Distance: 108km northeast of site

Descriptive summary:

The Maidens SAC is formed by a group of small rocky reefs off north east Larne. Just two of these are large enough to be considered islands, known as West Maiden with an abandoned lighthouse and East Maiden with a functioning lighthouse. The rare habitats and species communities found at The Maidens are considered to be a consequence of the regional hydrographic conditions. The Maidens SAC is within the North Channel, which connects the Atlantic to the Irish Sea, experiencing currents of up to 4 knots as the currents from the channel grow when they rise over the plateaus. The region is also in close proximity to deep upwelling water, all of which contributes to the habitats and communities which are of particular conservation interest. There are number of deep-water reef species supporting unique hydroid and sponge assemblages, only known to occur in the Maidens, Rathlin Island and a few sites in the Sound of Jura. In addition to the reef habitat, there are also sedimentary habitats such as shallow stable sandy gravels and sand with maerl as well as coarse sediment. The Maidens SAC was designated based on the following primary marine features: reef, sandbanks which are slightly covered by seawater, grey seal (Halichoerus grypus).

Qualifying Feature (s) & Conservation Objectives:

Table 10: Qualifying features and Conservation Objectives of The Maidans SAC

Feature Types	Feature	Size/extent/population	Conservation Objectives
Habitat	Reef	2550 ha	Maintain and enhance, as appropriate extent of the reefs
			Allow the natural processes which determine the development, structure, function and distribution of habitats associated with the reefs, to operate appropriately.

			Maintain and enhance, as appropriate, viability, distribution and diversity of typical species within this habitat.
Habitat	Sandbanks which are slightly covered by sea water all the time	200 ha	Maintain extent and volume of sandbanks which are always slightly covered by sea water, subject to natural processes.
			Allow the natural processes which determine the development, structure and extent of sandbanks which are always slightly covered by sea water, to operate appropriately.
			Maintain and enhance, as appropriate, viability, distribution and diversity of typical species within this habitat.
Species	Grey Seal *Halichoerus grypus*	50 individuals	Maintain, and if feasible enhance population numbers and distribution.
			Maintain and enhance physical features used by Grey Seals within the site.
Species	Common Seal *Phoca vitulina*	D	No significant decrease in population against national trends, caused by on-site factors
Species	Harbour Porpoise *Phocoena phocoena*	D	

3.2 NBN Atlas

A search of the NBN returned no species recorded within the proposed developments boundary.

3.3 Impact Predictions

The purpose of designating and managing Natura 2000 sites is to maintain at or restore to 'favourable conservation status' the habitats and species listed within the Directives for which the sites are notified; individual conservation objectives encapsulate an overall aim of maintaining or achieving favourable conservation status for each feature and maintaining the integrity of the site as a whole.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species 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 its populations on a long-term basis.

Article 6(3) of the Habitats Directive requires that prior assessment is conducted regarding the established conservation objectives for each designated site. A general conservation objective encapsulating an overall aim of maintaining 'favourable conservation status' has been applied in relation to each Natura 2000 site and in relation to each site feature for the purposes of initial analysis.

3.4 Potential impacts

Disturbance of Qualifying Features – Construction

This report is looking at the development of the proposed Riverine Scheme site involving the construction of a foot/bicycle path bridge, public pathways, recreational areas and carparks, construction and installation of a jetty for boat and small craft access to the River Foyle, storm water management, accommodation works, Three River's Complex: drainage management and groundwork investigations (within the SAC). The bridge construction, car parking at the spillway (jetty) and ground investigations are located within the SAC on both banks of the River Foyle as a single span bridge structure. The stormwater management, accommodation works and Three Rivers Complex: drainage management are proposed for discharge into the SAC. The remainder of the proposed development extends beyond the boundaries of the SAC site. Despite the proposed development extending beyond the local fauna and flora species that occupy the borderline between the two may impacted. We will look at the effects of the construction process, works location, effects of access, mobilisation and demobilisation of equipment. During the completion of the development works, impacts that arise could include:

1. The potential of sediment/silt and pollutant to enter SAC's;
2. Direct habitat loss/fragmentation
3. Noise disturbance from machinery and drilling activities
4. The potential for the spread of non-native invasive species

Sediment and pollutants

Construction works involved the construction and installation of a single span foot/bicycle path bridge stretching both of the banks of the river, construction and installation of a jetty for boat and small craft access to the River Foyle and groundwork investigations (within the SAC). This will give rise to localised disturbance of the silt and mud substate of the riverbanks. Excessive inputs of silts can reduce suitability for salmon, smother eggs, choke fish and disrupt feeding and commuting behaviour. A Construction Environmental Management Plan (CEMP) is being devised by MCL Consulting to ensure the protection of the environment. Key highlights include the appointment of an Ecological Clerk of Works (ECoW) and the use of specialised equipment to mitigate impacts, which include:

- Bunded fuel bowser
- Spill kits
- Plant nappies
- Silt traps
- Biodegradable lubricant
- Designated skips according to waste type (recyclable/non-reuclable/biodegradable)

Any resuspension of substrate or sediment arising from the CFA piling works will be localised and carried out within a specified time frame, May - September, ameliorated by the mitigation measures set out within the CEMP.

Habitat loss

The proposed site development includes the clearance of some trees, wooded areas and grassland for both the proposed development plans and site access which will results in the loss of certain areas of habitat. Habitat reduction will be kept to a minimum, primarily to areas just beyond the SAC boundary in order to cater for public pathways and site entrances. Compensatory planting has been suggested in regard to any habitat that is lost through the development process.

It has been suggested that a 10m buffer be kept between the banks of the river in order to maintain suitable otter habitat, with the exception of the bridge location. The proposed pathways have been re-routed due to the presence of a main badger sett on the Strabane side. Consultation with NIEA resulted in these pathways being removed in order to preserve the badger sett and the surrounding habitat.

However, habitats for which these areas have been designed as SAC's are either not located locally or upstream from the proposed development location. Therefore, these selection features will not be affected by the development works. Other than the disruption beyond the SAC boundaries there will be no habitat reduction for the qualifying species and no effect on the overall conservation objectives of qualifying habitats.

Noise and Visual Disturbance

Ground investigation works involves minor and ephemeral works which will contribute to localised noise, in the form of drilling, and visual disturbance in the form of investigation

works and increased human activity. The significance of these impacts is evaluated in the context of the designation's selection features. The works are not likely to impact on local otters, during the site visit no holts or concrete evidence of otter's presence were noted, additionally, otters are predominantly crepuscular and nocturnal, and therefore will be active during periods were works have ceased.

Noise and visual disturbance are unlikely to impact Atlantic salmon due to ground works impacts being localised. Works are to be undertaken in late spring/ early summer as outlined by the Lough's Agency and therefore will avoid salmon travelling upstream from November to February.

Noise and visual disturbance are likely to impact a local badger population located on the Strabane side of the proposed site. A main sett was located near to proposed bridge landing location and is located in line with one of the proposed public pathways. Mitigation has been drawn up by MCL Consulting ecologists in line with consultations with NIEA resulting in the proposed temporary exclusions of subsidiary and annex setts within 25m of the proposed bridge landing site as well as a complete rerouting of the proposed public path layout in order to retain the badger setts and habitat reducing the impact. As badgers are also primarily crepuscular and nocturnal impacts will be reduced again as they are most active when works have stopped. Suggested piling method is CFA piling which differs from standard percussion piling with a reduced vibration and noise level.

Spread of non-native invasive species

The spread of invasive species can result in the reduction of SAC's qualifying habitats and habitats essential for qualifying species. Invasive species on site include Japanese knotweed *Reynoutria japonica*, Himalayan balsam *Impatiens glandulifera*, and Giant hogweed *Heracleum mantegazzianum*. Development works have the potential to disturb these invasive species and cause local spread and spread further downstream. An invasive species management plan is being drafted up by MCL Consulting and will be included within the CEMP. ECoW will advise which areas are safe to work, the safest way to approach them and provide dedicated toolbox talks to advise workers on how to avoid unintentional disturbance.

4.0 MITIGATION

The proposed development at stage one screening test of likely significance has demonstrated that the proposed new Riverine Community Park has potential for adverse effects on the aforementioned designations, however, these can be eliminated through a detailed CEMP and good practise, therefore significant adverse impacts on the Natura 2000 sites: River Finn SAC and River Foyle Tributaries SAC, Lough Foyle SPA, The Maidens and Donegal Bay are considered negligible.

Standard Mitigation Measures

These mitigation measures apply to all fauna species on both sides of the SAC and should be implemented as part of the CEMP and best practice measures for the development.

During the construction phase noise may cause disturbance, therefore the adoption of best practice as defined by the Control of Pollution Act 1974 should be implemented.

All noise caused by machines should be minimised and should operate during daytime hours only as agreed with the council.

With regards to dust it should be ensured that an adequate supply of water is available on site for effective dust suppression.

Similarly, no light should be directed onto woodland features during the construction or operational phase.

During the construction phase management and protection measures should be implemented prior to works commencing on site, these include:

- No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as otters may fall in or enter in search of food and become trapped.
- No buildings or storage units are to be left open overnight, as wildlife may enter and become trapped.

- No poisonous or potentially harmful substances or materials are to be left unsecured overnight.
- No vehicles or machinery are to be used installing any fencing or exclusion gates.

Otter

See Appendix: 8-6 for full otter report

It is recommended that a minimum of 10 metres should be retained as a buffer between the proposed development and the surrounding water courses to reduce any potential impact. It is also recommended that a surface water management plan be drafted and implemented to avoid potential impacts on the water courses and water quality. Consideration should also be given to otters concerning their use of the site's interior for foraging and fencing designs should facilitate free movement of otters to allow unrestricted passage throughout the site.

It is also recommended that either a small culvert or small ledge structure be worked into the bridge landing areas to allow otters free land access across the areas where the bridge makes contact with the banks of the River Foyle.

Badger

See Appendix: 8-5 for full badger report

In response to the badger's main sett location and the original proposed pathway, a consultation was held with Dr Jon Lees from NIEA to discuss potential alternatives and mitigation protocols regarding the badger main sett location and proposed pathways. Ultimately it was decided that a design change would be the best course of action. Therefore, the original proposed pathway has been altered with the path that was originally going through the main badger sett has been removed along with the pathway going north along the flood embankment, (see Appendix IV). This design change means that proposed pathway construction is all beyond the main sett's 25m exclusion zone. Proposed method of bridge construction on the Strabane banks requires the use of continuous flight auger (CFA) piling, which utilises a 'corkscrew' method to create the required hole. This method has been deemed much less impactful that standard percussive piling methods such as driven piling due to the current setback distance. See Appendix X for diagram illustrating a vibration contour graph for a 70t CFA piling rig, based upon this diagram the proposed method of CFA piling is not expected to have any lasting significant impacts upon the badger sett

which is currently approximately 40m away from the proposed piling site. The closer annex and subsidiary setts have been proposed for temporary exclusion due to their current status of inactivity along with the close proximity to the proposed piling locations.

Boreholes (cable percussion with rotary core follow-on)

Cable percussion allows the installation of casing inside the borehole to prevent loose soils collapsing into the hole, allowing the borehole to be advanced to considerable depths while maintaining good progress. In this case the boreholes will extend from ground level to approximately 3m within rock level. Various tools are used drill the hole through the centre of the casing. The casing is then advanced around the perimeter of the drilled hole.

The arisings are set to one side for sampling, logging and at locations where monitoring wells are to install the arising which will be disposed of to a skip provided by a licenced waste carrier. At certain locations, the drilling with the cable percussion drilling will be advance to rock head. The casing will be left in-situ and the cable rig removed off site. A rotary drilling rig will then be placed over the installed casing the drilling of rock commenced.

Any resuspension of substrate or sediment arising from the drilling works will be very localised and short-term, ameliorated by the mitigation measures set out within the CEMP. Other than the very localised disruption there will be no habitat reduction for the qualifying species and no effect on the overall conservation objectives of qualifying habitats.

Noise and visual disturbance are unlikely to impact Atlantic salmon due to ground works impacts being localised. Works are to be undertaken in late spring/ early summer and therefore will avoid salmon travelling upstream from November to February. Otters are predominantly crepuscular and nocturnal, and therefore will be active during periods were works have ceased. Additionally, no holts were identified near vicinity of boreholes.

Causeway Geotech have set out mitigation measures within their CEMP. This in accompany with the presence of an ECoW there should be no spread of invasive species.

Atlantic Salmon and Riverine Habitat

See Appendix: 8-12 for full aquatics report

Consultation with Loughs Agency resulted in a design change for the single span bridge structure. Originally this structure was proposed to include a single central pier halfway across the River Foyle. However, due to the potential impacts, mitigation requirements and concerns raised by the Lough's agency this was ultimately removed from the bridge design and a single span structure has been proposed instead.

In order to achieve this a temporary platform will need to be constructed on the Lifford bank of the River Foyle within the SAC. This will be a localised stationary platform of temporary construction. It is proposed that in order to help minimise potential risk to the SAC environment on the riverbank that a geotextile tarp material be laid down on the riverbank before the platform is construction from rubble. This will help to preserve the underlying riverbank/bed habitat reducing silt and sediment production and distribution from installation and removal of the temporary platform as well as avoiding any loss of riverbank structure. The construction of a coffer damn has been recommended as a measure to prevent the transportation of silt and debris down stream into the main water system. It is understood that a piling technique known as 'pressed-in' piling will be used to install sheet piles in close proximity to the riverbed on the Lifford side. This technique is considered to be a low vibration piling method, similar to the CFA method where continuous vibrations at a low level could be expected from the prime movers. Continuous monitoring should be used where both techniques are being carried out, to monitor vibration levels at the source and at the vibration sensitive receptor locations. The 'pressed-in' piling techniques has also been suggested for the creation of a temporary concrete platform to assist in crane and bridge construction on the riverbank. Similarly, to the bridge it is advised and recommended that this procedure takes place between the months of May and September in order to avoid the salmon run and not impact on the migrating salmon as they make their way to their spawning grounds. While this method is considered to be a low impact approach timing the works outside of the salmon run season vastly reduces the potential impact to negligible levels.

Construction of the single span bridge structure will take place between the months of May and September in order to avoid the salmon run and not impact the migrating salmon as they make their way to their hereditary spawning grounds. As this will be a single span

structure it is not envisioned to impact the run by displacing fish as they migrate upstream allowing them free unrestricted access upriver.

Silt traps/curtains have also been suggested in order to capture any dust or sediment displacement or spill which may occur and keep it within a localised area to avoid it being carried further downstream. Lighting should also not be directed onto the river habitat as this may attract or disorient the fish. Lighting should be switched off at night in order to avoid fish congregating in well-lit areas increasing their chances of being preyed upon and decreasing their chances of making it to their spawning grounds.

In addition to bridge abutments, where permanent CFA Piles will be used piled foundations may also need to be emplaced on land within the river margin beyond the flood embankment in proximity to the Bridge Abutment sites. Depending on the outcomes of the proposed Ground Investigation Works, this may be necessary to create a working platform for the assembly and lifting of the bridge, which will arrive to the site in sections requiring assembly on site. This platform will support the main crane used to lift the bridge into position, smaller crane(s) used to assist with the assembly of both the main crane and bridge and to store the assembled bridge before it is lifted into place. This platform structure will be deconstructed once the bridge has been completed. If CFA piles, which are permanent and cannot be withdrawn, have been used as foundations for this structure, then these piles shall be cut down to 1m below ground level as part of the site restoration / landscaping works following completion of bridge construction.

A temporary crane pad, extending into the river channel, is required to be constructed to support the large crane used for the bridge lift. This pad must bear the weight of the crane whilst it is lifting the bridge, and will be of sufficient dimension to facilitate safe lifting of the bridge structure. The crane pad structure may involve sheet piling through the riverbed to install a temporary peripheral coffer dam and / or piling through the riverbed under the crane footprint to provide a temporary foundation for the crane. The crane platform and any associated sheet piles will be withdrawn and deconstructed once the bridge is completed.

A section of the existing flood embankment running alongside the riverbank may need to be temporarily realigned to provide a suitable working room for the bridge abutment piling

and construction works. In order to retain flood protection during the construction phase it is necessary to construct a temporary sheet pile wall in place of the removed section of flood defence. This sheet pile will be withdrawn and deconstructed once the new permanent section of flood defence is in place.

It is also recommended that a 100m buffer zone be implemented for watercourses applying to the construction compound, refuelling and oil/fuel storage and a 10m buffer for water courses applying to the stockpiling of materials and wastes as well as concrete mixing and washing areas should be instated between the proposed development and the surrounding water courses to reduce any potential impact. It is also recommended that a surface water management plan be drafted and implemented to avoid potential impacts on the water courses and water quality.

Plant nappies and spill kits must be available and in working condition on site at all times with toolbox talks provided to ensure site staff are aware of potential risks and how to correctly use these response tools.

The same mitigation measure is recommended for the construction and installation of the jetty proposed on the Lifford banks of the River Foyle at the site's southern boundary. However, the construction of this carpark will include drainage for surface runoff. This runoff will lead into an oil-water interceptor to separate the surface rainwater runoff from potential oil/fuel leaks from parked vehicles before discharging to a sub-surface via a soakaway deliberately reducing discharge flow rates in a more controlled approach. Removal of harmful substances due to the presence of the interceptor will reduce potential risks from discharging into the SAC ensuring only rainwater runoff is discharged.

The stormwater management accommodation works is to provide site runoff from grassland areas on the site via a piped drainage network draining at several points into the Roughan Stream leading to the River Deele and River Foyle SAC. This proposed system operates under the influence of standard green field drainage rates and does not utilise a constant high flow discharge or pump system as it is designed to counter surface flooding due to rainfall. Potential discharge rates will depend on rainfall rates with a reduced discharge rate into the SAC. This system and discharge are not considered to impact upon the SAC due to the low discharge flow rates perceived for this type of drainage installation.

The Three Rivers Complex: drainage management currently has no outlined mitigation as its design and finer working operations will be finalised in the detailed design stage. However, it is believed that there are opportunities to provide betterment to the existing Three Rivers storm discharge arrangement and to provide mitigation in the detailed design to ensure no residual impacts on the receiving environment and River Foyle SAC. This will include provision of petrol interceptors and other appropriate mitigation measures.

Loss of Habitat

There is no predicted loss of habitat within the River Foyle SAC. The proposed development is primarily based beyond the boundaries of the SAC where some habitat loss is predicted to allow for improved public visitor access. However, this has been mitigated against with the rerouting of the proposed public pathways to preserve the main badger sett located on the Strabane side of the site and the surrounding habitat. Other pathways and road entrances will experience minimal habitat loss through the clearance of select trees and pre-designated pathways.

A long-eared owl is known to nest on the Lifford side within the proposed development site within a coniferous treeline located in the site's western area. Proposed route plans currently propose a carpark and entrance road passing through 2 sections of the treeline. Long-eared owls are considered a species which has a moderate ability to co-exist with human populations, due to the nest's close location not Lifford town, it is proposed a minimum 150m buffer when construction works are being carried out and between 22-90m from the disturbance source once works have completed is left between the nest within the treeline and the long-eared owl nest.

It has also been recommended that should removal of the nest or works within 150m of the nest be required it will require appropriate wildlife licensing and will need to be carried outside of the breeding season. It is also recommended should the nest be removed a replacement raptor box be installed within the area as a compensatory measure to ensure the long-eared owl has appropriate replacement nesting. This must be carried out under supervision and installed by a suitably qualified ecologist.

Trees, hedgerows and scrub are of importance to breeding and nesting birds. While no nests have been identified, the removal of hedgerows, trees and scrub during the breeding

season will negatively impact upon nesting birds due to the abundant presence and activity of birds during the breeding season.

Any scrub or tree clearance should be kept to a minimum and undertaken outside of the breeding season 1st March – 31st August).

It should be noted that should clearance of scrub/hedgerow's during the breeding season be required, this must be undertaken under the supervision of a qualified ecologist and appropriate surveys undertaken prior to any scrub clearance i.e. pre-working nest inspection/breeding bird survey to ensure no active nests are present. Any vegetation which is removed prior to the bird breeding season should be removed from the site completely, in order to prevent birds along with other species using stored debris as nesting/resting sites.

Invasive Species and Biosecurity

To ensure biosecurity on site and reduce the spread of the invasive species throughout the site and on to other sites the following measures are to be implemented:

- Erect fencing around the invasive species (Japanese Knotweed & Giant Hogweed) and place relevant signage
- Erect Fencing around Containment Treatment Area and relevant signage.

The general Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invertebrate species is as follows:-

Invasive Species (Plants and Bivalves) Construction Phase

- Before any piece of construction 'machinery' including crane or mobile machinery / plant, (excavators, rollers, dumpers, tele-handlers etc.) is delivered to the site, the invasive species Clerk of Works shall be provided documentation providing details of all sites close to or involving works in water that the machinery has been working on or stored on in the last 60 days.
- The invasive species Clerk of Works may consider the need for additional biosecurity measures, such as quarantining or pre-delivery disinfection, for any high risk machinery that has recently involved in in-river works.

- Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invasive bivalve species is as follows:-

    - On arrival at or departure from the site, ALL construction machinery should be visually inspected and disinfected in the self-contained biosecurity washing area of the Construction Compounds.

    - The disinfection process shall involve dosing of the exterior of the machinery with a diluted solution of 1% Vircon Aquatic solution or an approved alternative.

    - The machinery should then be power-hosed with water of 60 oC + to remove disinfection solutions and any invasive species debris and any residual treated clams / eggs which may be present, followed by a final off-site visual inspection.

    - The treatment and inspection of machinery shall be overseen and approved by a qualified ecological Clerk of Works, including verification records to confirm completion of the disinfection for each piece of machinery, including any replacement / standby units intended to be used on the project. Records shall be retained for inspection by the client's representatives.

    - Sludge from the self-contained biosecurity facility shall be routinely (on at least a weekly basis) removed from the washing area and transferred to a water-tight covered skip for storage, awaiting off-site disposal to an appropriately licensed landfill site for deep burial.

Mitigation Measures Invasive Species (Plants only) Construction Phase

- The Invasive Species Clerk of Works and Ecological Clerk or Works shall be jointly responsible for the monitoring of biosecurity onsite. These responsibilities include site management, restrict personal and movement to designated areas, restrict access to site, clean maintain PPE, equipment and plant machinery.
- Plant Machinery are to restrict movement around the site, and within given work areas and haul routes to from containment areas.

- Plant machinery will remain on site in restricted area until excavation, and replacement to the containment area have been completed.
- Recommend the use of rubber tyre plant wherever possible rather than tracked plant.
- Plant machinery to be thoroughly cleaned down upon completion of works including tracks, tyres, buckets, trailers etc and material place in the containment area.
- PPE especially boots to be deep cleaned and any material placed in containment area.
- Cleaning of Plant Machinery and PPE will be overseen and undertaken by onsite Invasive Species supervisor who will instruct if the plant and personal are safe to leave.

A strict invasive species management plan has been drafted which shall be implemented on site through the lifespan of the pre-construction and construction phase along with a management plan for post-construction management of species. Toolbox talks will be provided to ensure all site staff are aware of the management plan and are aware of biosecurity protocols as well as any health and safety concerns.

It is recommended before that before any of the excavation or stripping elements of the treatment strategies to update the Invasive Species survey and management plan if required.

This is due to the nature of site along situated along the river Foyle which the lands are at risk from further spread of invasive species.

No additional live projects/developments are located within close proximity, it is therefore, considered that there is no additive effect for significant cumulative or in combination impacts on the Natura 2000 network to occur as a result of the development.

No additional live projects/developments are located within close proximity, it is therefore, considered that there is no additive effect for significant cumulative or in combination. impacts on the Natura 2000 network to occur as a result of the development.

4.1 Conclusion

All potential impacts that have been predicted for the proposed Riverine Scheme are localised to within the River Foyle and its Tributaries SAC. The River Finn SAC is not considered to be directly impacted by the proposed development, however, certain

features such as otter and Atlantic salmon which move freely between the River Finn and Foyle may experience some disturbance. Therefore, proposed mitigation for these features within the River Foyle and its Tributaries SAC are deemed sufficient to provide extended protection for River Finn SAC features and avoid any long term negative impacts.

Lough Foyle SPA is hydrologically linked downstream to the River Foyle SAC and as such is considered to have the greatest risk of impact from the proposed development scheme. However, due to its distance from the immediate proposed development site and dilution factors of the riverine system it is considered that proposed mitigation and best practice management plans implemented on site will be sufficient to negate these impacts from the Lough Foyle SPA site.

The Maidens SAC and Donegal Bay SPA are not hydrologically linked with the proposed development site nor do they share a site overlay. Both of these sites are a substantial distance, (108km and 46km respectively), away from the proposed development site that they are not considered to have any impact from the Riverine Scheme development. However, the species features of grey and harbour seal for these sites may travel up the Foyle as they travel to forage for food. While this may be a rare incident it is concluded that proposed mitigation for SAC features of otter and Atlantic salmon; along with mitigation for the protection of the riverine habitat should be sufficient to negate potential impacts to these species. Therefore, the CEMP for the construction stage should aim to minimise the outputs of pollutants i.e. dust, sediment etc, to ensure that no serious pollution incidents occur and to minimise disturbance to wildlife as well as protecting and enhancing Biodiversity.

With the implementation of the proposed mitigation measures, it is the ecologist's reasonable conclusion that there is no likelihood of significant, long-term impacts to the primary Natura2000 site of the River Foyle and its Tributaries SAC, the other remaining 5 sites have also been deemed as not likely to have significant, long lasting impacts due to their geographic location, setback distance and proposed mitigation measures. Any potential impacts that may arise will be localised and segregate from the wider site and short term with minimal impact to the Natura 2000 site.

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FIGURES

Figure 3. Riverine Habitat within River Foyle SAC

Figure 4. Wood habitat on Strabane side

Figure 5. Overview of grassland habitat on Lifford side within hare coursing ground

APPENDICIES

River Foyle

Marsh

Wetland

SUDs

Overhead Electric Lines

Park Road

Barnhill Road

Existing Water Level +(2.00)

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road influences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

N

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of the items in the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

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Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Ghoirtha Báin
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · ZO · XX · DR · LA · 102 · P00

Project Number: 1383

Status code & Description: PLANNING

LEGEND

SOFTWORKS

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MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

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NOTES

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3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	15.02.21	Issued for planning	DM
P02	17.03.21	Issued for planning	DM

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

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Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: LIFFORD LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	ZO	XX	DR	LA	101	DRAFT

Project Number: 1383
Status code & Description: PLANNING

Appendix 8-3

Baseline Ecology Survey

Proposed Riverine Community Park Lifford and Strabane

Baseline Ecology Survey

Prepared By:

Delichon Ecology

Prepared For:

Donegal County Council

Baseline Ecology Survey

Revision	Document Number	Description	Prepared by	Checked by	Date
Draft for Review	12-21	Baseline Ecology Report for Proposed Riverine Community Park Lifford and Strabane	ED	ED	11/05/2020
Final	12-21	Baseline Ecology Report for Proposed Riverine Community Park Lifford and Strabane	ED	ED	29/07/2020

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Figures

1. Introduction

Delichon Ecology was commissioned by Donegal County Council to undertake baseline ecology surveys for a proposed Riverine Community Park between Lifford Co. Donegal and Strabane Co. Tyrone. The Riverine Community Park project proposes to create thirty acres of new community park space and infrastructure at Lifford and Strabane. It proposes to create a neutral, shared space by utilising agricultural land and wetland lying along either side of the border. It will span both sides of the River Foyle and be connected by a new pedestrian and cycle bridge.

1.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns. The site measures approximately 11.69 hectares in total, with approximately 5.73 acres on the Lifford side and 5.96 acres on the Strabane side.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused car park, with the rest of the site consisting of woodland.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

1.2 General Description of Proposed Development

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways and cycleways, wetlands supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of twenty-five acres by utilising agricultural land and wetlands lying along either side of the
border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events.
- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

1.2.1 Proposed Site Design

Sustainable development is central to the design, delivery and implementation ethos of both Donegal County Council (DCC) and Derry City and Strabane District Council (DCSDC). It is proposed to design an iconic park to create a welcoming, person centred environment which will optimise the opportunity for person-to-person interaction.

It is proposed to reuse earth material for landform rather than removal off site in order to reduce carbon emissions and landfill. Sustainable Urban Drainage Design System (SUDS) will be employed to harvest rainwater, allow for containment of run-off and deploy attenuation measures for hard surfaces. Mitigation measures will be put in place, through consultation with Loughs Agency to ensure that the River Foyle remains unaffected throughout the construction and lifespan of the proposed development.

The following elements are to be incorporated into the final design of the proposal in order to minimise environmental impact:

- The use of timber from sustainable sources must be considered.
- The use of loose ground cover to facilitate water percolation and minimal impact on the natural water flow to the River must also be considered.
- Orientation of the pavilion building to maximise solar gain for space heating and use of a green sedum roof or similar for energy efficiency and positive impacts for pollinating insects.
- Use of site contours for new path networks to minimize site impact and the carbon footprint of new path infrastructure.
- Conservation of the wetland areas with proactive biodiversity and environmental training programmes to encourage its enhancement and protection.

The design must primarily optimise the use and mix of space in terms of functional space, circulation space and provision for services both planned at this stage and flexible in terms of future re-

designation of areas.

A Proposed Masterplan for the development is presented in **Appendix A**.

Figure 1-1 - Site Location

2 Methodology

2.1 ASSESSMENT GUIDANCE METHODOLOGY

The assessment had regard to the following guidelines:

- EPA (2002) *Guidelines on the information to be contained in Environmental Impact Statements*, Environmental Protection Agency;
- EPA (2003), *Advice Notes on current practice in the preparation of Environmental Impact Statements*, Environmental Protection Agency;
- NRA (2009) *Guidelines for the Assessment of Ecological Impacts of National Road Schemes Rev. 2*, National Roads Authority;
- NRA (2008) *Ecological Surveying Techniques for Protected Flora and Fauna During the Planning of National Road Schemes*, National Roads Authority;
- (NRA, 2008c) *Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*, National Roads Authority;
- CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Version 1.1*. Chartered Institute of Ecology and Environmental Management, Winchester; and
- EPA (2017) *Guidelines on the information to be contained in Environmental Impact Assessment Reports*, Environmental Protection Agency.

The assessment was carried out in two stages, firstly through a desktop study and secondly by field survey work in order to identify, describe and map areas of know or potential ecological value.

2.2 DESK STUDY

Sources of information that were used to inform the assessment were:

- Environmental Protection Agency (EPA) EnVision Mapping gis.epa.ie/EPAMaps;
- EPA Catchments Website – for the 2nd cycle River Basin Management Planning www.catchments.ie;
- Geological Survey of Ireland online mapping www.gsi.ie;
- Information on the conservation status of birds in Ireland (Colhoun & Cummins, 2013);
- NPWS online maps and data, site synopsis and conservation objectives www.npws.ie
- National Biodiversity Data Centre (NBDC) online maps and data www.biodiversityireland.ie;
- OSI Map Viewer www.osi.ie;
- Meath County Development Plan 2013-2019; and
- Any other relevant ecological reports and literature (published scientific literature and 'grey' literature).

2.3 ZONE OF INFLUENCE

Following the guidance set out by the NRA (2009), the proposed development has been evaluated based on an identified zone of influence (ZoI) with regard to the potential impact pathways to ecological features (habitats, flora and fauna).

The ZoI for terrestrial habitats is limited to the footprint of the proposed development, with groundwater movement and levels considered in relation to groundwater dependent terrestrial habitats outside of the footprint of the development.

Hydrological linkages between a proposed development and aquatic habitats/species can occur over significant distances; however the significance of the impact will be site specific depending on the receiving water environment and nature of the potential impact. Adopting a precautionary approach, the distance over which surface water discharges could have a significant impact on receiving watercourses is considered to extend downstream of the proposed development site.

2.4 CONSULTATION

The following organisations with relevance to ecology were consulted in relation to the proposed development:

- Department of Arts, Heritage and the Gaeltacht (Development Applications Unit (DAU)), response received;
- Inland Fisheries Ireland (IFI), response received;
- BirdWatch Ireland (BWI), no response received; and
- Biodiversity Officer, Meath County Council, no written response received.

2.5 FIELD SURVEY

The principal aim of the field survey was to identify and map the habitats and features of terrestrial ecological interest present within the proposed development boundary and its immediate environs, to note the occurrence and potential occurrence of protected species and to identify any potential impacts of the proposed development. Field walkover survey dates are survey types undertaken are presented in **Table 2.1** below.

Table 2-1 - Survey dates and survey types

Survey Date	Survey Type
June 06th 2020	Multi-disciplinary survey including habitat survey, botanical survey, invasive species survey, breeding bird survey (late season), non-volant mammal survey and passive bat surveys.
July 15th 2020	Multi-disciplinary survey including habitat survey, botanical survey, invasive species survey, breeding bird survey (late season), non-volant mammal survey and passive bat surveys.
November 30th 2020	Wintering bird surveys and non-volant mammal survey
December 28th 2020	Wintering bird survey
January 12th 2021	Wintering bird survey
February 11th 2021	Wintering bird survey
March 30th 2021	Wintering bird surveys and non-volant mammal survey
May 11th 2021	Breeding Bird survey (early season)

2.5.1 Habitat Survey

A habitat assessment was carried out in accordance with current guidelines (Smith *et al*. 2011). This involved a walkover of the study site, where the habitats present were classified according to Fossitt (2000) and recorded on a field map. A botanical survey was conducted in-parallel with the habitats survey, where botanical species were identified and recorded according to dominant habitat type. Any other records of interest (e.g. invasive plant species) were also marked on field maps and locations were recorded using GPS handheld units.

The conservation status of habitats and flora was also considered. The conservation status of habitats and flora within Ireland and Europe is indicated by inclusion in one or more of the following: Irish Red Data Book for Vascular Plants (Wyse Jackson et al. 2016); Flora Protection Order (1999 as amended 2015); the EU Habitats Directive (92/43/EEC).

Habitats were assessed for field signs and/or usage by fauna, such as tracks, scat, spraint, droppings in addition to places of shelter and features or areas likely to be of particular value as foraging resources. Invasive species listed on Schedule 3 of the Birds and Natural Habitats Regulations 2011 (as amended) were also recorded.

2.5.2 Bat Survey

Passive bat survey of the proposed development site were undertaken on June 06th 2020 and July 15th 2020. Prior to a night-time detector survey being carried out a detailed daytime visual inspection of the site was undertaken to identify any mature trees which may have roosting potential for bats and to assess the suitability of habitats at the site for foraging and commuting bats.

Habitats were classified according to *A Guide to Habitats in Ireland* (Fossitt, 2000). The entire site was walked and the potential for suitable roosting, foraging and commuting habitats to occur were assessed based on the 'Negligible, Low, Moderate and High' classification described in Table 4.1 of Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins (ed.), 2016). The visual inspection focussed on potential roost features within the footprint of the proposed development. Binoculars and a torch were also used to examine trees for Potential Roost Features (PRF) such as crevices or holes. Signs of bats such as oil staining, scratches, droppings and corpses were also searched for.

2.5.2.1 Walked Transect/Activity Survey

A night-time/dusk activity survey of the study site was undertaken on the June 06th 2020 and July 15th 2020. Walked transect surveys are important for identifying flight lines and for gaining an understanding of bat abundance at the study site.

The survey aimed to identify what bat species utilise the site and to record bat activity within and adjacent to the proposed development site.

The surveyor was using a handheld bat detector (Wildlife Acoustics Echo Meter Touch2 Pro with a Amazon Fire Tablet). The bat detector is triggered to record when a bat call is emitted louder than 18dB for 1sec. This detector uses full spectrum sampling; detecting all frequencies simultaneously, meaning that multiple bat calls can be recorded at the same time.

The survey completed on June 06th 2020 commenced 30 minutes before sunset and finished 90 minutes after sunset. The temperature at the beginning of the bat survey was 11°C. Survey conditions were dry. Cloud cover was between 100% during the survey, with no moon during the site walkover. Wind varied between light to gentle breezes, Force 2-3 on the Beaufort Scale. The survey was carried out in optimal for bat surveys.

The survey completed on July 15th 2020 commenced 30 minutes before sunset and finished 90 minutes after sunset. The temperature at the beginning of the bat survey was 16.5°C and 15°C at the end of the survey. Survey conditions were dry. Cloud cover was between 100% during the survey, with no moon during the site walkover. Wind speed and force was gently, Force 1-2 on the Beaufort Scale. The survey was carried out in optimal for bat surveys.

2.5.3 Bird Surveys

2.5.3.1 Breeding Bird Surveys

The breeding bird surveys comprises line transect surveys. These surveys were completed in accordance with the Countryside Bird Survey (CBS) methodologies[1] during suitable weather conditions (Bibby et al. 2000). Line transects were located through the study area and were selected to cover all suitable habitat types occurring within the study area and environs. A total of six transects were undertaken, each measuring between ca. 200m and 600m in length and positioned at different locations within and across the study site.

All bird species encountered (seen or heard) during the surveys were recorded, together with the abundance of each species. Birds flying over the site were also included as part of the observations. Birds were recorded as occurring within 0-25m, 25m-100m and greater than 100m from the observer. Abundance data collected from each transect was collated for each species for each survey visit. Casual records of breeding birds encountered during the multidisciplinary surveys, but outside of dedicated survey period were also noted.

2.5.3.2 Wintering Bird Survey

Five field walkover surveys which incorporated wintering bird surveys were undertaken between November 2020 and March 2021, during suitable weather conditions (Bibby et al. 2000). The bird surveys were conducted within the study site and its immediate surrounds, using a series of transects in accordance with the methodology described by Bibby et al. (2000) and a targeted Vantage Point Survey, undertaken at dusk or dawn. A total of two transects were undertaken, each measuring between 400m and 800m in length and positioned at different locations within and across the study site. The transect locations remained the same for each of the five visits and utilised the main habitats present on site; pastoral grassland, amenity grassland, riparian habitat, woodland fringe.

All bird species encountered (seen or heard) during the surveys were recorded, together with the abundance of each species. Birds flying over the site were also included as part of the observations. Birds were recorded as occurring within 0-25m, 25m-100m and greater than 100m from the observer. Abundance data collected from each transect was collated for each species for each survey visit.

[1] CBS Manual: Guidelines for Countryside Bird Survey Participants

Casual records of birds encountered during the winter transect surveys, but outside of dedicated survey period were also noted.

The transect surveys were supplemented by field scanning surveys, which assessed for the presence of grazing wildfowl or probing waders using expansive pastoral fields during or immediately following prolonged wet weather conditions.

Vantage Point Surveys were undertaken near the northern end of the study site. The Vantage Point was selected to offer a view over the River Finn, its riparian area and adjoining pastoral fields. The Vantage Point surveys sought to identify the usage of the riparian area and the proposed study site as foraging or commuting route for waders and wildfowl, in particular Whooper Swan and Geese. Dawn Vantage Point Surveys were undertaken in December 2020, January 2021 and February 2021 while dusk Vantage Point Surveys were undertaken in November 2020 and March 2021. Dawn Vantage Points commenced 30 minutes before first light for a duration of 1 hour 30 minutes. Dusk Vantage Point survey duration was 1 hour 30 minutes and continued until last light.

2.5.4 Non-volant Mammal Survey

Otter surveys were conducted along the riparian areas of the River Finn and contributory drainage channels and watercourses.

The survey methodology was based on the detection of signs of otter presence or absence within a survey area and its environs and follows those methods employed in the 'Otter Survey of Ireland 2004/2005' (Bailey & Rochford, 2006) comprising a modification of the Standard Otter Survey Method developed by Jefferies 1980).

The survey area and environs was checked for the presence of badger setts and other mammals as necessary. Badger surveys will be completed in accordance with the Guidelines for the treatment of badgers prior to the construction of National Road Schemes (TII 2006).

Surveys for otter holts, badger setts and general mammal signs were conducted during the winter season and in early spring when vegetation is not fully emerged to ensure that this seasonal constraint did not impact on the completeness of the findings of the surveys. The surveys involved a search for all mammal signs including spraints, scat, prints, slides, trails, couches, holts, setts, latrines, snuffles holes etc.

The presence and suitability of the site for amphibians and reptiles was also considered during the site walkover surveys.

2.6 IMPACT ASSESSMENT CRITERIA

The methodology for the assessment of impacts is derived from the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018). Potential changes and impacts on ecosystem and receptor structure and function make reference to the parameters discussed in **Table 2-2**.

Table 2-2 - Characteristics used in Describing Impacts on Ecosystem Structure and Function

Characteristics	Definition of Impact Characteristics[2]
Positive or negative	Positive and negative impacts/effects should be determined according to whether the change is in accordance with nature conservation objectives and policy: - Positive impact - a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment; - Negative impact - a change which reduces the quality of the environment e.g. destruction of habitat, removal of species foraging habitat, habitat fragmentation, pollution.
Extent	The extent is the spatial or geographical area over which the impact/effect may occur.
Magnitude	Magnitude refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
Duration	Duration should be defined in relation to ecological characteristics (such as a species' lifecycle) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long- lived species, would span at least five generations of some invertebrate species. The duration of an activity may differ from the duration of the resulting effect caused by the activity. For example, if short-term construction activities cause disturbance to birds during their breeding period, there may be long-term implications from failure to reproduce that season. Effects may be described as short, medium or long-term and permanent or temporary. Short, medium, long-term and temporary will need to be defined in months/years.
Frequency and timing	The number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog will have very limited impact on nearby waders using wetland habitat, but numerous walkers will subject the waders to frequent disturbance and could affect feeding success, leading to displacement of the birds and knock-on effects on their ability to survive.

[2] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester

Characteristics	Definition of Impact Characteristics[2]
	The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.
Reversibility	An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation. In some cases, the same activity can cause both reversible and irreversible effects. For example placement of a temporary access through an ancient wood could cause the loss of food and shelter for common woodland birds that may be reversible, but the compaction of fragile woodland soils and damage to ancient woodland ground flora along the access route is effectively irreversible.
Cumulative impacts and effects	Cumulative or in-combination effects are experienced where the project may impact or influence an impact to an ecological receptor in combination with other projects / interactions within the zone of influence. Different types of actions can cause cumulative impacts and effects: - Additive/incremental - multiple activities/projects (each with potentially insignificant effects) added together to give rise to a significant effect due to their proximity in time and space. The effect may be additive (1+1 = 2) or synergistic (1+1 = 3). - Associated/connected - a development activity 'enables' another development activity e.g. phased development as part of separate planning applications. Associated developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess impacts of the 'project' as a whole and not ignore impacts that fall under a separate consent process.
Residual Impacts	After assessing the impacts of the proposed project all attempts should be made to avoid and mitigate ecological impacts. Once measures to avoid and mitigate ecological impacts have been finalised, assessment of the residual impacts should be undertaken to determine the significance of their effects on ecological features.

2.6.1 Evaluation

All ecological receptors within the project's zone of influence were assessed according to criteria for site evaluation outlined in the NRA *Guidelines for Ecological Impact Assessment of National Road Projects* (NRA, 2009). The geographic frame of reference used to determine the ecological value of receptors as they occurred within the project zone of influence are presented in **Table 2-3**.

Table 2-3 - Ecological Site Assessment Scheme

Ratings for Ecological Sites
International Importance:
'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
Proposed Special Protection Area (pSPA).
Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
Features essential to maintaining the coherence of the Natura 2000 Network.
Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
Resident or regularly occurring populations (assessed to be important at the national level) of the following:
Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or
Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
Biosphere Reserve (UNESCO Man & the Biosphere Programme).
Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
Biogenetic Reserve under the Council of Europe.
European Diploma Site under the Council of Europe.
Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance:
Site designated or proposed as a Natural Heritage Area (NHA).
Statutory Nature Reserve.
Refuge for Fauna and Flora protected under the Wildlife Acts.
National Park.
Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
Resident or regularly occurring populations (assessed to be important at the national level) of the following:
Species protected under the Wildlife Acts; and/or
Species listed on the relevant Red Data list.
Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.

Ratings for Ecological Sites
County Importance:
Area of Special Amenity.
Area subject to a Tree Preservation Order.
Area of High Amenity, or equivalent, designated under the County Development Plan.
Resident or regularly occurring populations (assessed to be important at the County level) of the following:
Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
Species protected under the Wildlife Acts; and/or
Species listed on the relevant Red Data list.
Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
County important populations of species or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared.
Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value):
Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
Resident or regularly occurring populations (assessed to be important at the Local level) of the following:
Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
Species protected under the Wildlife Acts; and/or
Species listed on the relevant Red Data list.
Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value):
Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;
Sites or features containing non-native species that are of some importance in maintaining habitat links.

In summary, the habitats found are evaluated based on their naturalness, value and vulnerability, as well as their inclusion within the European site network. Habitats that are considered to be good

examples of Annex I and Annex I Priority habitats are classed as being of International or National Importance. Semi-natural habitats with high biodiversity in a county context and that are vulnerable, are considered to be of County Importance. Habitats that are semi-natural, or locally important for wildlife, are considered to be of Local Importance (higher value) and sites containing small areas of semi-natural habitat or maintain connectivity between habitats are considered to be of Local Importance (lower value).

3 Results

3.1 Desktop Assessment

3.1.1 Biodiversity Records

3.1.1.1 National Biodiversity Data Centre

Records of rare, protected and invasive species of flora and fauna from the hectad supporting the study area was obtained from the National Biodiversity Data Centre (NBDC) online database[3]. **Table 3-1** below presents the protected species and invasive species records held by the National Biodiversity Data Centre for hectad (10x10km) H39.

Table 3-1 - National Biodiversity Data Centre Biodiversity Records for hectad H39

Common Name (Species Name)	Record Date	Conservation Status
Smooth Newt (*Lissotriton vulgaris*)	31/12/1972	Protected Species: Wildlife Acts
Barn Owl (*Tyto alba*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Barn Swallow (*Hirundo rustica*)	15/04/2016	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Black-headed Gull *(Larus ridibundus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Grasshopper Warbler (*Locustella naevia*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kestrel (*Falco tinnunculus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kingfisher (*Alcedo atthis*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

[3] https://maps.biodiversityireland.ie/Map

Common Name (Species Name)	Record Date	Conservation Status
Common Linnet (*Carduelis cannabina*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Pheasant (*Phasianus colchicus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Common Redshank (*Tringa totanus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Sandpiper (*Actitis hypoleucos*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Snipe (*Gallinago gallinago*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Starling (*Sturnus vulgaris*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Swift (*Apus apus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Wood Pigeon (*Columba palumbus*)	05/06/2016	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Corn Crake (*Crex crex*)	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Eurasian Curlew (*Numenius arquata*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened

Common Name (Species Name)	Record Date	Conservation Status
		Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Eurasian Teal (*Anas crecca*)	29/02/1984	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Eurasian Tree Sparrow (*Passer montanus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Eurasian Woodcock (*Scolopax rusticola*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
European Golden Plover (*Pluvialis apricaria*)	29/02/1984	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Great Black-backed Gull (*Larus marinus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Cormorant (*Phalacrocorax carbo*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Grey Partridge (*Perdix perdix*)	31/07/1972	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Common Name (Species Name)	Record Date	Conservation Status
Hen Harrier (*Circus cyaneus*)	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Herring Gull (*Larus argentatus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
House Martin (*Delichon urbicum*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
House Sparrow *(Passer domesticus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Jack Snipe (*Lymnocryptes minimus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species
Lesser Black-backed Gull (*Larus fuscus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Little Grebe (*Tachybaptus ruficollis*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mallard (*Anas platyrhynchos*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Mew Gull (*Larus canus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mute Swan (*Cygnus olor*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Northern Lapwing (*Vanellus vanellus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive

Common Name (Species Name)	Record Date	Conservation Status
		>> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Northern Wheatear (*Oenanthe oenanthe*)	31/07/1972	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Peregrine Falcon (*Falco peregrinus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Red Grouse (*Lagopus lagopus*)	31/07/1972	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Red-breasted Merganser (*Mergus serrator*)	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species
Rock Pigeon (*Columba livia*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Sand Martin (*Riparia riparia*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Sky Lark (*Alauda arvensis*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Spotted Flycatcher (*Muscicapa striata*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Twite (*Carduelis flavirostris*)	29/02/1984	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Whooper Swan (*Cygnus cygnus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of

Common Name (Species Name)	Record Date	Conservation Status
		Conservation Concern >> Birds of Conservation Concern - Amber List
Yellowhammer (*Emberiza citrinella*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Killarney Fern (*Trichomanes speciosum*)	31/12/2010	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Threatened Species: Vulnerable
Arthurdendyus triangulatus	20/05/2013	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Black Currant (*Ribes nigrum*)	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Butterfly-bush (*Buddleja davidii*)	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Canadian Waterweed (*Elodea canadensis*)	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Giant Hogweed (*Heracleum mantegazzianum*)	24/01/2018	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Heath Cudweed (*Gnaphalium sylvaticum*)	31/12/1929	Threatened Species: Vulnerable
Himalayan Knotweed (*Persicaria wallichii*)	31/12/1999	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Indian Balsam (*Impatiens glandulifera*)	26/09/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Intermediate Wintergreen (*Pyrola media*)	31/12/1929	Threatened Species: Vulnerable
Japanese Knotweed (*Fallopia japonica*)	14/05/2017	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Large Bitter-cress (*Cardamine amara*)	31/12/1929	Threatened Species: Vulnerable

Common Name (Species Name)	Record Date	Conservation Status
Rhododendron ponticum	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Salmonberry (*Rubus spectabilis*)	31/12/1999	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Small Cudweed (*Filago minima*)	31/12/1999	Threatened Species: Vulnerable
Sycamore (*Acer pseudoplatanus*)	08/09/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Traveller's-joy (*Clematis vitalba*)	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Wall Cotoneaster (*Cotoneaster horizontalis*)	31/12/1999	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Nebrioporus (Nebrioporus) *depressus*	31/12/1990	Threatened Species: Data deficient
Shining Flapwort (*Jungermannia paroica*)	31/12/1950	Threatened Species: Near threatened
Common Porpoise (*Phocoena phocoena*)	20/07/2014	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention
Ash-black Slug (*Limax cinereoniger*)	01/03/1992	Threatened Species: Vulnerable
Brown Snail (*Zenobiella subrufescens*)	01/03/1992	Threatened Species: Vulnerable
Budapest Slug (*Tandonia budapestensis*)	01/03/1992	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Common Shelled Slug (*Testacella* (Testacella) *haliotidea*)	31/12/1908	Threatened Species: Vulnerable
Copse Snail (*Arianta arbustorum*)	01/03/1992	Threatened Species: Vulnerable
English Chrysalis Snail (*Leiostyla* (Leiostyla) *anglica*)	01/03/1992	Threatened Species: Vulnerable
Freshwater Pearl Mussel (Margaritifera	02/09/1996	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected

Common Name (Species Name)	Record Date	Conservation Status
(*Margaritifera) margaritifera*)		Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Jenkins' Spire Snail (*Potamopyrgus antipodarum*)	01/03/1992	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Plated Snail (*Spermodea lamellata*)	01/03/1992	Threatened Species: Endangered
Hair-pointed Grimmia (*Grimmia trichophylla*)	31/12/1991	Threatened Species: Data deficient || Threatened Species: Least concern
Haller's Apple-moss (*Bartramia halleriana*)	31/12/1914	Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order 2015 Schedule B (Mosses) || Threatened Species: Regionally Extinct
Spruce's Bristle-moss (*Orthotrichum sprucei*)	31/12/2009	Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order 2015 Schedule B (Mosses) || Threatened Species: Vulnerable
Straight-leaved Apple-moss (*Bartramia ithyphylla*)	31/12/1883	Threatened Species: Vulnerable
American Mink (*Mustela vison*)	31/10/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Daubenton's Bat (*Myotis daubentonii*)	30/06/2014	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Eastern Grey Squirrel (*Sciurus carolinensis*)	25/06/2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Eurasian Badger (*Meles meles*)	24/07/2014	Protected Species: Wildlife Acts
Eurasian Red Squirrel (*Sciurus vulgaris*)	09/03/2009	Protected Species: Wildlife Acts
European Otter (*Lutra lutra*)	19/12/2013	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
European Rabbit (*Oryctolagus cuniculus*)	31/10/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species

Common Name (Species Name)	Record Date	Conservation Status
Lesser Noctule (*Nyctalus leisleri*)	31/10/2010	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Natterer's Bat (*Myotis nattereri*)	12/05/2008	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Pine Marten (*Martes martes*)	31/10/2010	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Pipistrelle (*Pipistrellus pipistrellus sensu lato*)	23/08/2012	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Sika Deer (*Cervus nippon*)	31/12/2008	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	01/09/2014	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
West European Hedgehog (*Erinaceus europaeus*)	20/06/1998	Protected Species: Wildlife Acts

3.1.1.2 National Parks and Wildlife Service

Table 3-2 presents protected species records held for hectads C30 and H39 by the National Parks and Wildlife Service.

3.1.2 National Parks and Wildlife Service

Table 3-2 - National Parks and Wildlife Service Protected Species Records

Scientific Name	Common Name	Record Date	Location(s)	Conservation Status
Mustela erminea subsp. hibernica	Irish Stoat	1972	Letterkenny C30 & H39 Co. Tyrone	Protected under the Irish Wildlife Act (1976) as amended.
Rana temporaria	Common Frog	1969 and 1979	Multiple locations H39 and C30	Annex IV of the EU Habitats Directive and protected under the Irish Wildlife Act (1976) as amended.
Trollius europaeus	Globeflower	1898 & 1994	Convoy and Deele River (several sites)	Protected under the Flora Protection Order (2015)
Meles meles	Badger	1990 & 1991	H29 H39 C20	Appendix III of the Bern convention and protected under the Irish Wildlife Act (1976) as amended.
Lepus timidus subsp. hibernicus	Irish Hare	1991	C30 & H39	Irish Wildlife Act (1976) as amended.
Lutra lutra	Otter	1990 & 2005	C20 & H39	Annex II and IV of the EU Habitats Directive and protected under the Irish Wildlife Act (1976) as amended.
Euphydryas aurinia	Marsh Fritillary	2006 & 2007	H29	Annex II and IV of the EU Habitats Directive and protected under the Irish Wildlife Act (1976) as amended.
Martes martes	Pine Marten	2006	H29	Annex IV of the EU Habitats Directive and protected under the Irish Wildlife Act (1976) as amended.
Cervus nippon	Sika Deer	2008	C20, C30, H29 & H39	Irish Wildlife Act (1976) as amended Invasive Species High Impact Invasive Species
Erinaceus europaeus	West European Hedgehog	1969, 1972 & 1973	H39, C20 & C30	Irish Wildlife Act (1976) as amended.
Lissotriton vulgaris	Smooth Newt	1972	H39	Irish Wildlife Act (1976) as amended.

Scientific Name	Common Name	Record Date	Location(s)	Conservation Status
Lolium temulentum	Darnel	1898	H29 Finn River, near Clady	Classified as Endangered under Irish Red list for Vascular plants (2016)[4]
Margaritifera margaritifera	Freshwater Pearl Mussel	1989	H29 Finn River Co. Donegal	Annex II and IV of the EU Habitats Directive and protected under the Irish Wildlife Act (1976) as amended.
Petromyzon marinus	Sea Lamprey	Date not provided	C30 Foyle / Bridge at Strabane-downstream	Annex II and IV of the EU Habitats Directive and protected under the Irish Wildlife Act (1976) as amended.
Rana temporaria	Common Frog	Not specified	H39 & C30	Annex IV of the EU Habitats Directive and protected under the Irish Wildlife Act (1976) as amended.
Centaurea cyanus	Cornflower	2003	H39 Strabane	Classified as Waiting List under Irish Red list for Vascular plants (2016).

[4] Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016) Ireland Red List No. 10: Vascular Plants. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

3.1 Designated Sites

3.1.1 European Sites

There are four Special Areas of Conservation (SACs) and one Special Protection Areas (SPAs), collectively referred to as European Sites, located within 15km of the proposed development. Their location relative to the proposed development site is illustrated in **Figure 3.1**, while details of the European Sites are listed in **Table 3-3**. The spatial boundary data for the European Sites shown in **Figure 3.1** was the most recent available online from NPWS (August 2018).

SACs are sites of international importance due to the presence of Annex I habitats and/or Annex II species listed under the EU Habitats Directive (92/43/EEC). SPAs are designated for the protection of bird species listed on Annex I of the Bird Directive (2009/147/EC), regularly occurring populations of migratory species and areas of international importance for migratory birds.

Table 3-3 - European Sites within 15km of the proposed development

Site Code	Site Name	Qualifying Features / Special Conservation Interest Species	Distance from Study Area	Connectivity
002301	River Finn SAC	1106 Atlantic Salmon *Salmo salar* 1355 Otter *Lutra lutra* 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) 4010 Northern Atlantic wet heaths with *Erica tetralix* 7130 Blanket bogs (* if active bog) 7140 Transition mires and quaking bogs	The proposed development is partially located within this European Site.	Direct and indirect connectivity as the proposed development is partially located within this European Site.
UK0030320	River Foyle and Tributaries SAC	1106 Atlantic Salmon *Salmo salar* 3206 Water courses of plain to montane levels with the Ranunculus fluitans and Callitricho-Batrachion vegetation 1355 Otter *Lutra lutra*	The proposed development is partially located within this European Site.	Direct and indirect connectivity as the proposed development is partially located within this European Site.
UK0030211	Moneygal Bog SAC	7110 Active raised bog*	This European Site is located 13.6km south-west of the proposed development.	No potential for connectivity due to distance and absence of viable ecological vectors.

Site Code	Site Name	Qualifying Features / Special Conservation Interest Species	Distance from Study Area	Connectivity
UK0030233	Owenkillew River SAC	1029 Fresh Water Pearl Mussel *Margaritifera margaritifera* 3260 Water courses of plain to montane levels with the Ranunculus fluitans and Callitricho-Batrachion vegetation 91A0 Old Sessile Oak woods with *Ilex* and *Blechnum* in the British Isles 91D0 Bog Woodland 1355 Otter *Lutra lutra* 1106 Atlantic Salmon *Salmo salar*	This European Site is located 13.9km south-east of the proposed development.	Located upstream of the works. There is no potential for connectivity due to distance and absence of viable ecological vectors.

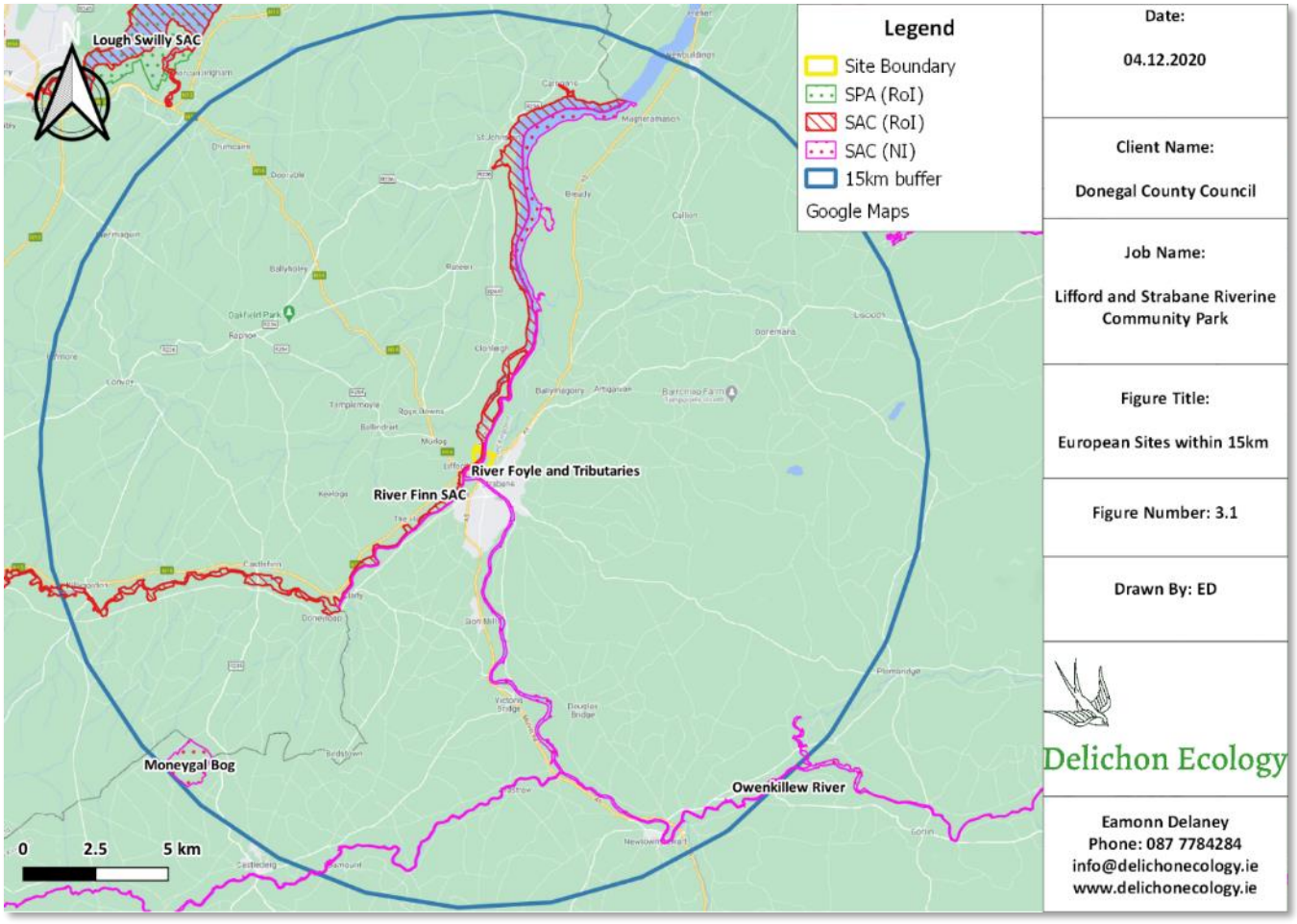

Figure 3-1 - European Sites within 15km of the proposed Riverine Community Park

3.1.2 Nationally Designated Sites

There are two proposed Natural Heritage Areas (pNHAs) and ten Areas of Special Scientific Interest (ASSI) located within 15km of the proposed development sites. There are no Natural Heritage Areas located within 15km of the proposed development. This is illustrated **Figure 3-2** in and listed in **Table 3-4**.

NHAs are sites deemed to be of national ecological importance and are afforded protection under the Wildlife Act 1976 (as amended), with many NHA boundaries overlapping with European sites.

The pNHAs have not been statutorily proposed or designated under the Wildlife Act (as amended), however they are afforded some protection under County Development Plans including such schemes as agri-environment schemes (Rural Environment Protection Scheme (REPS) and Agri Environmental Options Scheme (AEOS)). In the case of Donegal County Development Plan 2018-2024 e.g. NH-P-1, is focused on the requirements and protective measures afforded to Nationally designated sites.

Areas of Special Scientific Interest (ASSI) provide statutory protection for the best examples of Northern Ireland's flora, fauna, geological or physiographical features. ASSIs were first designated under the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985: New ASSIs are designated under the Environment (Northern Ireland) Order 2002. The Order makes it an offence for anyone to intentionally or recklessly damage any natural feature of an ASSI.

Table 3-4 - Nationally Designated Sites within 15km of the Proposed Development

Site Name and Code	Site Description	Distance from the Study Area	Connectivity
River Foyle and Tributaries ASSI	The area is of special scientific interest because of the physical features of the river and its associated riverine flora and fauna. The River Foyle and Tributaries ASSI includes that part of the River Finn which lies within Northern Ireland, the River Mourne and its tributary the River Strule (up to its confluence with the Owenkillew River) and the River Derg, along with two of its sub-tributaries, the Mourne Beg River and the Glendergan River. In total, the area encompasses 120km of watercourse and is notable for the physical diversity and naturalness of the banks and channels, especially in the upper reaches, and the richness and naturalness of its plant and animal communities, in particular the population of Atlantic Salmon Salmo salar, which is of international importance.	Adjoins	Potential direct and indirect connectivity
Strabane Glen ASSI	Strabane Glen is a narrow valley supporting a calcareous ash/hazel woodland which is atypical of this region and whose presence is related to the underlying geology. The valley represents a line of weakness between the Upper Dalradian schists and a basic igneous unit, possibly enhanced by local faulting. It was developed as a meltwater channel during the final deglaciation of the Sperrins ice, as indicated by outwash deposits and by washed rock outcrops on the valley sides.	1.5km east	No potential for connectivity due to distance and absence of viable ecological vectors
McKean's Moss Parts 1 and 2 ASSI	McKean's Moss is the most extreme north - western example of lowland raised bog in Northern Ireland. The intact bog surface exhibits a well defined dome with characteristic vegetation and structural features, including hummock and lawn complexes and small shallow pools. Sphagnum species are well represented.	13km south-west	No potential for connectivity due to distance and absence of viable ecological vectors

Site Name and Code	Site Description	Distance from the Study Area	Connectivity
	McKean's Moss Part 2 consists of a small area of cutover bog adjacent to McKean's Moss ASSI in County Tyrone. The raised bog system represents the most extreme north-western example of a lowland raised bog in Northern Ireland. The cutover bog within this site is now dominated by downy birch. The ground flora is dominated by Sphagnum mosses and dense stands of purple moor-grass. These old hand cuttings provide additional habitat diversity to McKean's Moss ASSI and are integral to the hydrological integrity of the bog.		
Corbylin Wood ASSI	The area is of special scientific interest because of its woodland flora and fauna. Corbylin Wood is an extensive semi-natural woodland. Because of the variety of environmental conditions, there are several distinctive woodland plant communities. As a result, the area is one of the richest for woodland plants in Northern Ireland. There are a number of notable plants and animals. The wood extends along a steep ridge to the north of Dunnamanagh, associated with part of the Burn Dennet river valley and its tributary, the Corbylin Burn.	9.6km north-east	No potential for connectivity due to distance and absence of viable ecological vectors
Silverbrook Wood ASSI	The area is of special scientific interest for its woodland flora and fauna. Despite its moderate extent, Silverbrook Wood includes a number ofwoodland plant communities, ranging from strongly acidic to flushed and base-rich. As a result of this variation, the area has one of the richest woodland plant assemblages in Northern Ireland and supports a number of notable woodland plants and animals. Silverbrook Wood lies to the south of Dunnamanagh and extends along the Burn Dennet River and its tributary, the Lockagh Bum. The largest and most continuous woodland block occurs on the steep, north-facing valley slope.	103.km east	No potential for connectivity due to distance and absence of viable ecological vectors

Site Name and Code	Site Description	Distance from the Study Area	Connectivity
Lisnaragh ASSI	isnaragh has been declared an ASSI because of its earth science interest. The features of interest at Lisnaragh formed by the action of water and ice toward the end of the last Ice Age, between 17,000 and 13,000 years ago. At this time the earth's climate was warming after the prolonged cold period that had allowed the ice to form. The main features are a moraine (sand, gravel and mud) ridge and an outwash terrace. During the ice age, ridges of moraine were deposited by the ice across the Burn Dennet River valley. Part of one of these ridges is contained within the site. Rivers and streams flowing from the glacier front laid down what are called outwash deposits along the side of the valley. These are flat and contrast with the moraine ridge.	11.5km east	No potential for connectivity due to distance and absence of viable ecological vectors
Aghabrack ASSI	The features of interest at Aghabrack formed by the action of water and ice toward the end of the last Ice Age, between 17,000 and 13,000 years ago. At this time the earth's climate was warming after the prolonged cold period that had allowed the ice to form. Sand and gravel were laid down in front of the ice as it was retreating south toward the main Sperrin Mountains. In Aghabrack, a hummocky ridge of this material, called moraine, was deposited when the ice briefly stopped it's retreat. The site also contains part of an esker ridge. An esker forms when a water channel under the ice becomes blocked up by sand and gravel as the flow of water declines. It is these ice channels that feed sediment from under the glacier to it's front. The water was actually flowing up hill because of the pressure from the ice to the south.	14.5km east	No potential for connectivity due to distance and absence of viable ecological vectors
Owenkillew and Glenelley Woods ASSI	The area is of special scientific interest because of its woodland flora and characteristic associated fauna. It represents the second largest intact seminatural deciduous woodland block surviving in the Sperrins. Indeed, it is one of the finest river valley woodlands in Northern Ireland. The wood is notable for the wide diversity in both its structure and in the plant communities occurring, and in its species richness. The wood extends eastwards	13.7km south-east	No potential for connectivity due to distance and absence of viable ecological vectors

Site Name and Code	Site Description	Distance from the Study Area	Connectivity
	for over 2.5 km along both flanks of the Owenkillew valley from its confluence with the Glenelly valley, while also extending up the Glenelly valley for 1 km, although becoming fragmented along its upper reaches. In addition to displaying a wide range of soil conditions with varying acidity and water movement, the wood also contains a number of associated physical features including streams, waterfalls, gorges, scattered boulder scree, cliffs and rock faces, all of which contribute to the diversity and variation of the plant communities present.		
Owenkillew River ASSI	The area is of special scientific interest because of the physical features of the river and its associated riverine flora and fauna, with adjacent woodlands providing additional interest. In comparison to other rivers of its type, the Owenkillew River is notable for the physical diversity and naturalness of the bank and channel, and the richness and naturalness of its plant and animal communities. It is a very important river for rare species and includes the largest known population of the Freshwater Pearl Mussel Margaritifera margaritifera in Northern Ireland. The Owenkillew River is a typical fast-flowing spate river, which gradually changes in character from ultra-oligotrophic (waters that are very low in plant nutrients) to mesotrophic (moderately low in nutrients) as it flows from its source to its confluence with the Strule.	13.6km south-east	No potential for connectivity due to distance and absence of viable ecological vectors
Moneygal Bog Parts 1 and 2 ASSI	The area is of special scientific interest because it contains one of the finest raised bog pool systems in Northern Ireland, with the pools arranged concentrically around the site of an old bog burst. Parts of the bog surface have well developed hummocks and hollows, including frequent hummocks of *Sphagnum imbricatum*, *Sphagnum fuscum* and *Racomitrium lanuginosum*.	13.2km south-west	No potential for connectivity due to distance and absence of viable ecological vectors

Site Name and Code	Site Description	Distance from the Study Area	Connectivity
	The area is of special scientific interest because of its physiographical features and peatland flora and associated fauna. Moneygal Bog Part II is an integral part of Moneygal Bog ASSI. The biological interest of the bog relates to the size of the intact dome, its western position within Northern Ireland and the presence of one of the best lowland raised bog pool systems. Moneygal Bog lies in a basin surrounded by low hills directly north of Castlederg and represents the most north-westerly lowland raised bog in Northern Ireland. The bog lies at a moderate elevation between 130m and 140m O.D. and displays some characteristics of transitional intermediate bog. Within Moneygal Bog ASSI, which was declared in March 1987, the peat deposits are deep and permanently waterlogged and the main feature of interest is a well-defined dome. Sphagnum hummocks and a well-developed system of pools are arranged concentrically around the site of an old bog burst. The intact dome supports frequent hummocks of the notable *Sphagnum imbricatum* and *S. fuscum* as well as *Racomitrium lanuginosum* which, in association with the pools create an impressive microtopography. The pool margins are typically dominated by Sphagnum papillosum with Bog Asphodel Narthecium ossifragum, Common Cottongrass Eriophorum angustifolium and Round-leaved Sundew Drosera rotundifolia. The bog vegetation is generally characterised by a high cover of Sphagnum mosses, ericoid dwarf shrubs and associated species. Old hand cuttings are extensive around Moneygal Bog, but are confined to the margins, leaving the central core of the bog intact.		
Feddyglass Woods pNHA (001129)	This site comprises three areas of woodlands approximately 5km east of Raphoe in Co. Donegal. The three areas are of interest because of their variety of woodland types. The	4.9km north-east	No potential for connectivity due to

Site Name and Code	Site Description	Distance from the Study Area	Connectivity
	wet woodland is of particular interest as it represents natural colonisation processes. The dry woodlands are of interest because of the tree species and rich ground floras. Broadleaved woodlands are of great value for birds and are relatively rare in this area.		distance and absence of viable ecological vectors
River Foyle Monagavlin to Carrigans pNHA (002067)	Site synopsis not available for this proposed Natural Heritage Area.	7.6km north	Potential indirect connectivity via the River Finn / River Foyle

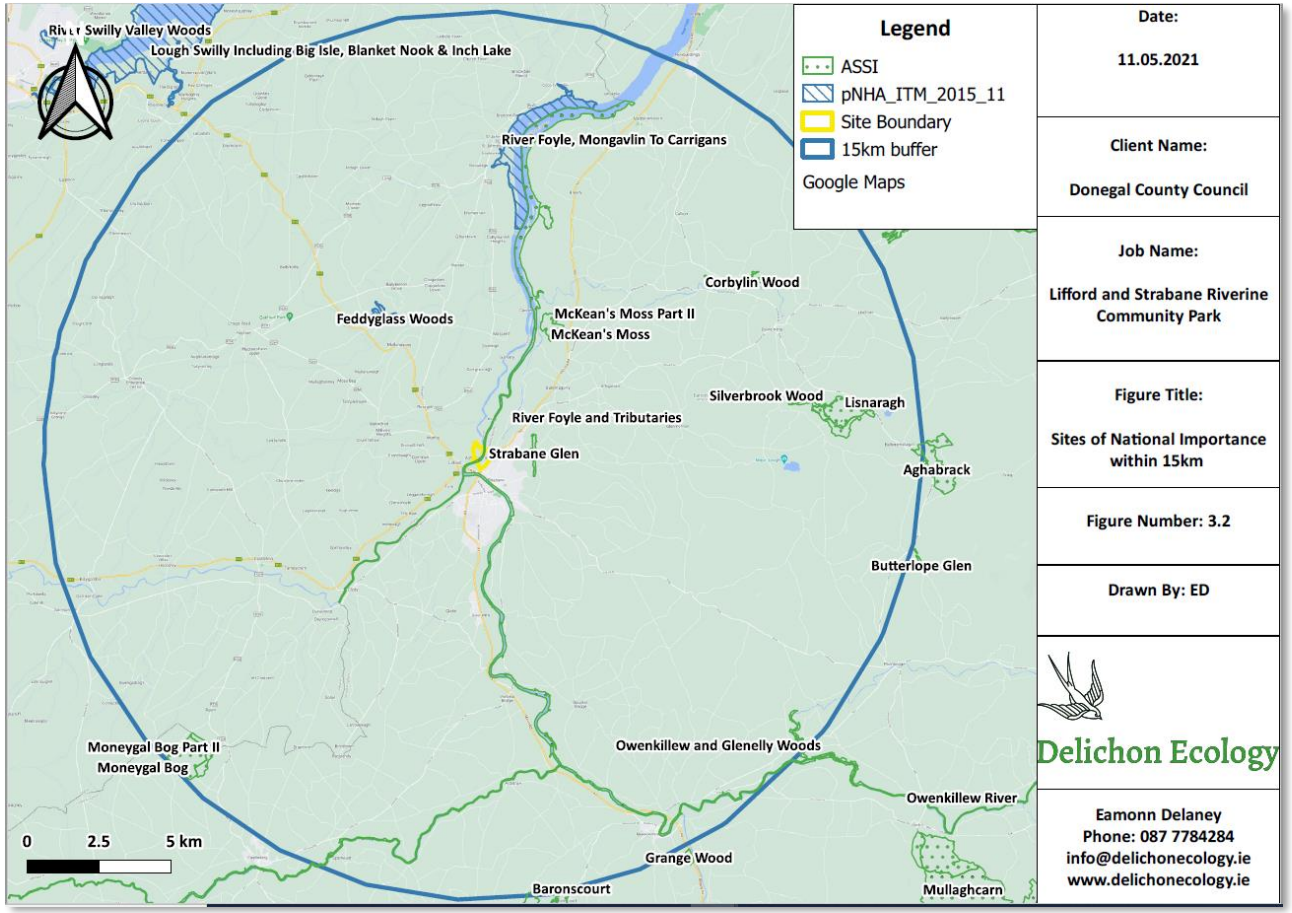

Figure 3-2 - Nationally designated sites within 15km of the proposed Riverine Community Park

4 Field Studies

4.1 Habitats in the Existing Environment

The existing environment within the Lifford area comprises improved grassland (GA1[5]), fringed by treelines (WL2), hedgerows (WL1) and woodland areas comprising mixed broadleaved woodland mixed broadleaved / conifer woodland (WD1 & WD2). The northern section of the site also supports a drainage channel which is a tributary of the River Deele (Donegal)_050 (NW_01D010650)

The south-eastern (Strabane) section of the study area is poor draining when compared with the Lifford side of the river and supports rush dominated wet grassland (GS4), improved agricultural grassland (GA1), wet willow-alder-ash woodland (WN6) comprising grey willow (*Salix cinerea*) and hedgerows and treelines. The wet willow-alder-ash woodland supports widespread, but localised occurrences of Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Fallopia japonica*).

Within the study area, the river is a large open watercourse and is classified by the Environmental Protection Agency (EPA) as a transitional waterbody; i.e. the Foyle and Faughan Estuaries (UKGBNI5NW250010). The river is fringed intermittently by reed and large sedge swamp (FS1) and localised areas of exposed fine aggregates. The higher areas of the riverbank support dry meadows and grassy verge habitat (GS2) that comprise stout, dense growing grasses. Habitats within the proposed study area are presented in **Figure 4.1** below and photos showing habitats within the proposed study area are presented in **Images 4.1** – **4.6** below.

4.1.1.1 Improved Agricultural Grassland (GA1)

The proposed development site supports this habitat on the Lifford side and near the southern and eastern margins of the Strabane side of the study area. The improved grassland areas located on the Lifford side of the study area are cut for silage annually and are otherwise used for hare coursing. Those located on the Strabane side are used for grazing, silage harvesting and low intensity grazing. Plant species composition comprise the usual suite of grasses and herbs associated with this habitat such as perennial rye grass (*Lolium perenne*), red fescue (*Festuca rubra*), Yorkshire fog (*Holcus lanatus*), creeping thistle (*Cirsium arvense*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*) and broadleaved dock (*Rumex obtusifolius*).

The improved grassland fields located near the southern boundary of the Strabane side of the study area are slightly poorer draining and consequently support timothy, floating sweet grass (local), marsh foxtail and common rush, in addition to the species previously listed.

4.1.1.2 Amenity grassland (GA2)

This is associated with the Lifford Celtic soccer pitch located on the Lifford side of the study area. This is a routinely maintained grassland habitat comprising red fescue, white clover and red clover.

[5] Alphanumeric codes in accordance with '*A Guide to Habitats in Ireland*' (Fossitt, 2000).

4.1.1.3 Wet grassland (GS4)

This habitat is located on the Lifford side of the study area. This is a common rush dominated wet grassland in addition to Yorkshire fog (*Holcus lanatus*), greater bird's foot trefoil (*Lotus pedunculatus*), common bent (*Agrostis capillaris*), meadow vetchling (*Lathyrus pratensis*), common sorrel (*Rumex acetosa*) and spreading grey willow (*Salix cinerea*) shrubs. The south-eastern corner of this wet grassland habitat adjoins a line of Japanese knotweed (*Reynoutria japonica*) plants, which are fringing an access track located immediately east of this habitat.

4.1.1.4 Hedgerows (WL1)

Hedgerows fringe the improved grassland fields located on the Strabane side of the study area. These comprise hawthorn (*Crataegus monogyna*) and occasional elder (*Sambucus nigra*), overtopped by semi-mature ash (*Fraxinus excelsior*) trees.

4.1.1.5 Treelines (WL2)

Treelines are located on both sides of the study area. Treelines line the improved grassland areas used as hare coursing lands on the Lifford side of the study area. The westernmost areas of the Lifford side supports maturing lines of Sitka spruce (*Picea sitchensis*) trees, in addition to occasional sycamore and elder. Another treeline in this area supports sycamore (*Acer pseudoplatanus*), ash, grey willow (*Salix cinerea*), alder (*Alnus glutinosa*), dog rose (*Rosa canina*), broom (*Cytisus scoparius*), gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus* agg.)

Treelines located on the Strabane side of the study area line the pastoral fields and comprise ash, sycamore (*Acer pseudoplatanus*), elder, hawthorn and grey willow.

4.1.1.6 Scrub (WS1)

Scrub is very localised within the study area and occurs along the riverbank margins on the Strabane side, in addition to another small area near the north-eastern boundary, where it occurs in mosaic with dry meadows and grassy verge habitat. Plant species composition included bramble (*Rubus fruticosus* agg.), willow and gorse (*Ulex europaeus*).

4.1.1.7 Depositing Lowland River (FW2)

This habitat relates to the River Finn which separates the Lifford and Strabane sides of the study area. Instream or emergent aquatics were not evidence. The fringes of the river comprise reed and large sedge swamp establishing on areas of accumulated aggregates and alluvium. This habitat is described in further detail below.

4.1.1.8 Drainage ditches (FW4)

A dry drainage channel was identified near the northern boundary of the Lifford side of the study area. This supported no flow during the site walkover survey in June 2020. This channel was heavily encroached with aquatic macrophytes include floating sweet grass (*Glyceria fluitans*) and reed canary grass (*Phalaris arundinacea*). This channel moves water west to east providing connectivity to the main channel of the River Finn.

4.1.1.9 Reed and Large Sedge Swamp (FS1)

This habitat is located on the margins of the River Finn and has established on areas of accumulated alluvium and flood deposited aggregate and detritus. Plant species composition includes reed canary

grass, marsh ragwort (*Senecio aquaticus*), broadleaved dock (Rumex obtusifolius), angelica (*Angelica sylvestris*), meadowsweet (*Filipendula ulmaria*), water forget-me-not (*Myosotis scorpioides*), water mint (*Mentha aquatica*), marsh marigold (*Caltha palustris*), creeping buttercup (*Ranunculus repens*), common valerian (*Valeriana officinalis*), redshank (*Persicaria maculosa*) and amphibious bistort (*Persicaria amphibia*). These habitats where they occur along the fringes of the River Finn support occasional to frequent occurrences of Himalayan balsam (*Impatiens glandulifera*).

4.1.1.10 Dry meadows and Grassy Verges (GS2)

This is characteristic habitat along the margins of the river body, typically along the embankment areas and walkways set back from the riparian and riverbank margins. Plant species includes false oat grass (*Arrhenatherum elatius*), field horsetail (*Equisetum arvense*), bramble, cleavers (*Galium aparine*), bush vetch (*Vicia sepium*), meadowsweet, nettle (*Urtica dioica*), lesser stitchwort (*Stellaria graminea*), cock's-foot (*Dactylis glomerata*), sweet vernal grass (*Anthoxanthum odoratum*), meadow vetchling (*Lathyrus pratensis*) and ribwort plantain (*Plantago lanceolata*).

4.1.1.11 Mixed Broadleaved Woodland (WD1)

A small pocket of mixed broadleaved woodland occurs on the northernmost boundary of the Lifford section. This is a young woodland with ash, sycamore and grey willow in the canopy layer and hawthorn and elder in the canopy and shrub layers. The ground layer remains underdeveloped and supports localised abundances of bramble, with ivy (*Hedera hibernica*), male fern (*Dryopteris filis-mas*) and locally abundant Himalayan balsam (*Impatiens glandulifera*). Wetter parts of the ground layer exhibit the absence of bramble and the emergence of common rush (*Juncus effusus*), remote sedge (*Carex remota*), creeping buttercup and broad buckler fern (*Dryopteris dilatata*).

4.1.1.12 Mixed broadleaved conifer woodland (WD3)

This woodland habitat is located immediately south of the mixed broadleaved woodland described above. This woodland supports fir, cypress and spruce trees, planted for cover ca. 50 years ago. This woodland supports elder and common privet in the understorey (locally frequent), in addition to ivy, and broad buckler fern in the ground layer.

4.1.1.13 Wet willow alder-ash-woodland (BL3)

The Strabane side of the study area supports a large are of fen carr type woodland that has developed on impounded wetland areas. Water levels within the woodland ground layer fluctuate seasonally but are almost all waterlogged or are submerged for large parts of the year. The woodland canopy is dominated by grey willow (*Salix cinerea*) trees and shrubs with occasional alder (*Alnus glutinosa*). The woodland is heavily shaded and in places densely crowded by close growing grey willow trees. Area of open water or waterlogged soils are often spanned horizontally by the limbs and boles of willow trees. Ground layer species are localised and not abundant and include water horsetail (Equisetum fluviatile), tufted hair grass (Deschampsia cespitosa), reed canary grass, marsh bedstraw (*Galium palustre*) and meadowsweet. Himalayan balsam is located throughout the woodland understorey possibly spread through the rising and falling flood waters of the nearby River Finn.

4.1.1.14 Buildings and Artificial Surfaces (BL3)

This habitat includes the roads, trackways and existing buildings within the study area such as the viewing stand and access roads on the Lifford side and the hardstanding area located on the Strabane

side. The hardstanding area has been abandoned in recent years and has witnessed the proliferation of ruderal plant species including cat's ear (*Hypochaeris radicata*), herb Robert (*Geranium robertianum*), spear thistle (*Cirsium vulgare*), red fescue (*Festuca rubra*), white clover (*Trifolium repens*), mouse-ear chickweed (*Cerastium fontanum*), smooth hawk's-beard (*Crepis capillaris*), black medick (*Medicago lupulina*), common sow thistle (*Sonchus oleraceus*), field horsetail (*Equisetum arvense*), tufted vetch (*Vicia cracca*), greater plantain (*Plantago major*), lesser burdock (*Arctium minus*), hedge mustard, perforate St. John's wort (*Hypericum perforatum*), colt's-foot (*Tussilago farfara*) and American willowherb (*Epilobium ciliatum*).

4.1.2 Evaluation of Habitats

Habitat evaluation within the proposed development site and the surrounding area are presented in **Table 4-1** below.

Table 4-1 - Evaluation of habitats within the proposed development site and surrounding areas

Habitat	Evaluation	Evaluation Rationale
Depositing Lowland Rivers (FW1)	International Importance	This habitat includes the River Finn, which is designated as part of the River Finn SAC / River Foyle and Tributaries SAC.
Drainage ditches (FW4)	Local Importance – Higher Value	Drainage channels and streams of low and negligible flow are considered to be of local importance to avifauna and small mammals as a viable foraging habitat and localised refuge. In addition, these habitats are important contributory watercourses and streams for larger watercourses, such as the River Finn.
Wet willow alder ash woodland (WN6)	Local Importance – Higher Value	This habitat occurs as young semi-natural woodland on the Strabane side of the study area. It comprises young thin boled willow trees that have established around and upon an impounded wetland. This habitat provides a number of ecosystem services for various species including passerine birds, wetland birds ground mammals, bats and amphibians. The woodland supports moderate plant species diversity due to its age and developing flora.
Other Artificial Lakes and Ponds (FL8)	Local Importance – Higher Value	This habitat occurs within the wet willow alder ash woodland. It provides suitable habitat for wetland birds such as Teal as well as amphibians and reptiles. Where it occurs within the study area, this habitat supports poor botanical diversity.
Hedgerows (WL1)	Local Importance – Higher Value	Linear woodland habitats such as hedgerows and treelines provide valuable ecosystem services for other semi-natural habitats and faunal species in the locality in terms of cover, refuge and connectivity. This is particularly the case for areas

Habitat	Evaluation	Evaluation Rationale
		dominated by improved grassland habitats, such as the Lifford side of the study area.
Treelines (WL2)	Local Importance – Higher Value	Linear woodland habitats such as hedgerows and treelines provide valuable ecosystem services for other semi-natural habitats and faunal species in the locality in terms of cover, refuge and connectivity. This is particularly the case for areas dominated by improved grassland habitats, such as the Lifford side of the study area.
Improved Agricultural Grassland (GA1)	Local Importance – Lower Value	A habitat of low ecological value for flora, habitats and non-volant mammals comprising poor floristic diversity. May be of some benefit to over-wintering waterbirds as opportunistic feeding habitat.
Amenity Grassland (GA2)	Negligible	A habitat of low ecological value for flora, habitats and non-volant mammals comprising poor floristic diversity. May be of some benefit to over-wintering waterbirds as opportunistic feeding habitat.
Dry Meadows and Grassy Verges (GS2) (and mosaics)	Local Importance – Higher Value	A habitat likely to be of local importance to avifauna and small mammals as a viable foraging habitat, localised refuge and corridor.
Reed and large sedge swamps (FS1)	International Importance	Habitat fringing the main channel of the River Finn. This habitat is of moderate botanical diversity and provides key refugia for otter associated with the River Finn.
Wet grassland (GS4)	Local Importance – Lower Value	Where this habitat occurs on site, it supports poor botanical comprising rush dominated swards. A habitat likely to be of local importance to avifauna and small mammals as a viable foraging habitat and localised refuge. Wet grassland within the study area is isolated and typically surrounding by improved grassland habitats.
Buildings and Artificial Surfaces (BL3)	Negligible	A habitat of low ecological value for flora, habitats and non-volant mammals comprising man made habitats, built surfaces such as roads, buildings etc. There are no man made or built structures within the proposed site that provide suitable bat roosting features.

Habitat	Evaluation	Evaluation Rationale
Mixed Conifer Woodland (WD3)	Local Importance – Lower Value	This habitat occurs to the north of the Lifford side of the study area. This is of local importance to avifauna and small mammals as a viable foraging habitat and habitat of refuge and cover.
Scrub (WS1) and mosaic	Local Importance – Lower Value	A habitat of moderate floristic value. However scrub habitats provide valuable ecosystem services for other semi-natural habitats and faunal species in the locality in terms of cover, refuge and connectivity.

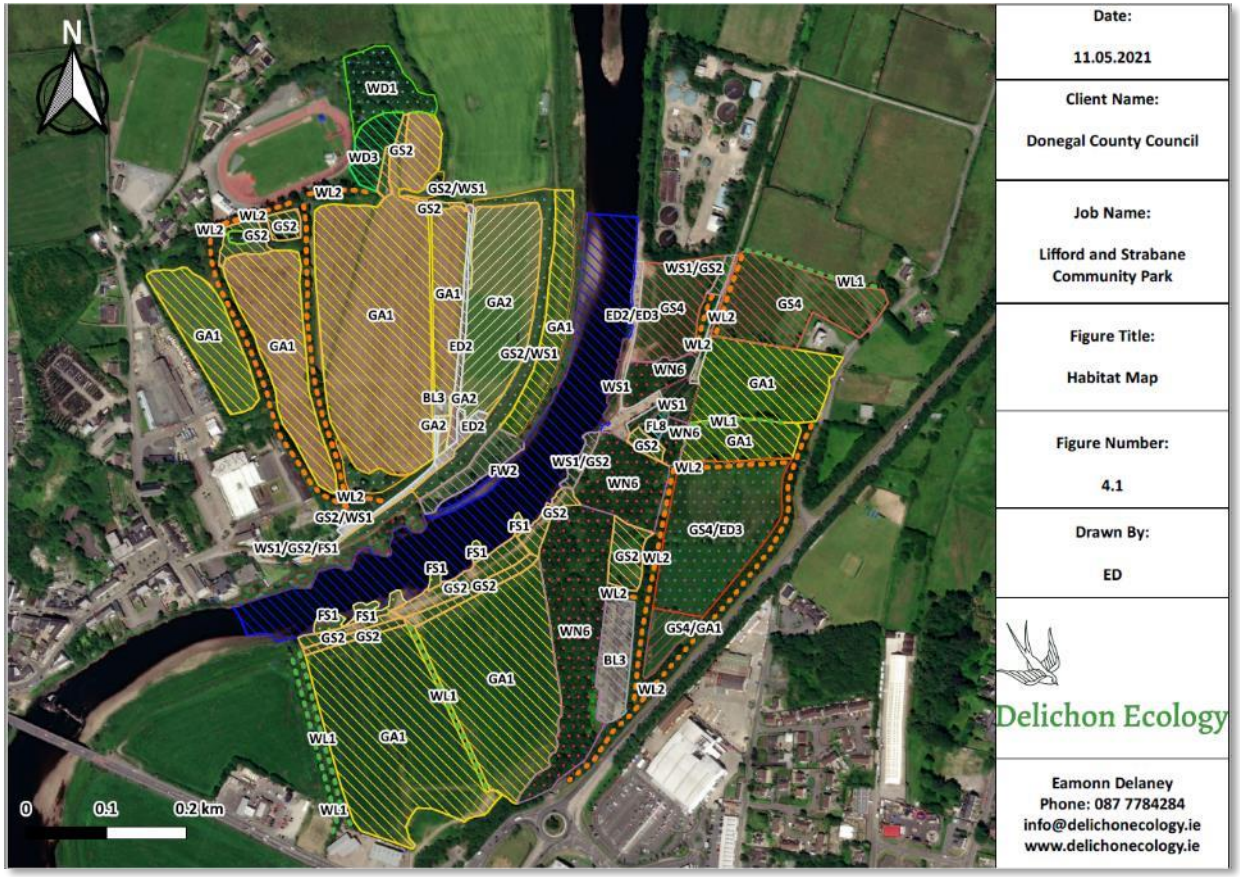

Figure 4-1 - Habitats within the proposed study area

4.2 Invasive Plant Species

An invasive plant species survey was completed in conjunction with the habitat survey and multi-disciplinary walkover surveys. These surveys identified and mapped invasive species occurrence and abundance with the study area and its environs.

The riparian area of the River Finn supports disparate occurrences of invasive plant species along the riverbank margins and the immediate adjoining terrestrial habitats. The Lifford side of the river supports lower abundances when compared with the Strabane side. The Strabane side of the study area supports considerable linear growth of Himalayan balsam, which is facilitated in its spread through ongoing flood regimes of the River Finn. Giant Hogweed and Japanese knotweed also occur within the study area. When compared with Himalayan balsam, their cover and abundance is more localised than Himalayan balsam, but nonetheless remains considerable.

The full extent and cover of invasive plant species within the study area are presented in **Figure 4.2** below. Extensive / linear sections of invasive species plant growth are displayed as linear features, while localised individual populations are displayed as point features.

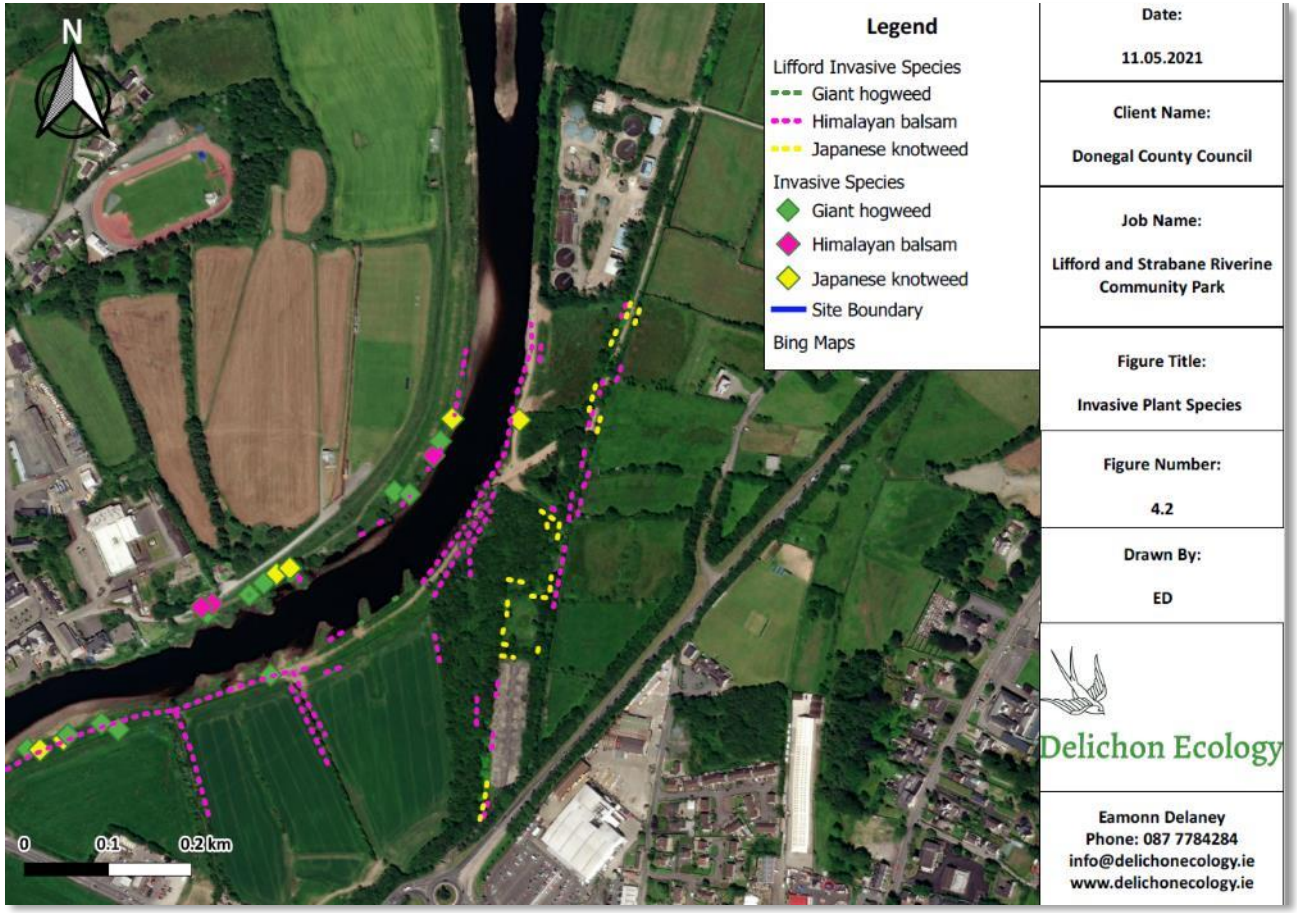

Figure 4-2 - Invasive Plant Species within the study area

Image 4.1 – Riparian area of River Foyle downstream of N15/A38

Image 4.2 – Improved grassland on the Lifford site of the proposed Riverine Community site

Image 4.3 – Wet woodland / scrub on the Strabane side of the River Foyle

Image 4.4 – Wet grassland located on the Strabane side of the River Foyle

	
Image 4.5 – Access track on Strabane side, fringed by Himalayan balsam and Japanese knotweed	**Image 4.6 – Giant hogweed on the Lifford side of the River Foyle**

4.2.1 Mammals

The site walkover survey included an assessment of the presence and likely occurrence for protected non-volant mammal species within the proposed development site and adjoining areas. Habitat assemblages within the proposed development site were assessed for field signs and patterns of usage by fauna including scat, spraint, droppings, hair, foraging tracks and paths in addition to resting places and breeding sites. Particular attention was given to the woodland areas and field network boundaries throughout the site, including the treeline and hedgerow networks and their component earth banks.

Mammal features identified during the site walkover surveys are presented in **Figure 4.4** below.

4.2.1.1 Badger

Badgers (*Meles meles*) are legally protected under the Irish Wildlife Act 1976 (as amended) and Annex IV of the EU Habitats Directive. The boundaries of all treelines, hedgerows and earth banks within the site were walked during the site surveys. Two badger setts were identified within the proposed development site and its environs.

A main badger sett was identified on the Strabane side of the proposed development site while an abandoned badger sett is located on the Lifford side of the proposed development, north of the proposed development footprint.

The badger sett on the Strabane side is a large main sett set within an embankment with a higher, drier area of the wet woodland habitat. This set comprises eight entrances, with evidence on ongoing usage as reflected by routinely used tracks / paths, a latrine and discarded bedding material. A subsidiary sett is located 35m south of the main sett and supports 5 entrances. This sett also show signs of ongoing activity as evidenced by access tracks and discarded bedding material. Two other outlier sett are located approximately 30m north of the main sett, on the western fringes of the woodland habitat. These setts are located on the lower slopes of a steep embankment. The comprise a two entrance sett which does not display signs of recent activity and a one entrance sett which displays signs of recent activity.

An area of mixed conifer woodland located to the north of the proposed development footprint (on the Lifford side of the study area) supports an abandoned badger sett. This was likely to have been a main sett as evidenced by the numerous entrances within a localised area. The majority of the sett entrances do not display signs of ongoing or recent activity. There are two sett entrances that show more recent usage near the eastern side of the woodland area. However, site walkover surveys completed in winter and spring 2020 and 2021 did not identify ongoing badger activity in this area.

4.2.1.2 Otter

Otters (*Lutra lutra*) are protected under the Irish Wildlife Act 1976 (as amended) and are listed on Annex II and Annex IV of the EU Habitats Directive. Otter occur along the River Finn with, upstream and downstream of the study area. Otter were identified within the River Finn waterbody during site walkover surveys completed in June 2020, November 2020 and March 2021. Signs of otter, including prints and slides were identified along the marginal habitats (the areas of reed swamp and exposed deposited alluvial material) of the River Finn during the site walkover surveys completed. Otter use these areas for foraging, lay-ups and general refugia.

No otter holts or breeding sites were identified along the banks of the River Finn or its immediate riparian margins during the site walkover survey. The footprint and environs of the proposed bridge crossing were surveyed to identify the presence of otter breeding habitat, particularly holts. The extent of surveys included repeated visits during summer 2020 and winter 2021 to the riverbank corridor within this area to identified otter holts or accompanying features of otter activity. No holts were found within this area. Following site surveys, it is considered that the otter are unlikely to utilise the bridge crossing footprint as a breeding site due to its exposed nature and possible anthropogenic disturbance from the nearby riverbank, in addition to the flood regime of the river at this location with can cover the river bank margins during period of flood.

4.2.1.3 Bats

All bats and their roosting sites are legally protected under the EU Habitats Directive as transposed by the Habitats Regulations. With the exception of Lesser Horseshoe bat (*Rhinolophus hipposideros*), which is an Annex II species, the remainder are classified as Annex IV species. They are also protected under the Wildlife Act (as amended). Across Europe, bats are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both of these conventions.

The desk and field-based assessments undertaken of the habitats at the proposed development area revealed moderate potential for bat roosting features. The presence of a woodland, treelines and a large watercourse provides some potential for bat roosting and foraging (Lundy *et al.*, 2011). The National Biodiversity Data Centre mapviewer[6] provides a bat landscape assessment for the island of Ireland, based on existing bat records. The study area was given a bat suitability index of 30.11. Lesser horseshoe bat is unlikely to occur on site, as it is located outside of its current known range and distribution in Ireland (NPWS, 2019c).

Woodland habitat within the proposed development site comprise as mix of young willow woodland and adjoining young treeline and hedgerow habitats on the Strabane side, while the Lifford side of the study area supports mixed conifer plantation and semi-mature mixed broadleaved and conifer treelines. The condition and bat roost suitability of trees and shrubs within these linear woodland features was assessed during the site walkover survey. Most trees within these features were semi-mature and did not support large crevices, apertures or dense ivy growth that could provide suitable roosting habitat for bats. To this end, it is considered that the treelines and hedgerows within the proposed development site supports low to moderate potential to support roosting bats. The majority of the wet woodland habitat on the Strabane side of the study area supports thin boled young willow trees that provide low suitability to support bat roosts. There are no built structures within the site that provides suitable roosting habitat for bats.

[6] https://maps.biodiversityireland.ie/Map

The woodland and riparian habitats on site represent suitable foraging habitat for bats. These habitats also provide narrow but continuous connectivity through these sites and their environs.

4.2.1.3.1 Bat Surveys

The findings of the passive bat surveys are presented in **Table 4-2** and the extent of the passive bat surveys undertaken are presented in **Figure 4-3**.

Table 4-2 - Results of Passive Bat Surveys

Transect Number	Habitats	Species Recorded
1	Treeline and improved grassland.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging along treeline.
2	Treeline and improved grassland, conifer woodland copse.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging along treeline. Leisler's bat in conifer woodland copse.
3	Treeline and improved grassland, conifer woodland copse.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging along treeline. Leisler's bat in conifer woodland copse.
4	Hedgerow, semi-natural grassland, riparian corridor.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging. Distant recording of Daubenton's bat – most likely associated with river corridor.
5	Riparian corridor	Leisler's bat – not sighted, distant recording
6	Wet woodland fringe, improved grassland, riparian corridor.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging along woodland fringe. Leisler's bat in wet woodland area.
7	Wet woodland fringe, riparian corridor.	Soprano pipistrelle - individuals foraging along woodland fringe. Leisler's bat in wet woodland area.
8	Hedgerow and improved grassland	Soprano pipistrelle - individuals foraging along hedgerow and access track. Leisler's bat in wet woodland area.
9	Wet woodland and car park area	Common pipistrelle and soprano pipistrelle foraging along woodland margins
10	Treeline fringing A5 roadway	Individual common pipistrelle and soprano pipistrelle foraging along treeline habitat.

As outlined in **Table 4-2**, the passive bat survey identified the regular occurrence of individual bats utilising the treeline, hedgerow and woodland fringe habitats for foraging purposes. Identified bat passes included common pipistrelle and soprano pipistrelle. Leisler's bat passes were recorded at and near woodland areas on both the Lifford and Strabane sides of the study area.

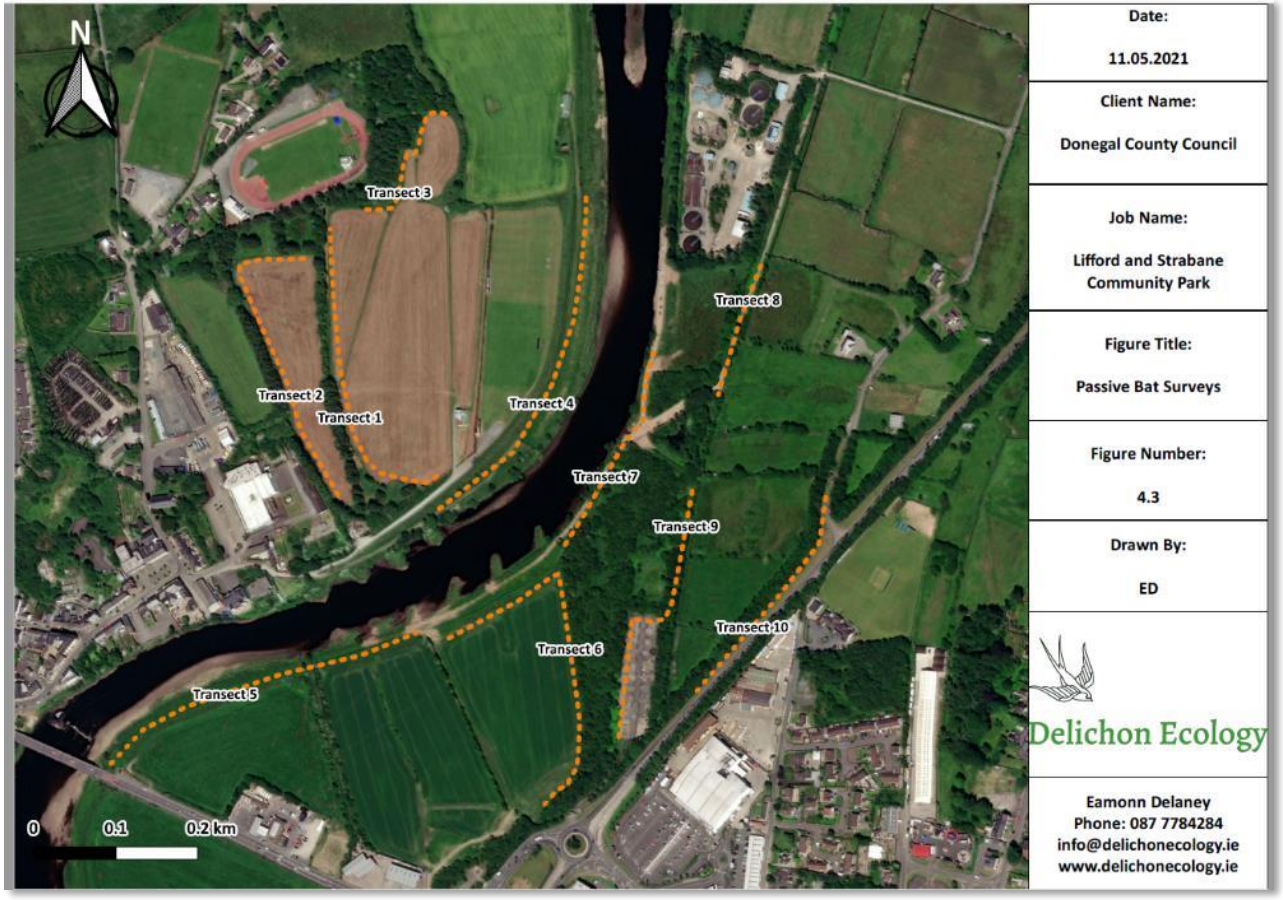

Figure 4-3 - Passive bat survey locations

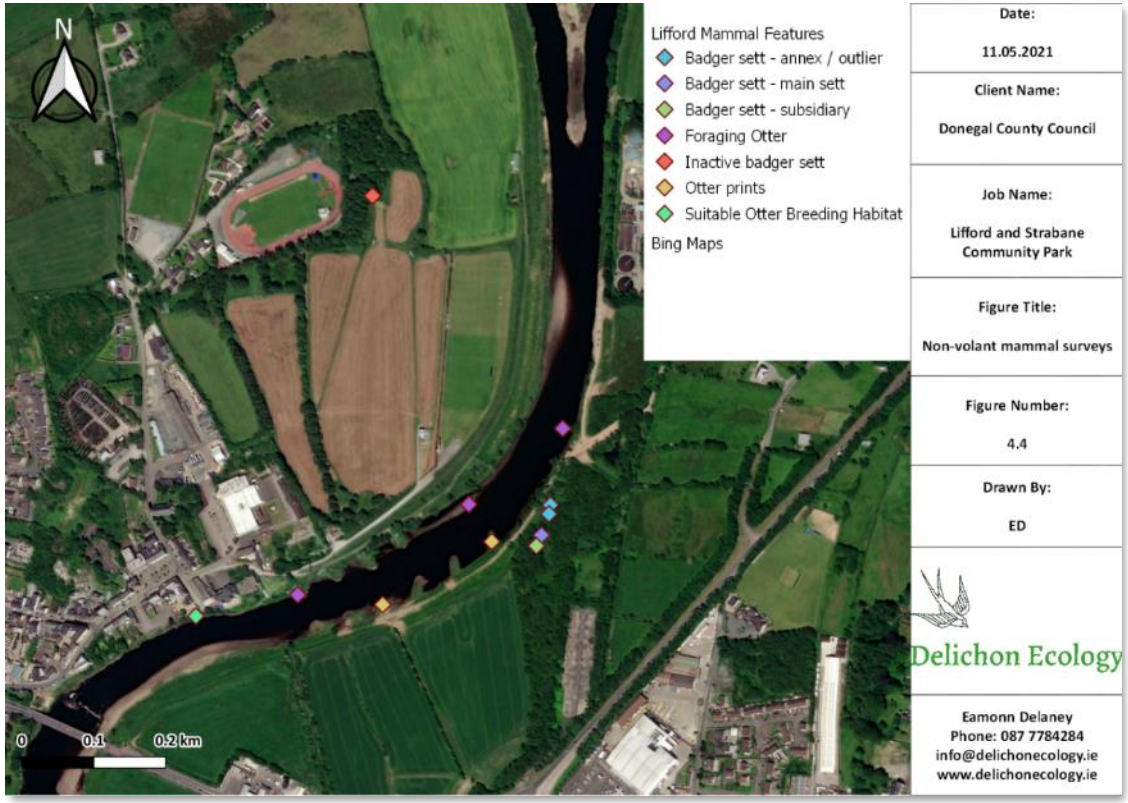

Figure 4-4 - Non-volant Mammal Survey Findings[7]

[7] Badger sett locations are provided for information only. These locations will need to be withheld from EIAR publication due to the risk of persecution / disturbance.

4.2.1.4 Other Mammals

Signs of other mammals using the study area sites include fox, Irish hare and rabbit. Irish hare is associated with the hare coursing club on the Lifford site of the study area. Liaison with coursing club officials indicate the presence of hedgehog along the field boundary margins of the site.

A seal (believed to be Harbour Seal) was identified within the River Finn during the March 2021 site walkover survey. This was identified downstream of the N15/A38 roadbridge and upstream of the proposed bridge crossing for the proposed riverine community park.

4.2.1.5 Amphibians and Reptiles

Amphibians and reptiles were not identified during the site walkover survey. The majority of the Lifford side of the study area is unsuitable for amphibians and reptiles given its lack of standing water and waterlogged habitats. The Strabane side provides greater suitability, due standing water within much of the impounded wet woodland habitat. This area supports standing water and sufficient cover for reptiles and amphibians, providing highly suitable terrestrial and aquatic habitat for these taxa.

4.2.2 Avifauna

4.2.3 Breeding Bird Surveys

Breeding bird surveys were completed for the survey area on June 04th 2020 and May 11th 2021. Surveys undertaken were completed in accordance with the Countryside Bird Survey Methods[8], which employed a series of transects (line and point transects) used to provide a representative sample of bird usage, abundance and diversity of the study area and its environs. The findings of the line transect surveys are presented in **Table 4-3** and the extent of the line transect surveys undertaken are presented in **Figure 4-5**.

Table 4-3 - Findings of Breeding Bird Surveys

Transect Number	Species	Early Season	Late Season	Conservation Status[9]
Transect 1	Blackcap		✓	Green
	Grey Heron		✓	Green
	Goldcrest	✓	✓	Amber
	Wren	✓	✓	Green
	Woodpigeon		✓	Green
	Rook		✓	Green
	Blackbird	✓	✓	Green
	Hooded Crow		✓	Green
	Pheasant		✓	Green
	Song Thrush	✓	✓	Green
	Chiffchaff		✓	Green
	Chaffinch	✓	✓	Green

[8] CBS Manual: Guidelines for Countryside Bird Survey Participants

[9] In accordance with Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation Concern in Ireland 2020 – 2026". Irish Birds 9: 523—544

Transect Number	Species	Early Season	Late Season	Conservation Status[9]
	Robin	✓	✓	Green
	Magpie	✓		Green
	House Sparrow	✓		Amber
	Willow Warbler	✓		Amber
Transect 2	Wren		✓	Green
	Grey Heron	✓	✓	Green
	Rook	✓	✓	Green
	Sedge Warbler		✓	Green
	Magpie	✓	✓	Green
	Willow Warbler		✓	Amber
	Woodpigeon	✓	✓	Green
	Song Thrush		✓	Green
	Dunnock		✓	Green
	Swift		✓	Red
	Blackbird	✓		Green
	Starling	✓		Amber
	Swallow	✓		Amber
	Feral Pigeon	✓		n/a
	Jackdaw	✓		Green
	Robin	✓		Green
	Chaffinch	✓		Green
	Common Sandpiper	✓		Amber
	Hooded Crow	✓		Green
	Shelduck	✓		Amber
Transect 3	Blue Tit		✓	Green
	Blackbird	✓	✓	Green
	Goldcrest	✓	✓	Green
	Chaffinch	✓		
	Blackcap		✓	Green
	Woodpigeon	✓	✓	Green
	Grey Heron		✓	Green
	Wren		✓	Green
	Dunnock		✓	Green
	Rook	✓	✓	Green
	Song Thrush		✓	Green
	Starling	✓	✓	Amber
	Mallard		✓	Amber
	Common Gull		✓	Amber
	Wren	✓		Wren
	Starling	✓		Amber
Transect 4	Blue Tit		✓	Green

Transect Number	Species	Early Season	Late Season	Conservation Status[9]
	Wren		✓	Green
	Song Thrush		✓	Green
	Blackcap		✓	Green
	Chaffinch		✓	Green
	Blackbird		✓	Green
	Goldcrest		✓	Green
	Woodpigeon		✓	Green
	Magpie		✓	Green
	Chiffchaff		✓	Green
Transect 5	Bullfinch		✓	Green
	Wren		✓	Green
	Song Thrush		✓	Green
	Woodpigeon	✓	✓	Green
	Dunnock		✓	Green
	Willow Warbler	✓	✓	Green
	Magpie		✓	Green
	Blue Tit		✓	Green
	Robin	✓	✓	Green
	Blackcap		✓	Green
	Rook	✓	✓	Green
	Goldcrest		✓	Green
	Chaffinch		✓	Green
	Buzzard		✓	Green
	Starling	✓	✓	Green
	Blackbird	✓		Green
	Hooded Crow	✓		Green
Transect 6	Chiffchaff		✓	Green
	Goldcrest		✓	Green
	Song Thrush		✓	Green
	Chaffinch	✓	✓	Green
	Wren		✓	Green
	Blue Tit	✓	✓	Green
	Woodpigeon	✓	✓	Green
	Blackbird	✓	✓	Green
	Blackcap		✓	Green
	Robin	✓	✓	Green
	Starling	✓	✓	Green
	Dunnock		✓	Green
	Willow Warbler	✓		Amber
	Hooded Crow	✓		Green
	House Sparrow	✓		Amber
	Meadow Pipit	✓		Red

Transect Number	Species	Early Season	Late Season	Conservation Status[9]
	Rook	✓		Green
	Jackdaw	✓		Green
	Feral Pigeon	✓		n/a
	Cormorant	✓		Amber

In addition to the findings of the line transect surveys, the occurrence of breeding bird species were also identified and recorded during the multi-disciplinary ecology surveys completed in June and July 2020 and March 2021. Species identified during the multi-disciplinary surveys not listed in **Table 4.3** are as follows:

- Linnet
- Sand Martin
- Jackdaw
- Reed Bunting
- Swallow
- Long-tailed Tit
- House Sparrow
- Great Tit
- Cormorant
- Spotted Flycatcher
- House Martin
- Feral Pigeon
- Jackdaw
- Pied Wagtail
- Grey Wagtail
- Common Sandpiper
- Long-eared Owl

The findings of the site line transect surveys and the multi-disciplinary surveys reveal a common assemblage of passerine birds associated with the treeline, hedgerow, woodland and pastoral habitats on site. Abundance of bird activity is greatest and near these habitats and these habitats were used for commuting and foraging purposes. The River Finn and its riparian area supports its own subset of riverine breeding bird species including Grey Heron, Sand Martin, Cormorant, Mallard and Common Gull. The proximity of Lifford town to the study area has its own influences on bird species composition as evidenced by the identification of Swift, House Martin and House Sparrow.

Raptor species identified within the study area included Long-eared Owl, which occurs near the western boundary of the site and Buzzard, which was identified foraging over arable lands to the north of the site and on treelines near the site's western boundary. Long-eared Owl is known to breed along the conifer treeline along the site's western boundary and young chicks were heard calling from this location during the June 2020 site walkover survey.

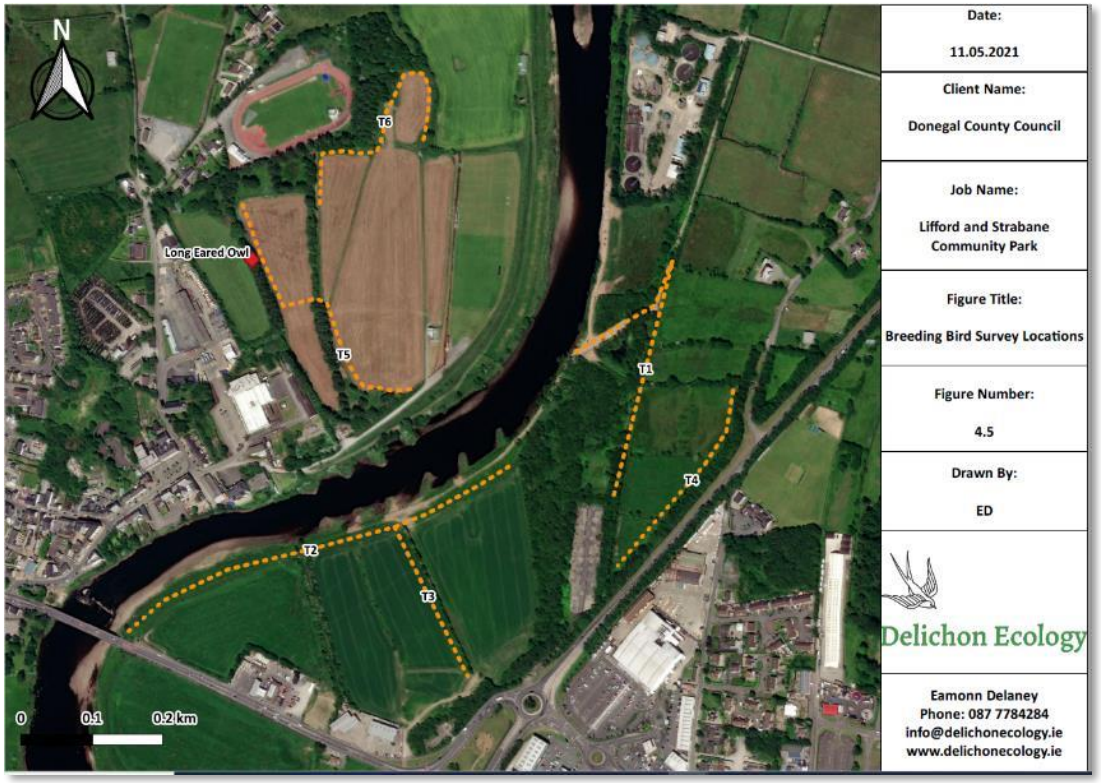

Figure 4-5 - Breeding Bird Survey Locations[10]

[10] Long eared Owl locations are provided for information only. These locations will need to be withheld from EIAR publication due to the risk of persecution / disturbance.

4.2.4 Winter Bird Surveys

Wintering bird surveys were completed for the survey area between November 2020 and March 2021. Survey methods employed a series of transect, Vantage Point Survey and scanning of expansive pastoral and arable fields within and adjoining the study area for grazing wildfowl and probing waders. The location of the line transects and the Vantage Point undertaken are presented in **Figure 4-6** below.

The findings of the winter bird surveys exhibited low abundances of wintering bird species within the site and its environs. This included the common resident passerine species associated with treeline, hedgerow and woodland habitats. The adjoining pastoral fields supported mixed flocks of Fieldfare, Redwing and Song Thrush. The River Finn and its riparian corridor supported low numbers (single birds and small flocks <15) of Black-headed Gull, in addition to individual Cormorant, Little Egret, Teal, Herring Gull, Red Breasted Merganser (3 birds together total maximum count), Mallard, Mute Swan, Redshank, Grey Wagtail, Snipe and Grey Heron. These birds are overflying the study area or using the vast river corridor as a commuting route, refuge and feeding habitat.

Whooper Swan utilise the riparian corridor and its adjoining pastoral lands as a commuting route between Islandmore[11] to the north of the study area and expansive grazing lands, south of the N15/A38 roadbridge (See **Figure 4.7**). Flightlines of Whooper Swan flocks were identified along the River Finn migrating between the Islandmore area and to lands south of the N15/A38 crossing. Anecdotal evidence from local landowners indicated that Whooper Swan routinely utilise the river corridor in this area to commute to and from feeding grounds. This communication also indicated that Whooper Swan and Geese have utilised the arable fields located immediately north of Lifford Celtic football grounds as a feeding ground, should remnant crops or cereals remain following harvest. The findings of the Vantage Point surveys confirmed the flight of small flocks of Whooper Swan n=6 on two occasions (December 2020 and January 2021), while the line transect surveys identified 8 Whooper Swan (two flocks of four birds) flying north to south-east over the river corridor during the November 2021 walkover surveys and 38 Whooper Swan flying over the study area in a south-east to north-west direction during the March 2021 walkover surveys. The findings of the wintering bird surveys indicate that the wide river corridor provides a useful refuge, commuting corridor and navigational route for waterfowl and waders in the locality.

[11] The Islandmore area is an expansive linear area that is adjoined on either side by stretches of the River Finn. This area is known to support Whooper Swan feeding and roosting habitat.

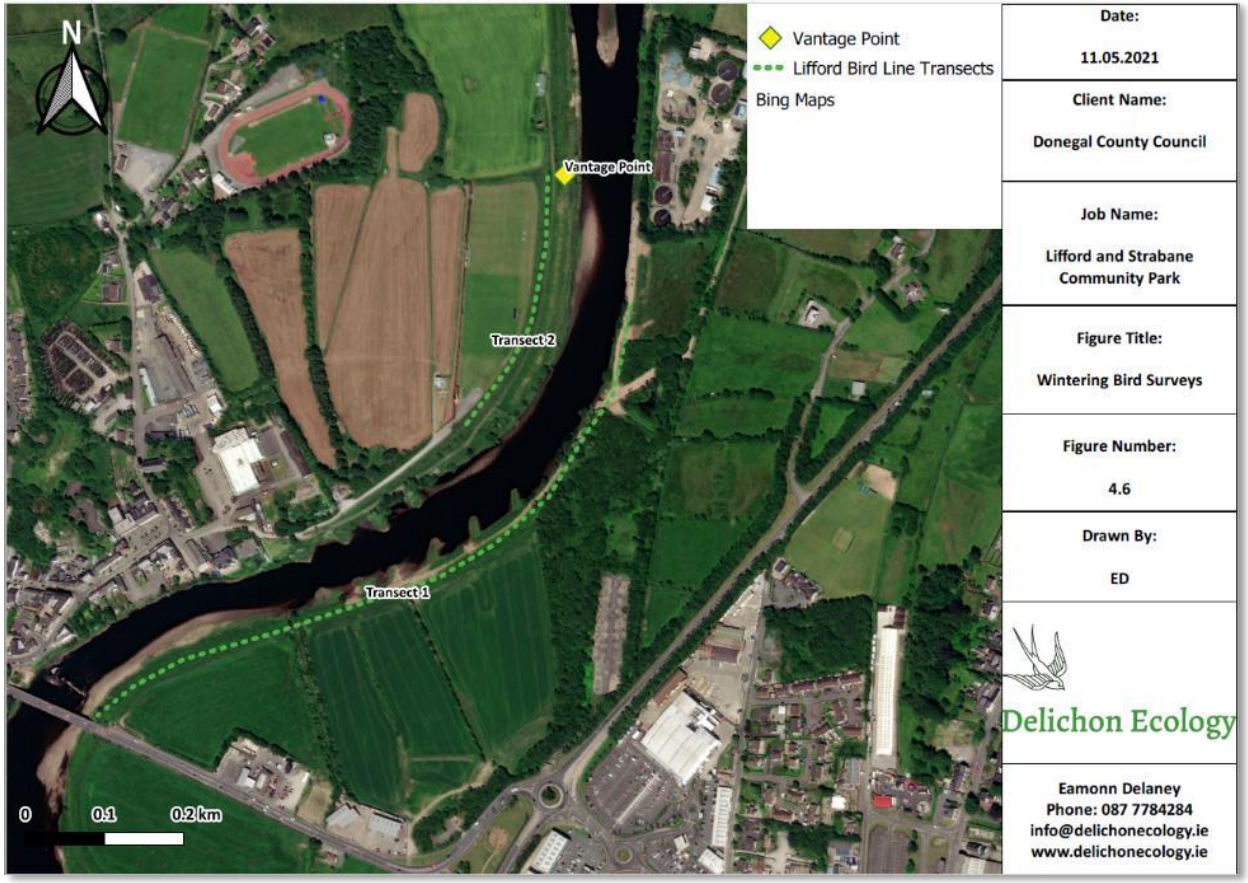

Figure 4-6 – Wintering bird survey locations

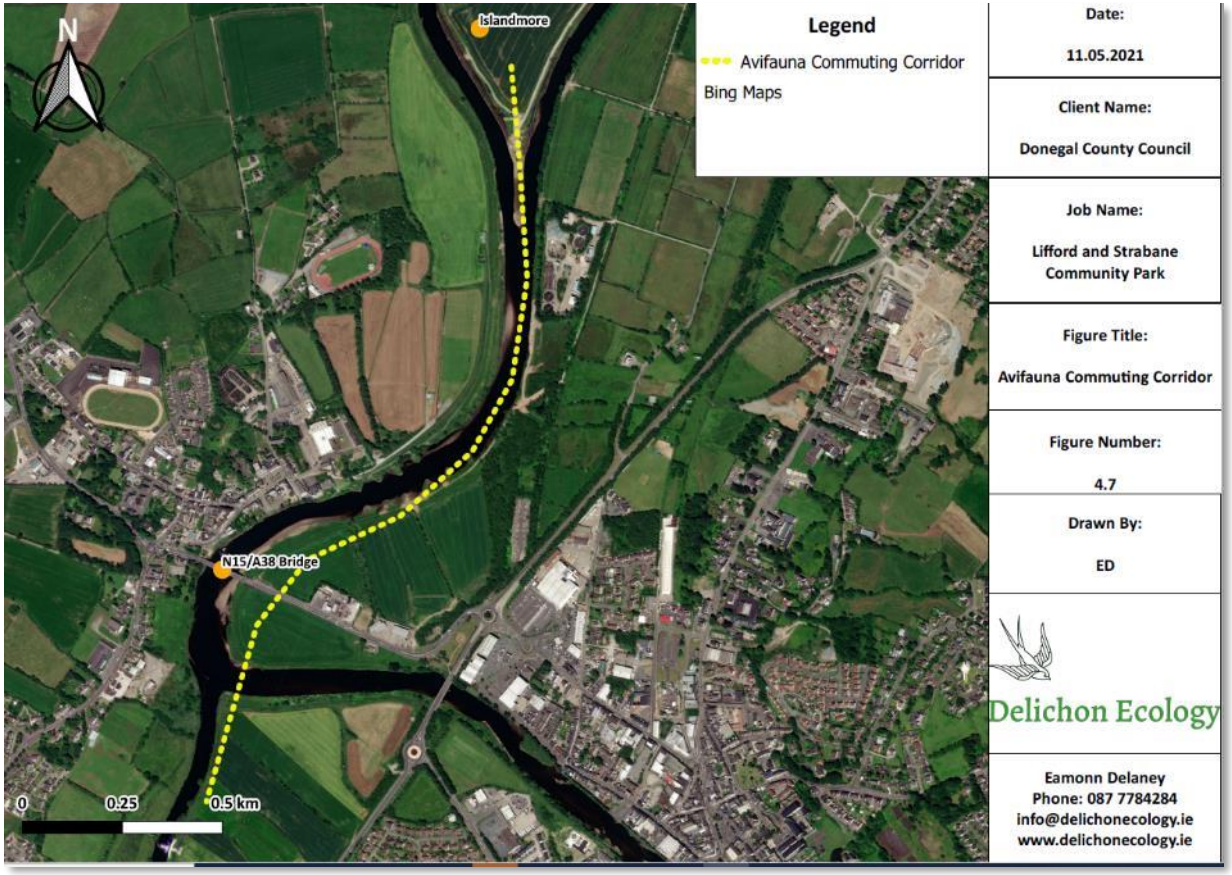

Figure 4-7 – Avifauna Commuting Corridor

5 Summary of Findings

A summary of the findings from the baseline terrestrial ecology surveys completed to date are as follows:

- The project is partially located within the bounds of the River Finn SAC and River Foyle and Tributaries SAC.
- Qualifying habitats and species for these European Sites within the nearby and downstream sections of the River Finn SAC and River Foyle and Tributaries SAC include; Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (3260), Otter (1355) and Salmon (1355).
- There is extensive distribution of invasive species, particularly along the River Finn riparian area and wet woodland within the Strabane section of the study area. The project risks the further spread of these species. A key consideration for the Appropriate Assessment will be to ensure that the proposed design will not facilitate the further spread of these species within the study area and to other parts of the River Finn SAC & River Foyle and Tributaries SAC.
- Crossing of River Finn SAC & River Foyle and Tributaries SAC for the proposed pedestrian access bridge. The accompanying Appropriate Assessment will need to be informed through detailed design proposals for bank side works, particularly bridge abutment works. Bridge works and bankside works could impact nearby areas of the River Finn through run-off or potential hydromorphological changes to the riparian / riverbank area. Such impacts will depend on bridge crossing design.
- Wet woodland at Strabane – potential habitat loss and disturbance and indirect pollution of wetland habitats during construction of the proposed development. This habitat is of high local importance in the local context.
- Otter was identified within the adjoining areas of the River Finn SAC. No otter holts were identified within the study area footprint, but regularly utilise the river corridor and its riparian area for foraging and commuting purposes. The project risks potential disturbance during construction and operational phases. Otter is a species of Conservation Interest for the River Finn SAC and the Appropriate Assessment will need to prove that there will be no impacts to this species, in addition to the other features of Qualifying Interest of this European Site; i.e. 1106 Salmon 1355 Otter 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae), 4010 Northern Atlantic wet heaths 7130 Blanket bogs (* if active bog) and 7140 Transition mires and quaking bogs.
- Potential effects to nocturnal species (bats, badgers, otters, Long-eared Owl) associated with lighting regime / design.
- Removal of woodland, treeline, hedgerow and scrub habitats and potential knock-on effects to dependent faunal species. Need for the scheme to retain or integrate the existing semi-natural habitat assemblages on site to restrict potential impacts to local ecology.
- Outside of the riparian corridor, the site supports riparian habitats of local importance, predominantly improved grassland, amenity grassland and linear woodland on the Lifford side of the study area. The Strabane side of the study area

supports an extensive parcel of young willow dominated woodland, supporting impounded freshwater. This woodland area s adjoined by rush dominated wet grassland to the north, improved grassland to the south and semi-improved grassland to the east.

- The riparian corridor supports a thin fringe of reed and large sedge swamp, establishing on accumulated alluvial material. These habitat are in turn fringed by dry neutral and grassy verge grassland habitats.
- The western margins of the wet woodland on the Strabane side supports a main badger sett, that displays signs of ongoing and sustained usage.
- Breeding avifauna within the study area supports common species assemblage that are representative for the pastoral, woodland and riparian habitats within the study area.
- Over-wintering avifauna within the study area comprises low numbers of common wetland species. Whooper Swan routinely utilise the River Finn corridor as a commuting route to access feeding lands south of the N15/A38 and roosting lands north of the study site.
- Seal (believed to be Harbour Seal) was identified downstream of the N15/A38 roadbridge during the March 2021 walkover surveys. This suggests that Harbour Seal may use this section of the River Finn during optimal tidal cycles or flooding regimes.

APPENDIX A – PROPOSED DEVELOPMENT DESIGN

Appendix 8-4

Preliminary Ecological Appraisal

APPENDIX 8-4

Preliminary Ecological Appraisal

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: July 2021

MCL Consulting Ltd
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Duncrue Street
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BT3 9BJ
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SUMMARY

In 2021 MCL Consulting was appointed by McAdam to provide an updated badger survey on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing lands on the outskirts of Strabane and Lifford. Previous baseline ecology surveys had been carried out by Delichon Ecology including habitat surveys and species-specific surveys.

The application site is not located within any sites that are nationally or internationally designated for their nature conservation importance. However, the proposed development site does sit located on the banks of the River Foyle and Tributaries SAC and ASSI, and 16 sites are located within approx. 15km of the site. The application area is not within any areas designated as local wildlife sites, however, there are 8 within roughly 5km of the proposed site location. There is a potential hydrological linkage between the site and River Finn 002301, River Foyle and Tributaries UK0030320, Owenkillew River UK0030233, River Foyle Monagavlin to Carrigans 002067 due to the site's location on the banks of the River Foyle. This can be negated through a suitable Surface Water Management Plan (SWMP) detailed within a CEMP.

The data search from CEDaR identifies various species protected under Schedule 1 Part 1, Schedule 5 and Schedule 8 Part 1 of the Wildlife Order (NI) and the Habitat regulations (NI). No records were identified on site. All species were recorded offsite, but within a 2km proximity of the site, those mentioned within the Wildlife (NI) order 1985 are listed in Table 5. With the same outcome for record results from NPWS, NBN Atlas and National Biodiversity data Centre records.

The site has potential for otters and breeding birds. Evidence of otters present and active on site have been identified along the banks of the River Foyle through the site. Further otter surveys are required in order to determine the extent of otter presence and activity on site and a buffer of 10m should be established between the river and construction to prevent any potential disturbance to commuting otters. Any clearance should be kept to a minimum and undertaken outside of the breeding season (1st March – 31st August). It should also be noted that **should** clearance of the site occur **during** the breeding season, this **must** be undertaken under the supervision of a qualified ecologist and appropriate surveys undertaken prior to any scrub clearance.

The site offers great potential for bats due to the extensive areas of woodland and linear features such as treelines and hedgerows on both sides of the site with a riverine habitat running through the centre of it. Further surveys for bat roost potential and activity will be required in order to ascertain roosting potential for bats on site as well as to identify any roosts and to recommend suitable mitigation for the proposed site plans.

A main badger sett has been identified on the Strabane side of the site located within the historical railway embankment through the wet woodland area. Numerous mammal trails and other signs of badger activity have been identified and will require further surveying to fully map out the badger setts as well as to determine site activity.

Suitable habitat was identified on the Strabane side of the site for smooth newts due to an extensive area of wet woodland and a small water body near the northern area of the Strabane area. Further surveys will be required to identify current newt presence and abundance within the proposed site area. A SWMP should be implemented in order to prevent spills and to reduce potential impacts to the water systems on site.

Japanese knotweed, Himalayan balsam and giant hogweed were identified throughout the site with higher density of these species in close proximity to the banks of the River Foyle on both the Lifford and Strabane sides of the site. An invasive species survey should be undertaken to discover the extent of these species and they should be cleared to prevent further spread onto the development site.

Investigation into marine and freshwater aquatic species is recommended due to the site's location on the River Foyle and its tributaries. Concerns over potential impacts occurring further downstream due to proposed site activities have been raised due to the use of the River Foyle and its Tributaries as part of the Salmon run.

No other protected species were located on site and therefore, provided the suggested mitigation is implemented and best practice used throughout, no other assessments are recommended.

1.0 INTRODUCTION

In 2021 MCL Consulting was appointed by McAdam Design Ltd to provide an updated badger survey on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing lands on the outskirts of Strabane and Lifford. Previous baseline ecology surveys had been carried out by Delichon Ecology including habitat surveys and species-specific surveys.

1.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused concrete hardstand, with the rest of the site consisting of wet woodland and soil embankments.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

Figure 1: Site location

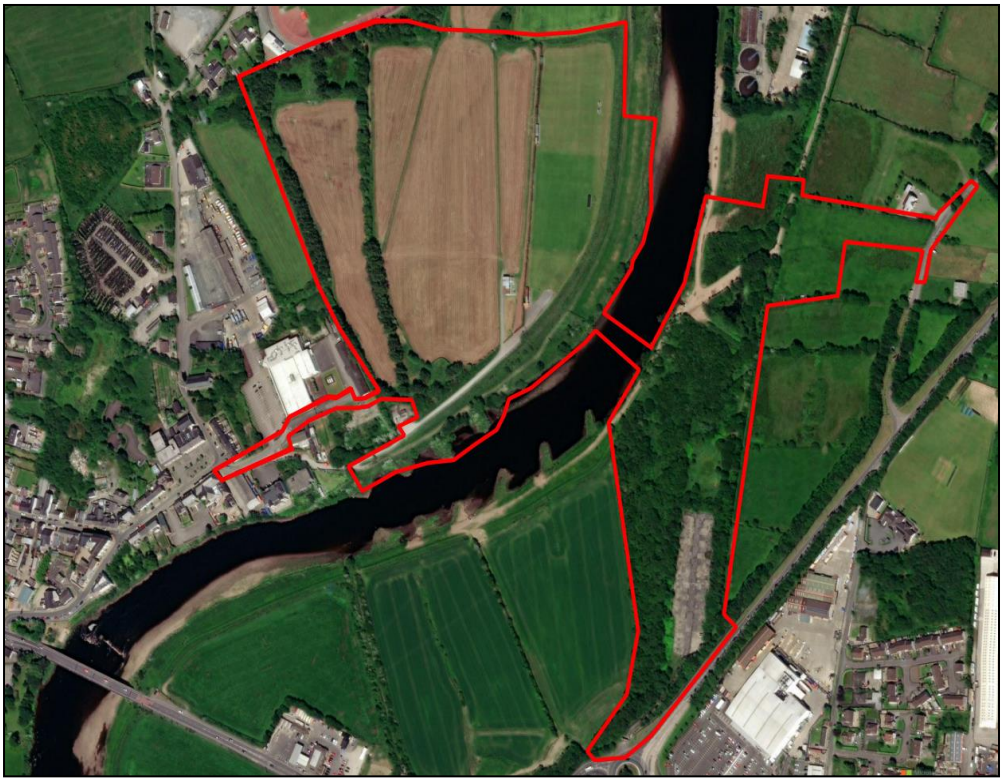

Figure 2: Site boundary

1.2 Development Proposals

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways, cycleways and retained wetlands. The development will be supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 11 hectares by utilising agricultural land and wetlands lying along either side of the
border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The bridge will be a single span with the central, (in river), piering removed, with landing points on either side of the riverbanks. The Park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.
The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities on the Lifford side of the proposed development.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events on the Lifford side of the proposed development.

- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane will be made available on the Lifford side of the proposed development.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

1.3 Rationale of PEA

The aim of this report is to provide: -

- Baseline ecological conditions through a desk study of the site and the surrounding environs, involving designations local to the site and protected species that could be affected by this development.
- Carry out an extended Phase 1 Habitat survey to identify habitat types and their dominant vegetation and to identify potential habitats capable of supporting protected species.
- Identify any ecological issues that could potentially hinder this application, such as the presence of protected species and invasive weeds and recommend the need for further survey.

1.4 Surveyors/Authors

MCL Consulting is a Northern Ireland based multidisciplinary environmental consultancy which provides expert advice for a wide range of ecological services in support of Environmental Impact Assessments (EIA).

Ryan Boyle BSc MSc – Consultant Ecologist

Fieldwork was carried out and assisted by Ryan Boyle a consultant ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queens University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 7 years of professional and voluntary experience in the ecological, environmental and

conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc – Graduate Ecological Consultant

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, as well as a seasonal volunteer for the Bat Conservation Trust and regularly takes part in newt, lizard and bat surveys.

Conor Finlay BSc MSc – Graduate Ecologist

All surveying and reporting were assisted by Conor Finlay, a graduate ecologist at MCL Consulting. He has a master's degree (MSc) in Ecological Management and Conservation Biology from Queens University, Belfast, a bachelor's degree (BSc) in Environmental Sciences from Ulster University, Coleraine and previous employment experience working as a Park Ranger within Stormont Estate assisting contractor ecologists in biodiversity checklists within veteran woodlands and conservation wetlands. He has professional experience assisting bat activity surveys, bat analysis, ecological biodiversity checklists, breeding bird's surveys, badger surveys and desktop study experience in Amphibian conservation working within Global Amphibian Biodiversity Project (GABiP).

2.0 LEGISLATION

2.1 International (E.U)

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna)	main legislative body for the protection and conservation of biodiversity within the European Union (EU). The Habitats Directive lists habitats and species that must be protected within Special Areas of Conservation (SAC) on Annexes I and II respectively. The Habitats Directive additionally identifies plant and animal species on Annex IV which are subject to strict protection anywhere they occur.
The Birds Directive (Council Directive 2009/147/EC on the Conservation of Wild Birds)	provides a network of sites in all member states. These are designated as such to protect birds at their breeding, feeding, or roosting areas. The Birds Directive identifies in Annex I species that are rare, in danger of extinction or vulnerable to changes in habitat and which require special protection (so-called 'Annex I' species). Special Protection Areas (SPA) are designated under the Birds Directive to protect a range of bird populations including those of Annex I species.

2.2 National (Northern Irish)

The Conservation (Nature Habitats, etc.) Regulations (Northern Ireland) 1995 and its amendments.	Under the regulations, public bodies have a duty in exercising their functions to have regard to the EC Habitats Directive.
The wildlife (Northern Ireland) order 1985 (as amended)	Primary Legislation in Northern Ireland for the protection of wild animals, birds, plants and their habitats
The wildlife and natural Environment Act (Northern Ireland) 2011	This amended the Wildlife (Northern Ireland) order 1985 by giving protection to a wider range of plants, animals and birds. This included the increase of enforcement powers and penalties for wildlife related offences. It also introduced a statutory duty on all public bodies to further the conservation of biodiversity.
The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2012.	Sets out the requirements for Environmental Impact Assessments of proposed developments in Northern Ireland.
The Environment (Northern Ireland) order 2002	Grants authority to the DOENI to declare areas of land as ASSIs.
The Nature Conservation and Amenity Lands (Northern Ireland Order 1985) (as amended)	Sets out the DOENI (Department of the Environment for Northern Ireland) rights and duties to protect and enhance sites of natural beauty or specific scientific interest in Northern Ireland.

Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003	Transposes the Water Framework Directive into the NI statute book.
The Planning (Trees) Regulations (Northern Ireland) 2003 (S.R. No. 444 of 2003)	Establishes Tree Preservation Orders which provide legal protection specified trees from felling or damage.
The Noxious Weeds (Northern Ireland) Order 1976	Provides powers to compel landowners to destroy scheduled weeds on their property.

2.3 Planning Policy

The strategic planning policy for Northern Ireland (SPPS) sets out the core principals of forward planning and development management in Northern Ireland. These must be considered by Local Planning Authorities (LPAs) in the preparation of any Local Development Plans (LPDs).

The Planning Policy Statement 2 (PPS 2), Natural Heritage, NH2	Indicates that development proposals are required to be sensitive to all protected species and sited and designed to protect them, their habitats and prevent from deterioration and destruction of their breeding sites or resting places.
International Designations - Developments are restricted where they are likely to impact upon the integrity of European or RAMSAR sites as these are afforded the highest form of statutory protection. Planning will only be granted for a development which is not likely to have a significant impact on a SPA or proposed SPA, ASSI or proposed ASSI, SAC or Ramsar. **Protected Species** - If there is evidence to suggest that a protected species is present on site or may be impacted by the development, appropriate assessments must be undertaken to determine if the species is present. Requirements of the species must be factored into planning and design of the development and any likely impacts on the species must be fully considered before determination. Planning will only be granted for development proposals that are not likely to harm a European protected species. In exceptional circumstances a development proposal which is permitted to harm these species may only be permitted where; no alternative solution is available, it is required for imperative reasons of overriding public interest, there is no detriment to the maintenance of the population of the species at a favoured conservation status and compensatory measures are agreed and fully secured. Developments are always required to be sensitive to all protected species, habitats and prevent deterioration and destruction of their breeding sites or resting places. **National Designations**- Planning will only be granted for a development proposal which is not likely to have an impact on any ASSI which contain flora, fauna or any features designated under part IV of the Environment (NI) order 2002. These also include Nature Reserves or National Nature Reserves which are usually managed by the department, council or NGO's. Marine Nature Reserves or sea areas including the inter-tidal zones are designated by the DOE under part 3 of the Marine Act (Northern Ireland 2013) and are established for the conservation of marine flora and fauna, habitats and geological features. A development may only be permitted where the benefits may outweigh the value of the site. In such cases appropriate mitigation and compensatory measures will be required.	

Area of Outstanding Natural Beauty (AONB) - AONBs are designated for high landscape quality, wildlife importance and rich cultural heritage under the Nature Conservation and Amenity lands (NI) Order 1985. Development proposals in AONBs must be sensitive to the distinctive special character of the area and quality of their landscape. **Local Designations** – These can be established by councils under the provisions of nature conservation and amenity lands (NI) order 1985. The department can also provide a wildlife refuge under the wildlife (NI) order 1985. A development proposal which could have a significant adverse impact on a site of local importance should only be permitted where the benefits of the development outweigh the value of the site. This will require appropriate mitigation and compensatory measures.	
NI Biodiversity Strategy	Outlines a cross-sector approach to conserving biodiversity in Northern Ireland and provides the platform from which Species Action Plans (SAPs) and Habitat Action Plans (HAP's) are compiled for the most ecologically valuable and threatened flora and fauna.
Strategic Planning Policy Statement (SPPS), September 2015.	Eventually will combine all separate planning policy statements (PPSs) into one

2.4 Lifford (ROI) Legislation

Bats

All bats and their roosting sites are legally protected under the EU Habitats Directive as transposed by the Habitats Regulations. With the exception of Lesser Horseshoe bat (*Rhinolophus hipposideros*), which is an Annex II species, the remainder are classified as Annex IV species. They are also protected under the Wildlife Act (as amended). Across Europe, bats are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. Article 12 and 13 of the Habitats Directive relates to the establishment of a system of strict protection for certain animal and plant species, while Article 16 provides for derogations from these provisions under limited circumstances. Article 12, 13 and 16 of the Habitats Directive are transposed into Irish law by Regulation 51, 52 and 54 of the Birds and Habitats Regulations of 2011, respectively. All bats are strictly protected in Ireland and a person who deliberately captures, kills or disturbs a specimen in the wild, or who damages or destroys a breeding site or resting place of such an animal, is guilty of an offence.

As an Annex IV species may be found throughout the country, the protection of these species is not restricted in geographical terms and is not necessarily associated with areas subject to a specific nature designation

Under the Regulations it is an offence:

- Deliberately to capture, injure or kill a wild animal of a European protected species;
- Deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- Deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - impair its ability to survive, breed or reproduce, or rear or care for its young; or
    - impair its ability to hibernate or migrate;
- Deliberately to obstruct access to a breeding site or resting place of such an animal; or
- To damage or destroy a breeding site or resting place of such an animal.

There is no provision within the legislation to issue licences to kill bats for the purpose of development.

Badgers

Badgers (*Meles meles*) are legally protected under the Irish Wildlife Act 1976 (as amended) and Annex IV of the EU Habitats Directive Appendix III of the Bern convention as a species in need of protection. Under the Order it is an offence to:

- intentionally or recklessly kill, injure or take a badger; or
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place (normally a sett) that badgers use for shelter or protection; or
- intentionally or recklessly damage or destroy anything which conceals or protects any such structure; or
- intentionally or recklessly disturb a badger while it is occupying a structure or place which it uses for shelter or protection.

In addition, any person who knowingly causes or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence. There is no provision within the legislation to issue licences to kill badgers for the purpose of development.

Otters

Otters (*Lutra lutra*) are protected under the Irish Wildlife Act 1976 (as amended) and are listed on Annex II and Annex IV of the EU Habitats Directive. Under the Habitats Regulations it is an offence:

- Deliberately to capture, injure or kill a wild animal of a European protected species;
- Deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- Deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - impair its ability to survive, breed or reproduce, or rear or care for its young; or
    - impair its ability to hibernate or migrate;
- Deliberately to obstruct access to a breeding site or resting place of such an animal; or
- To damage or destroy a breeding site or resting place of such an animal.

There is no provision within the legislation to issue licences to kill otters for the purpose of development.

Red Squirrel

Red squirrels (*Sciurus vulgaris*) and their dreys are protected under the Irish Wildlife Act 1976 (as amended) and are listed under Annex III of the Bern Convention for Conservation of European Wildlife and Natural Habitats. Under this It is an offence to:

- intentionally or recklessly kill, injure or take
- intentionally or recklessly: damage or destroy, or obstruct access to, any structure or place which red squirrels use for shelter or protection;
- damage or destroy anything which conceals or protects any such structure; disturb a red squirrel while it is occupying a structure or place which it uses for shelter or protection.

Breeding Nesting Birds

All wild birds are protected, particularly during the bird breeding season while nesting under the Irish Wildlife Act 1976 (as amended), the EU Habitats Directive of the Bern convention via the European Communities (Birds and Natural Habitats Regulations 2011 (S. I. No. 477 of 2011). It is an offence to intentionally or recklessly:

- kill, injure or take any wild bird; or
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or

- at any other time take, damage or destroy the nest of any wild bird included in Schedule A1; or
- take or destroy an egg of any wild bird; or
- disturb any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturb dependent young of such a bird.

Additionally, any person who knowingly causes or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence.

Wild Birds

Most bird species return to the same general nesting location each year and build a new nest. However, some species return to the same nest sites year after year, re-using old nests. For these species it is an offence to damage or destroy their nests at any time of the year, even when they are not in use.

All wild birds are also subject to conservation measures under the Birds Directive (2009/147/EC). This requires European Member States to take conservation measures to maintain populations of all naturally occurring wild birds. Additionally, some bird species, which are particularly rare or vulnerable, are listed on Annex I of the Directive. These species are subject to special conservation measures and have additional legal protection as features of designated sites, such as Special Protection Areas (SPAs).

Local and national biodiversity action plans consider priority species within the local area of conservation concern.

Smooth Newt

Smooth newts (*Lissotriton vulgaris*) are protected in Ireland under Schedule 5 of the Wildlife Act, 1976. The species is also afforded additional protection under Appendix III of the Convention on the Conservation of European Wildlife and Natural Habitats (The Bern Convention). Under the Order it is an offence to:

- intentionally or recklessly kill, injure or take a newt; or
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place that newts use for shelter or protection; or

- intentionally or recklessly damage or destroy anything which conceals or protects any such structure; or
- intentionally or recklessly disturb a newt while it is occupying a structure or place which it uses for shelter or protection.

In addition, any person who knowingly causes or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence. There is no provision within the legislation to issue licences to kill newts for the purpose of development.

Common or viviparous lizard

Common lizards (*Zootoca vivipara*) are protected in Ireland under Schedule 5 of the Wildlife Act, 1976. The species is also afforded additional protection under Appendix III of the Convention on the Conservation of European Wildlife and Natural Habitats (The Bern Convention). Under the Order it is an offence to:

- intentionally or recklessly kill, injure or take a lizard, or
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place that lizards use for shelter or protection.

Lepidoptera

The marsh fritillary butterfly (*Euphydryas aurinia*) is a protected species listed on Annex II and Annex IV of the EU Habitats Directive. Under the Habitats Regulations it is an offence It is an offence to

- intentionally or recklessly kill, injure or take the marsh fritillary butterfly; or
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place that the marsh fritillary uses for shelter or protection

Cryptic Wood white Butterfly is also listed on Schedules 5 of the 1982 Wildlife and Countryside Act..

Flora

All wild plants are given some measure of protection in the Republic of Ireland, The current list of plant species protected by Section 21 of the Wildlife Act, 1976 is set out in the Flora (Protection) Order, 2015,. The order has the effect that, unless you have a licence, you may not:

- intentionally pick, uproot or destroy any wild plants listed in the schedule, or even collect their flowers and seeds;
- sell these plants or their seeds if taken from the wild;
- uproot any wild plants intentionally, except on your own land or with permission.

2.5 Strabane (NI) Legislation

Bats

All bat species in Northern Ireland are listed on Annex IV of the EC Habitats Directive (92/43/EEC) and are protected under the Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 (as amended), known as the Habitat Regulations.

Under the Regulations it is an offence:

- Deliberately to capture, injure or kill a wild animal of a European protected species;
- Deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- Deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - impair its ability to survive, breed or reproduce, or rear or care for its young; or
    - impair its ability to hibernate or migrate;
- Deliberately to obstruct access to a breeding site or resting place of such an animal; or
- To damage or destroy a breeding site or resting place of such an animal.

There is no provision within the legislation to issue licences to kill bats for the purpose of development.

Badgers

Badgers (*Meles meles*) are listed on schedules 5, 6 and 7 of the Wildlife (Northern Ireland) Order 1985 (as amended). Under the Order it is an offence to:

- intentionally or recklessly kill, injure or take a badger; or
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place (normally a sett) that badgers use for shelter or protection; or
- intentionally or recklessly damage or destroy anything which conceals or protects any such structure; or

- intentionally or recklessly disturb a badger while it is occupying a structure or place which it uses for shelter or protection.

In addition, any person who knowingly causes or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence. There is no provision within the legislation to issue licences to kill badgers for the purpose of development.

Otters

Otters (*Lutra lutra*) are listed on Annex IV of the EC Habitats Directive (92/43/EEC) and are protected under the Conservation (Natural Habitats etc.) Regulations 1995 (as amended), known as the Habitats Regulations. Under the Habitats Regulations it is an offence:

- Deliberately to capture, injure or kill a wild animal of a European protected species;
- Deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- Deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - impair its ability to survive, breed or reproduce, or rear or care for its young; or
    - impair its ability to hibernate or migrate;
- Deliberately to obstruct access to a breeding site or resting place of such an animal; or
- To damage or destroy a breeding site or resting place of such an animal.

There is no provision within the legislation to issue licences to kill otters for the purpose of development.

Red Squirrel

Red squirrels (*Sciurus vulgaris*) and their dreys are protected under Article 10 of the Wildlife (Northern Ireland) Order 1985 (as amended). It is an offence to:

- intentionally or recklessly kill, injure or take
- intentionally or recklessly: damage or destroy, or obstruct access to, any structure or place which red squirrels use for shelter or protection;
- damage or destroy anything which conceals or protects any such structure; disturb a red squirrel while it is occupying a structure or place which it uses for shelter or protection.

Breeding Nesting Birds

Under the Wildlife (Northern Ireland) Order 1985 (as amended) all wild birds are protected, particularly during the bird breeding season while nesting. It is an offence to intentionally or recklessly:

- kill, injure or take any wild bird; or
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- at any other time take, damage or destroy the nest of any wild bird included in Schedule A1; or
- take or destroy an egg of any wild bird; or
- disturb any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturb dependent young of such a bird.

Additionally, any person who knowingly causes or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence.

Wild Birds

Most bird species return to the same general nesting location each year and build a new nest. However, some species return to the same nest sites year after year, re-using old nests. Some of these species which have been deemed as particularly vulnerable to decline are given additional protection and are listed on Schedule A1 of the Wildlife Order (*see* Table 1). For these species it is an offence to damage or destroy their nests at any time of the year, even when they are not in use.

Table 1: Schedule A1 species

Common Name	Latin Name
Golden Eagle	*Aquila chrysaetus*
White-tailed Eagle	*Haliaetus albicilla*
Osprey	*Pandion haliaetus*
Barn Owl	*Tyto alba*
Peregrine	*Falco peregrines*
Red Kite	*Milvus milvis*

The Wildlife and Natural Environment Act (Northern Ireland) 2011 (known as the WANE Act) introduced a biodiversity duty on public bodies in Northern Ireland. It states that '*it is the duty of every public body, in exercising any functions, to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions'*.

The WANE Act also requires that the Department of the Environment maintains a list of species requiring special attention when delivering this duty. These are Northern Ireland priority species and specific actions for these have been addressed in a range of Government policies and activities.

All wild birds are also subject to conservation measures under the Birds Directive (2009/147/EC). This requires European Member States to take conservation measures to maintain populations of all naturally occurring wild birds. Additionally, some bird species, which are particularly rare or vulnerable, are listed on Annex I of the Directive. These species are subject to special conservation measures and have additional legal protection as features of designated sites, such as Special Protection Areas (SPAs).

Smooth Newt

Newts (*Lissotriton vulgaris*) are listed on schedules 5, 6 and 7 of the Wildlife (NI) Order 1985 (as amended). Under the Order it is an offence to:

- intentionally or recklessly kill, injure or take a newt; or
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place that newts use for shelter or protection; or
- intentionally or recklessly damage or destroy anything which conceals or protects any such structure; or
- intentionally or recklessly disturb a newt while it is occupying a structure or place which it uses for shelter or protection.

In addition, any person who knowingly causes or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence. There is no provision within the legislation to issue licences to kill newts for the purpose of development.

Common or viviparous lizard

In Northern Ireland the common or viviparous lizard (*Zootoca vivipara*) is protected under Article 10 of the Wildlife (Northern Ireland) Order 1985 (as amended). It is an offence to:

- intentionally or recklessly kill, injure or take a lizard, or
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place that lizards use for shelter or protection.

Lepidoptera

The marsh fritillary butterfly (*Euphydryas aurinia*) is a protected species listed on Schedules 5 and 7 of the Wildlife (Northern Ireland) Order 1985 (as amended) and included on Annex 2 of the European Habitats Directive (92/43/EEC). It is an offence to

- intentionally or recklessly kill, injure or take the marsh fritillary butterfly; or
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place that the marsh fritillary uses for shelter or protection

Cryptic Wood white and Holly Blue Butterfly are also listed on Schedules 5 and 7.

Flora

All wild plants are given some measure of protection in Northern Ireland under the Wildlife (NI) Order, 1985. Fifty-six species, listed in Schedule 8, parts 1 and 2, are given special protection. The order has the effect that, unless you have a licence, you may not:

- intentionally pick, uproot or destroy any wild plants listed in the schedule, or even collect their flowers and seeds;
- sell these plants or their seeds if taken from the wild;
- uproot any wild plants intentionally, except on your own land or with permission.

3.0 METHODOLOGY

This assessment comprised of a combination of desk study and field investigations, and used the following scope of works as a basis for the assessment:

- Desk study and review of potential development proposals;
- Site visit and walk over;
- Identification of onsite habitats and key species, GIS mapping;

- Habitat classification map using standardised Phase 1 Survey techniques and in accordance with NIEA and JNCC recommendations;
- Recording of geo-referenced target notes and production of GIS databases;
- Review of land designation GIS datasets (to include NIEA designations, Natura 2000 network sites etc.);
- Assessment on the potential impacts that the proposed development may have on local ecological environs and designated sites; and
- Recommendations for further ecological assessments, as required.

3.1 Desk Study

A desk study was undertaken to determine if any statutory or non-statutory designations, ancient woodland or priority species within proximity to the site. This involved using digital GIS datasets as well as contacting local recording groups for relevant information.

The data sources for the desk study were:

- Department of Agriculture, Environment and Rural Affairs (DAERA).
- NIEA Natural Environment Map Viewer.
- NI Planning portal.
- Relevant NGO Websites.
- Centre for Environmental Data and Recording (CEDaR) requested 20th July 2020.
- NBN Atlas.

3.2 Field Study

Survey methods followed the Phase 1 habitat methods as carried out in accordance with JNCC (2010). This involved a systematic walkover of the site during June 2020, mapping and broadly describing habitat types and identifying the presence of the dominant flora species and non-native invasive weeds.

Habitats were identified and described following Joint Nature Conservancy Committee (JNCC) Phase 1 habitat survey methodology (JNCC 1990), and reference made to the 'G*uidelines for Ecological Impact Assessment*' (CIEEM, 2018) and CIEEM (2017) Guidelines for Preliminary Ecological Appraisal.

A systematic search was carried out for evidence of and the site's potential to support protected mammal species, including but not limited to the following:

Badger *Meles meles* - The survey area and 25m beyond the site boundary was surveyed for signs of badger activity including the presence of setts, latrines, badger paths, bedding and hair caught on barbed wire fences. In addition, a note was made of any well-worn mammal track that was observed within the survey area.

Bats *Chiroptera sp*. - An assessment of the suitability of habitats and features within the survey area for their roosting, foraging and commuting places.

Otter *Lutra lutra* - The application site was surveyed for signs of otter activity. The survey involved searching for evidence of otters including the presence of holts (otter dens), couches (laying up areas), spraints (faecal droppings), otter paths, slides and otter paw prints.

Smooth Newt *Lissotriton vulgaris* - An assessment of the suitability of any waterbodies within the application site was made for smooth newts with areas of suitable habitat and niches noted.

Breeding Birds - An assessment of the suitability of the habitats and features within the site to support breeding bird species was made and a record of incidental bird sightings was conducted during the site visit. Special emphasis was placed on the suitability of the site for Schedule 1, red and amber listed birds along with UKBAP species and Northern Ireland Priority Species (NIPS).

Other protected species included within the survey for suitable habitat and any evidence of included common lizard *Zootoca vivipara*, formerly *Lacerta vivipara*, lepidoptera species and listed plant species.

Below is a summary of the survey details, survey timing and weather details including temperature (˚C), wind speed (Beaufort scale), cloud cover (Oktas), and precipitation.

Table 2: Summary of survey timing and weather

Surveyor	Date	Survey Start	Survey Finish	˚C	W/s (mph)	Oktas	Ppt %
Ryan Boyle BSc (Hons), MSc **Emily Taylor BSc (Hons)** **Conor Finlay BSc (Hons), MSc**	10/05/21	10:00	15:40	9	6	5/8	25

3.3 Survey Constraints

While there were no constraints experienced during the habitat mapping and site investigation period, it should be noted that ecological habitats can change over time and season. This includes temporal changes in flora and fauna assemblages, and these changes can be augmented or induced by alterations of land use within any given site.

This report can only provide a snapshot of the ecological activities at the time of the survey undertaken.

4.0 RESULTS

4.1 Previous Study

A previous baseline ecology study had been carried out by Delichon Ecology to consisting of habitat classification and species-specific surveys, outlined below in table 3. The previous studies carried out identified badger and otter presence and activity on site as well as investigated bat and bird activity across the site.

Table 3: Previous survey work carried out by Delichon Ecology

Survey Date	Survey Type
June 06th 2020	Multi-disciplinary survey including habitat survey, botanical survey, invasive species survey, breeding bird survey (late season), non-volant mammal survey and passive bat surveys.
July 15th 2020	Multi-disciplinary survey including habitat survey, botanical survey, invasive species survey, breeding bird survey (late season), non-volant mammal survey and passive bat surveys.
November 30th 2020	Wintering bird surveys and non-volant mammal survey
December 28th 2020	Wintering bird survey

January 12th 2021	Wintering bird survey
February 11th 2021	Wintering bird survey
March 30th 2021	Wintering bird surveys and non-volant mammal survey
May 11th 2021	Breeding Bird survey (early season)

4.2 Desk study

4.3 Natura 2000 & Land Designations

Following a search of the NIEA GIS databases for protected and designated areas, the application site is not located within any sites that are nationally or internationally designated for their nature conservation importance. However, the proposed development site does sit located on the banks of the River Foyle and Tributaries SAC and ASSI, 16 sites are located within approx. 15km of the site. The application area is not within any areas designated as local wildlife sites, however, there are 8 within roughly 5km (*see* Table 3 & 4).

Table 4: International/National Designations within 15km of the site

Designation	Site Name	Setback Distance
Special Areas of Conservation	River finn 002301	The proposed development is partially located within the River Finn SAC site on the western Lifford side
Special Areas of Conservation	River Foyle and Tributaries UK0030320	The proposed development is located particlaly within the River Foyle and Tributaries SAC site with the River Foyle itself going through the centre of the proposed site separating Strabane and Lifford
Special Areas of Conservation	Moneygal Bog UK0030320	Moneygal Bog SAC site is located at a setback distance of 13.6km southwest from the proposed development site
Special Areas of Conservation	Owenkillew River UK0030233	Owenkillew River SAC site is located at a setback distance of 13.9km southeast of the proposed development site
Area of Special Scientific Interest	River Foyle and Tributaries ASSI229	The proposed development is located partially within the River Foyle and Tributaries SAC site with the River Foyle itself going through the centre of the proposed site separating Strabane and Lifford
Area of Special Scientific Interest	Strabane Glen ASSI058	1.5km east of the proposed development site
Area of Special Scientific Interest	McKean's Moss Parts 1 and 2 ASSI128	13km northeast of the proposed site development

Area of Special Scientific Interest	Corbylin Wood ASSI197	9.6km northeast of the proposed development site
Area of Special Scientific Interest	Silverbrook Wood ASSI195	10.3km east of the proposed development site
Area of Special Scientific Interest	Lisnaragh ASSI288	11.5km east of the proposed development site
Area of Special Scientific Interest	Aghabrack ASSI304	14.5km east of the proposed development site
Area of Special Scientific Interest	Owenkillew and Glenelley Woods ASSI062	13.7km southeast of the proposed development site
Area of Special Scientific Interest	Owenkillew River ASSI213	13.6km southeast of the proposed development site
Area of Special Scientific Interest	Moneygal Bog ASSI005	13.2km southwest of the proposed development site
Natural Heritage Area	Feddyglass Woods 001129	4.9km northeast of the proposed development site
Natural Heritage Area	River Foyle Monagavlin to Carrigans 002067	7.6km north of the proposed development site

Table 5: Local Wildlife sites within 15km of the site.

Designation	Site Name	Setback Distance	Summary of Features
Local Wildlife Site	Holly Hill, Sperrin Wood	4.7km east of proposed development site	Local wildlife site
Local Wildlife Site	Glenside	1.1km east of the proposed development site	Local wildlife site
Local Wildlife Site	Strabane Quarry	0.8km southeast of the proposed development site	Local wildlife site
Local Wildlife Site	Urney Wood	4.7km southwest of proposed development site	Local wildlife site
Local Wildlife Site	Gallany House	4.5km south of proposed development site	Local wildlife site
Local Wildlife Site	Glenmornan River	4.9km northeast of proposed development site	Local wildlife site
Local Wildlife Site	Roundhill Wood	1.7km northeast of proposed development site	Local wildlife site
Local Wildlife Site	Tulacorr	1.4km northeast of proposed development site	Local wildlife site

River Finn

002301

Distance: Proposed development site is partially located within the River Finn site on the western Lifford side

Summary:

Within Northern Ireland the River Finn forms part of the River Foyle Tributaries and as such shares similar description features due to it's hydrological link with the River Foyle SAC and ASSI.

River Foyle and Tributaries

SAC: UK0030320

ASSI: ASSI229

Distance: The proposed development is located partially within the River Foyle and Tributaries SAC site with the River Foyle itself going through the centre of the proposed site separating Strabane and Lifford

Summary:

The River Foyle and Tributaries ASSI/SAC includes that part of the River Finn which lies within Northern Ireland, the River Mourne and its tributary the River Strule (up to its confluence with the Owenkillew River) and the River Derg, along with two of its sub-tributaries, the Mourne Beg River and the Glendergan River. In total, the area encompasses 120km of watercourse and is notable for the physical diversity and naturalness of the banks and channels, especially in the upper reaches, and the richness and naturalness of its plant and animal communities, in particular the population of Atlantic Salmon *Salmo salar*, which is of international importance. The area is also important as a river habitat. In their upper catchments, the tributaries are all fast-flowing spate rivers with dynamic flow regimes, characterised by sequences of rapid, riffle and run. Although the banks have been modified, the channel is natural and composed of large cobble substrate with scattered boulders and sandy marginal deposits, while cobble side and point bars and discrete sand deposits are common features. At the upper end of the River Derg and its two tributaries, the aquatic flora reflects the highly acidic character of the water, with mosses such as *Brachythecium plumosum*, *Fontinalis squamosa* and *Racomitrium* spp. and liverworts including *Marchantia polymorpha* on stabilised boulders and rocks. Downstream, beds of Stream Water-crowfoot *Ranunculus penicillatus* ssp. *penicillatus* occur where the flow is less dynamic, particularly in the lower sections of the River Derg and Moume Beg River and along the Strule and Moume

Rivers down to Strabane. Mosses and liverworts still remain a significant component of the aquatic plant community, while other higher plants such as Pondweeds *Potamogeton* spp., Starworts *Callitriche* spp. and Water-milfoils *Myriophyllum* spp. intermix with the Stream Water-crowfoot *R. penicillatus* ssp. *penicillatus* in the channel. Along the banks, there are emergent stands of Branched Bur-reed *Sparganium erectum* and Reed Canarygrass *Phalaris arundinacea*.

Downstream of Strabane, the River Foyle is slow-flowing and subject to tidal influences. The channel is extremely limited in aquatic plants, particularly in the more saline areas where marine algae make up the main component. Sheltered riverbanks in this section have a band of tall herb-fen dominated by Reed Canary-grass *Phalaris arundinacea* and other grasses. This becomes extensive in the large silty bays found at Saint Johnstone and 2 Grange. Associated fen species include Marsh-marigold *Caltha palustris*, Hedge Bindweed *Calystegia sepium*, Great Willowherb *Epilobium hirsutum*, Meadowsweet *Filipendula ulmaria*, Purple-loosestrife *Lythrum salicaria*, Common Valerian *Valeriana ofjicinalis*, Monkeyflower *Mimulus guttatus*, Cow Parsley *Anthriscus sylvestris* and Bulrush *Typha latifolia*. Willows *Salix* spp. are scattered throughout.

Strabane Glen

ASSI058

Distance: 1.5km east

Summary:

The area is of special scientific interest because of its woodland flora and characteristic associated fauna. The semi-natural deciduous woodland and scrub has a markedly calcicolous character, which is atypical for the region and is due to the underlying geology. The valley represents a line of weakness between the Upper Dalradian Dart schists and a basic igneous unit, possibly enhanced by local faulting. It was developed as a meltwater channel during the final deglaciation of the Sperrins ice, as indicated by outwash deposits to the north of the valley and by washed rock outcrops on the valley sides. The calcicolous nature of the soils reflects the influence of the igneous unit and adjacent Dungiven limestone, together with the glacial drift derived from these. The woodland has developed along both sides of the valley and has a wide diversity in structure, plant communities and overall species richness. In addition to the woodland interest the site has associated physical features including cliff and rock faces, boulder scree, streams, small rock gullies and waterfalls, all of which contribute

to the diversity of the site. The majority of the woodland canopy is composed of a mixture of Ash *Fraxinus excelsior* and Hazel *Corylus avellana*, with Wych Elm *Ulmus glabra* occasionally prominent. There is no distinct stratification of the understorey, which continually merges with canopy. The composition of the ground flora is variable because of the degree and extent of flushing down the steep gorge slopes. It exhibits high floristic diversity throughout, the principal components of which are Opposite-leaved Golden Saxifrage *Chrysosplenium oppositifolium*, Ivy *Hedera helix*, Lesser Celandine *Ranunculus ficaria*, ferns, principally Soft Shield-fern *Polystichum setiferum*, and calcicolous bryophytes. The rarity of this type of woodland in this region along with the geomorphological interest combine to increase the overall scientific value of the site.

Summary of Designations

The site area is partially located with the River Finn and River Foyle and Tributaries SAC/ASSI's, there are also a further x2 international and x11 national designations within 15km of the proposed development site. It is also noted that there are x8 local wildlife sites within 5km of the proposed site. There is concern in regard to the River Finn and River Foyle and tributaries SAC/ASSI's as proposed site works will need to take place within these designations. Due to the hydrological connections between these designations and their tributaries a HRA is recommended in order to determine the perceived risk and to help inform the production of a suitable Surface Water Management Plan (SWMP) detailed within the CEMP in order to negate the potential risks to these designations. As a small bridge structure is proposed for construction across the River Foyle, an investigation into the aquatic species with a particular emphasis on Atlantic salmon is required. All other designations have a suitable set back distance with the nearest being the Strabane Glen ASSI and the Strabane Quarry Local wildlife site with set back distances of 1.5km and 0.8km respectively and are of no concern due to the proposed nature of the development and the proposed development site.

4.4 Other Features/Species of Conservation Concern

No other features or species are of conservation concern.

4.5 CEDaR Protected Species Search

A written request was submitted to obtain data from the CEDaR recorded species dataset, and the results obtained from the CEDaR search provided a list of recorded species within a 2km radius of the site. Given the number of provided search records, the primary findings are summarised below in Table 5 and the full list of notable species records, including NI priority species, amber and red listed birds and NI rare and scarce plants are presented in Appendix III.

Table 6: CEDaR species records

Taxon Common Name	Taxon Latin Name	Event Date	Sample Spatial Reference	All Designations - Short Names
Long-Eared Owl	*Asio otus*	05/03/2014	C30	Bern-A2, ECCITES-A, W(NI)O-Sch1_part1
Barn Owl	*Tyto alba*	05/11/2016	H39	Bern-A2, ECCITES-A, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Sparrowhawk	*Accipiter nisus*	06/03/2011	H39	CMS_A2, ECCITES-A, W(NI)O-Sch1_part1
Buzzard	*Buteo buteo*	06/03/2011	H39	CMS_A2, ECCITES-A, W(NI)O-Sch1_part1
Long-Eared Owl	*Asio otus*	10/10/2014	H39	Bern-A2, ECCITES-A, W(NI)O-Sch1_part1
Kestrel	*Falco tinnunculus*	18/10/2013	H39	Bern-A2, Bird-Amber, CMS_A2, ECCITES-A, FEP-007_tab2, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, Wales_NERC_S.42
Buzzard	*Buteo buteo*	18/10/2013	H39	CMS_A2, ECCITES-A, W(NI)O-Sch1_part1
Peregrine	*Falco peregrinus*	1987	H358992	Bern-A2, BirdsDir-A1, CMS_A2, ECCITES-A, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1

Peregrine	*Falco peregrinus*	1988	H358992	Bern-A2, BirdsDir-A1, CMS_A2, ECCITES-A, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Whooper Swan	*Cygnus cygnus*	28/10/1995	H39	Bern-A2, Bird-Amber, BirdsDir-A1, CMS_A2, CMS_AEWA-A2, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Gannet	*Sula bassana*	30/05/2011	H39	Bird-Amber, CMS_AEWA-A2
Swift	*Apus apus*	08/05/2011	H39	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	*Apus apus*	08/05/2014	H39	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	*Apus apus*	08/05/2014	H3396	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	*Apus apus*	09/05/2013	H39	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	*Apus apus*	09/08/2014	H3396	Bird-Amber, NIPS, Scottish_Biodiversity_List
Willow Warbler	*Phylloscopus trochilus*	12/05/1988	H358990	Bird-Amber
Swift	*Apus apus*	17/07/2014	H3396	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	*Apus apus*	18/07/2014	C3500	Bird-Amber, NIPS, Scottish_Biodiversity_List
Spotted Flycatcher	*Muscicapa striata*	01/06/2011	H39	BAP-2007, Bern-A2, Bird-Red, CMS_A2, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Black Redstart	*Phoenicurus ochruros*	07/04/1999	H39	Bern-A2, Bird-Red, WACA-Sch1_part1
Mistle Thrush	*Turdus viscivorus*	12/05/1988	H358990	Bird-Red, BirdsDir-A2.2

Yellowhammer	*Emberiza citrinella*	12/05/1988	H358990	BAP-2007, Bern-A2, Bird-Red, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Tree Sparrow	*Passer montanus*	22/11/1997	H39	BAP-2007, Bird-Red, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Atlantic Salmon	*Salmo salar*	1974	C30	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Atlantic Salmon	*Salmo salar*	July 2009	H3498	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Atlantic Salmon	*Salmo salar*	July 2009	H3397	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Atlantic Salmon	*Salmo salar*	July 2009	H3398	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Atlantic Salmon	*Salmo salar*	October 2010	H3297	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42

Atlantic Salmon	*Salmo salar*	October 2010	H3397	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Beech Fern	*Phegopteris connectilis*	1887	H358990	NI Rare & Scarce Plants
Beech Fern	*Phegopteris connectilis*	1887	H3598	NI Rare & Scarce Plants
Moonwort	*Botrychium lunaria*	1896	H3497	RedList_ENG_post2001-VU
Beech Fern	*Phegopteris connectilis*	31/05/1878	H3599	NI Rare & Scarce Plants
Rigid Hornwort	*Ceratophyllum demersum*	- 1837	C30	NI Rare & Scarce Plants
Lesser Bladderwort	*Utricularia minor*	- 1933	H3497	RedList_ENG_post2001-VU
Purple Ramping-Fumitory	*Fumaria purpurea*	- 1953	H39	BAP-2007, England_NERC_S.41, FEP-007_tab2, NI Rare & Scarce Plants , NIPS, NS-excludes, RedList_ENG_post2001-VU, Scottish_Biodiversity_List, Wales_NERC_S.42
Wood-Sorrel	*Oxalis acetosella*	04/05/2005	H358982	RedList_ENG_post2001-NT
Sanicle	*Sanicula europaea*	04/05/2005	H358982	RedList_ENG_post2001-NT
Primrose	*Primula vulgaris*	04/05/2005	H358982	W(NI)O-Sch8_part2
Primrose	*Primula vulgaris*	05/05/2005	H358989	W(NI)O-Sch8_part2
Primrose	*Primula vulgaris*	05/05/2005	H354990	W(NI)O-Sch8_part2
Heath Speedwell	*Veronica officinalis*	05/05/2005	H351987	RedList_ENG_post2001-NT
Lesser Spearwort	*Ranunculus flammula*	05/05/2005	H354990	RedList_ENG_post2001-VU

Heath Speedwell	*Veronica officinalis*	05/05/2005	H358993	RedList_ENG_post2001 -NT
Wood-Sorrel	*Oxalis acetosella*	05/05/2005	H358993	RedList_ENG_post2001 -NT
Primrose	*Primula vulgaris*	05/05/2005	H358993	W(NI)O-Sch8_part2
Heather	*Calluna vulgaris*	05/05/2005	H358993	RedList_ENG_post2001 -NT
Wood-Sorrel	*Oxalis acetosella*	05/05/2005	H351987	RedList_ENG_post2001 -NT
Wood-Sorrel	*Oxalis acetosella*	05/05/2005	H354990	RedList_ENG_post2001 -NT
Wood-Sorrel	*Oxalis acetosella*	05/05/2005	H358989	RedList_ENG_post2001 -NT
Primrose	*Primula vulgaris*	12/05/1988	H358990	W(NI)O-Sch8_part2
Sanicle	*Sanicula europaea*	12/05/1988	H358990	RedList_ENG_post2001 -NT
Heather	*Calluna vulgaris*	12/05/1988	H358990	RedList_ENG_post2001 -NT
Wood-Sorrel	*Oxalis acetosella*	12/05/1988	H358990	RedList_ENG_post2001 -NT
Wood-Sorrel	*Oxalis acetosella*	12/05/1988	H358990	RedList_ENG_post2001 -NT
Wood-sorrel	*Oxalis acetosella*	15/04/2014	H3483799106	RedList_ENG_post2001 -NT
Primrose	*Primula vulgaris*	15/04/2014	H3483799106	W(NI)O-Sch8_part2
Hare's-foot sedge	*Carex lachenalii*	18/06/2009	H3498	NR-excludes, RedList_GB_post2001-NT, Scottish_Biodiversity_List
Hare's-foot sedge	*Carex lachenalii*	18/06/2009	H3297	NR-excludes, RedList_GB_post2001-NT, Scottish_Biodiversity_List
Needle Spike-Rush	*Eleocharis acicularis*	1829	H3497	RedList_ENG_post2001 -NT
Common Cow-Wheat	*Melampyrum pratense*	1878	H358990	RedList_ENG_post2001 -NT

Heath Cudweed	*Gnaphalium sylvaticum*	1896	H3497	NIPS, RedList_ENG_post2001-EN, RedList_GB_post2001-EN, Scottish_Biodiversity_List
Bromus x subsp. pseudothominei	*Bromus x subsp. pseudothominei*	1896	H3497	
Intermediate Wintergreen	*Pyrola media*	1896	H3497	NI Rare & Scarce Plants, NIPS, NS-excludes, RedList_ENG_post2001-EN, RedList_GB_post2001-VU, Scottish_Biodiversity_List
Large-Flowered Hemp-Nettle	*Galeopsis speciosa*	1897	H3497	FEP-007_tab3, RedList_ENG_post2001-VU, RedList_GB_post2001-VU, Scottish_Biodiversity_List, Wales_NERC_S.42
Field Woundwort	*Stachys arvensis*	1900	H3497	FEP-007_tab3, RedList_ENG_post2001-NT, RedList_GB_post2001-NT, Scottish_Biodiversity_List
Slender Spike-Rush	*Eleocharis uniglumis*	1930 - 1950	H3499	NI Rare & Scarce Plants
Slender Trefoil	*Trifolium micranthum*	1981	H358990	NI Rare & Scarce Plants, Scottish_Biodiversity_List
Corn Spurrey	*Spergula arvensis*	1987 - 1999	C3500	RedList_ENG_post2001-VU, RedList_GB_post2001-VU
Tormentil	*Potentilla erecta*	1987 - 1999	C3500	RedList_ENG_post2001-NT
Bog Myrtle	*Myrica gale*	1987 - 1999	C3500	RedList_ENG_post2001-NT
White Beak-Sedge	*Rhynchospora alba*	1987 - 1999	C3500	RedList_ENG_post2001-NT
Round-Leaved Sundew	*Drosera rotundifolia*	1987 - 1999	C3500	RedList_ENG_post2001-NT
Marsh Pennywort	*Hydrocotyle vulgaris*	1987 - 1999	C3500	RedList_ENG_post2001-NT

Devil's-Bit Scabious	*Succisa pratensis*	1987 - 1999	C3500	RedList_ENG_post2001 -NT
Eyebright	*Euphrasia arctica subsp. borealis*	1987 - 1999	C3500	RedList_ENG_post2001 -VU, RedList_GB_post2001- DD
Lesser Spearwort	*Ranunculus flammula*	1987 - 1999	C3500	RedList_ENG_post2001 -VU
Marsh Cinquefoil	*Potentilla palustris*	1987 - 1999	C3500	RedList_ENG_post2001 -NT
Large-Flowered Hemp-Nettle	*Galeopsis speciosa*	1987 - 1999	H343994	FEP-007_tab3, RedList_ENG_post2001 -VU, RedList_GB_post2001- VU,
Ragged Robin	*Lychnis flos-cuculi*	1987 - 1999	C3500	RedList_ENG_post2001 -NT
Common Valerian	*Valeriana officinalis*	1987 - 1999	C3500	RedList_ENG_post2001 -NT
Heather	*Calluna vulgaris*	1987 - 1999	C3500	RedList_ENG_post2001 -NT
Primrose	*Primula vulgaris*	1987 - 1999	C3500	W(NI)O-Sch8_part2
Tormentil	*Potentilla erecta*	22/06/2017	H346993	RedList_ENG_post2001 -NT
Bitter-Vetch	*Lathyrus linifolius*	23/09/2002	H345998	RedList_ENG_post2001 -NT
Goldenrod	*Solidago virgaurea*	23/09/2002	H3398	RedList_ENG_post2001 -NT
Wood-Sorrel	*Oxalis acetosella*	25/05/1988	H358990	RedList_ENG_post2001 -NT
Wood-Sorrel	*Oxalis acetosella*	25/05/1988	H358990	RedList_ENG_post2001 -NT
Primrose	*Primula vulgaris*	25/05/1988	H358990	W(NI)O-Sch8_part2
Common Valerian	*Valeriana officinalis*	25/06/2009	H3498	RedList_ENG_post2001 -NT
Marsh Cinquefoil	*Potentilla palustris*	25/06/2009	H3498	RedList_ENG_post2001 -NT

Lesser Spearwort	*Ranunculus flammula*	25/06/2009	H3498	RedList_ENG_post2001-VU
Marsh Speedwell	*Veronica scutellata*	25/06/2009	H3498	RedList_ENG_post2001-NT
Primrose	*Primula vulgaris*	28/03/1988	H358990	W(NI)O-Sch8_part2
Sanicle	*Sanicula europaea*	28/03/1988	H358990	RedList_ENG_post2001-NT
Marsh Ragwort	*Senecio aquaticus*	30/04/2015	H3598	RedList_ENG_post2001-NT
Sanicle	*Sanicula europaea*	30/04/2015	H3598	RedList_ENG_post2001-NT
Primrose	*Primula vulgaris*	30/04/2015	H3598	W(NI)O-Sch8_part2
Wood-sorrel	*Oxalis acetosella*	30/04/2015	H3598	RedList_ENG_post2001-NT
Large-Flowered Hemp-Nettle	*Galeopsis speciosa*	September 2006	C3500	FEP-007_tab3, RedList_ENG_post2001-VU, RedList_GB_post2001-VU, Scottish_Biodiversity_List, Wales_NERC_S.42
Bladder-Sedge	*Carex vesicaria*	Unknown	H3497	RedList_ENG_post2001-VU
Wood White	*Leptidea reali*	1960 - 2008	H39	BAP-2007, England_NERC_S.41, NIPS, RedList_GB_post2001-EN, WACA-Sch5_sect9.5a, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Wood White	*Leptidea reali*	1993	H39	BAP-2007, England_NERC_S.41, NIPS, RedList_GB_post2001-EN, WACA-Sch5_sect9.5a, Wales_NERC_S.42, Wildlife (NI) Order Sch 5

River Lamprey	*Lampetra fluviatilis*	October 2010	H3297	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Brook Lamprey	*Lampetra planeri*	October 2010	H3297	Bern-A3, FEP-007_tab2, HabDir-A2*, Scottish_Biodiversity_List
Sea Lamprey	*Petromyzon marinus*	October 2010	H3297	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A2*, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
River Lamprey	*Lampetra fluviatilis*	October 2010	H3397	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Brook Lamprey	*Lampetra planeri*	October 2010	H3397	Bern-A3, FEP-007_tab2, HabDir-A2*, Scottish_Biodiversity_List
Sea Lamprey	*Petromyzon marinus*	October 2010	H3397	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A2*, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Freshwater Pearl Mussel	*Margaritifera margaritifera*	01/02/1900	H39	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, NIPS, RedList_GB_post2001-CR, RedList_Global_post94-EN, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5

Freshwater Pearl Mussel	*Margaritifera margaritifera*	05/08/1899	H39	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, NIPS, RedList_GB_post2001-CR, RedList_Global_post94-EN, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Freshwater Pearl Mussel	*Margaritifera margaritifera*	1899	H39	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, NIPS, RedList_GB_post2001-CR, RedList_Global_post94-EN, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5

Freshwater Pearl Mussel	*Margaritifera margaritifera*	1905	H39	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, NIPS, RedList_GB_post2001-CR, RedList_Global_post94-EN, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Bog Moss	*Sphagnum*	October 2010	H3297	HabDir-A5
Compact Bog-moss	*Sphagnum compactum*	Unknown	H358990	HabDir-A5
Red Squirrel	*Sciurus vulgaris*	09/03/2009	H358987	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Pipistrelle Bat species	*Pipistrellus sp.*	17/07/2018	H347970	BAP-2007, Bern-A2, Bern-A3, CMS_A2, CMS_EUROBATS-A1, England_NERC_S.41, FEP-007_tab2, HabDir-A4, HabReg-Sch2, NIPS, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42

Red Squirrel	*Sciurus vulgaris*	1995	H359986	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Otter	*Lutra lutra*	2006	H339980	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Otter	*Lutra lutra*	2006	H334983	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42

Otter	*Lutra lutra*	2011	H339980	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Otter	*Lutra lutra*	2011	H334983	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Otter	*Lutra lutra*	2015	H334983	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42

Red Squirrel	*Sciurus vulgaris*	27/10/1984	H358984	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Otter	*Lutra lutra*	June 2009	H3498	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Otter	*Lutra lutra*	June 2009	H3398	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Badger	*Meles meles*	March 2012	H355992	Bern-A3, Protection_of_Badgers_Act_1992, W(NI)O-Sch5, Wildlife (NI) Order Sch 5

Otter	*Lutra lutra*	October 2010	H3297	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Pine Marten	*Martes martes*	October 2010	H3297	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A5, HabReg-Sch4, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Badger	*Meles meles*	October 2010	H3297	Bern-A3, Protection_of_Badgers_Act_1992, W(NI)O-Sch5, Wildlife (NI) Order Sch 5
Otter	*Lutra lutra*	October 2010	H3397	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42

The results of the field study, involving the Phase 1 habitat survey and protected species survey, are provided in the following sections. Target notes (TN) were used to identify anything of note.

4.6 NBN Atlas

A search of the NBN Atlas Northern Ireland returned no species within the site boundary but 479 species within 2km of the site area. The most recent records are from 2020 with one record produced within that year. Several of these species recorded are protected under Schedule 1 Part 1, Schedule 5 and Schedule 8 Part 1 of the Wildlife Order (NI) and the Habitat regulations (NI).

4.7 National Biodiversity Data Centre

Records of rare, protected and invasive species of flora and fauna from the hectad supporting the study area was obtained from the National Biodiversity Data Centre (NBDC) online database. 94 records were returned for the 10x10km hectad H39 which encompasses the proposed Riverine Scheme site. these results are displayed in Table 7.

Table 7: National Biodiversity Data Centre species records

Common Name (Species Name)	Record Date	Conservation Status
Smooth Newt (*Lissotriton vulgaris*)	31/12/1972	Protected Species: Wildlife Acts
Barn Owl (*Tyto alba*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Barn Swallow (*Hirundo rustica*)	15/04/2016	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Black-headed Gull *(Larus ridibundus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Grasshopper Warbler (*Locustella naevia*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Common Name (Species Name)	Record Date	Conservation Status
Common Kestrel (*Falco tinnunculus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kingfisher (*Alcedo atthis*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Linnet (*Carduelis cannabina*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Pheasant (*Phasianus colchicus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Common Redshank (*Tringa totanus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Sandpiper (*Actitis hypoleucos*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Snipe (*Gallinago gallinago*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Starling (*Sturnus vulgaris*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Common Name (Species Name)	Record Date	Conservation Status
Common Swift (*Apus apus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Wood Pigeon (*Columba palumbus*)	05/06/2016	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Corn Crake (*Crex crex*)	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Eurasian Curlew (*Numenius arquata*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Eurasian Teal (*Anas crecca*)	29/02/1984	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Eurasian Tree Sparrow (*Passer montanus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Common Name (Species Name)	Record Date	Conservation Status
Eurasian Woodcock (*Scolopax rusticola*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
European Golden Plover (*Pluvialis apricaria*)	29/02/1984	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Great Black-backed Gull (*Larus marinus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Cormorant (*Phalacrocorax carbo*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Grey Partridge (*Perdix perdix*)	31/07/1972	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Hen Harrier (*Circus cyaneus*)	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Common Name (Species Name)	Record Date	Conservation Status
Herring Gull (*Larus argentatus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
House Martin (*Delichon urbicum*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
House Sparrow *(Passer domesticus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Jack Snipe (*Lymnocryptes minimus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species
Lesser Black-backed Gull (*Larus fuscus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Little Grebe (*Tachybaptus ruficollis*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mallard (*Anas platyrhynchos*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Mew Gull (*Larus canus*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mute Swan (*Cygnus olor*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Common Name (Species Name)	Record Date	Conservation Status
Northern Lapwing (*Vanellus vanellus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Northern Wheatear (*Oenanthe oenanthe*)	31/07/1972	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Peregrine Falcon (*Falco peregrinus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Red Grouse (*Lagopus lagopus*)	31/07/1972	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Red-breasted Merganser (*Mergus serrator*)	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species
Rock Pigeon (*Columba livia*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Sand Martin (*Riparia riparia*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Sky Lark (*Alauda arvensis*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Spotted Flycatcher (*Muscicapa striata*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Common Name (Species Name)	Record Date	Conservation Status
Twite (*Carduelis flavirostris*)	29/02/1984	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Whooper Swan (*Cygnus cygnus*)	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Yellowhammer (*Emberiza citrinella*)	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Killarney Fern (*Trichomanes speciosum*)	31/12/2010	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Threatened Species: Vulnerable
Arthurdendyus triangulatus	20/05/2013	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Black Currant (*Ribes nigrum*)	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Butterfly-bush (*Buddleja davidii*)	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Canadian Waterweed (*Elodea canadensis*)	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Giant Hogweed (*Heracleum mantegazzianum*)	24/01/2018	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Heath Cudweed (*Gnaphalium sylvaticum*)	31/12/1929	Threatened Species: Vulnerable
Himalayan Knotweed (*Persicaria wallichii*)	31/12/1999	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Indian Balsam (*Impatiens glandulifera*)	26/09/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)

Common Name (Species Name)	Record Date	Conservation Status
Intermediate Wintergreen (*Pyrola media*)	31/12/1929	Threatened Species: Vulnerable
Japanese Knotweed (*Fallopia japonica*)	14/05/2017	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Large Bitter-cress (*Cardamine amara*)	31/12/1929	Threatened Species: Vulnerable
Rhododendron ponticum	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Salmonberry (*Rubus spectabilis*)	31/12/1999	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Small Cudweed (*Filago minima*)	31/12/1999	Threatened Species: Vulnerable
Sycamore (*Acer pseudoplatanus*)	08/09/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Traveller's-joy (*Clematis vitalba*)	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Wall Cotoneaster (*Cotoneaster horizontalis*)	31/12/1999	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Nebrioporus (Nebrioporus) *depressus*	31/12/1990	Threatened Species: Data deficient
Shining Flapwort (*Jungermannia paroica*)	31/12/1950	Threatened Species: Near threatened
Common Porpoise (*Phocoena phocoena*)	20/07/2014	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention
Ash-black Slug (*Limax cinereoniger*)	01/03/1992	Threatened Species: Vulnerable
Brown Snail (*Zenobiella subrufescens*)	01/03/1992	Threatened Species: Vulnerable
Budapest Slug (*Tandonia budapestensis*)	01/03/1992	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Common Shelled Slug (*Testacella* (Testacella) *haliotidea*)	31/12/1908	Threatened Species: Vulnerable
Copse Snail (*Arianta arbustorum*)	01/03/1992	Threatened Species: Vulnerable
English Chrysalis Snail (*Leiostyla* (Leiostyla) *anglica*)	01/03/1992	Threatened Species: Vulnerable
Freshwater Pearl Mussel (Margaritifera (*Margaritifera) margaritifera*)	02/09/1996	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts

Common Name (Species Name)	Record Date	Conservation Status
Jenkins' Spire Snail (*Potamopyrgus antipodarum*)	01/03/1992	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Plated Snail (*Spermodea lamellata*)	01/03/1992	Threatened Species: Endangered
Hair-pointed Grimmia (*Grimmia trichophylla*)	31/12/1991	Threatened Species: Data deficient || Threatened Species: Least concern
Haller's Apple-moss (*Bartramia halleriana*)	31/12/1914	Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order 2015 Schedule B (Mosses) || Threatened Species: Regionally Extinct
Spruce's Bristle-moss (*Orthotrichum sprucei*)	31/12/2009	Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order 2015 Schedule B (Mosses) || Threatened Species: Vulnerable
Straight-leaved Apple-moss (*Bartramia ithyphylla*)	31/12/1883	Threatened Species: Vulnerable
American Mink (*Mustela vison*)	31/10/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Daubenton's Bat (*Myotis daubentonii*)	30/06/2014	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Eastern Grey Squirrel (*Sciurus carolinensis*)	25/06/2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Eurasian Badger (*Meles meles*)	24/07/2014	Protected Species: Wildlife Acts
Eurasian Red Squirrel (*Sciurus vulgaris*)	09/03/2009	Protected Species: Wildlife Acts
European Otter (*Lutra lutra*)	19/12/2013	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
European Rabbit (*Oryctolagus cuniculus*)	31/10/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Lesser Noctule (*Nyctalus leisleri*)	31/10/2010	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Natterer's Bat (*Myotis nattereri*)	12/05/2008	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts

Common Name (Species Name)	Record Date	Conservation Status
Pine Marten (*Martes martes*)	31/10/2010	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Pipistrelle (*Pipistrellus pipistrellus sensu lato*)	23/08/2012	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Sika Deer (*Cervus nippon*)	31/12/2008	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	01/09/2014	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
West European Hedgehog (*Erinaceus europaeus*)	20/06/1998	Protected Species: Wildlife Acts

4.8 National Parks and Wildlife Service

A request was put into the NPWS for protected and priority species records within 2km of the proposed riverine scheme site Table 8 includes the 15 records returned for hectads C30 and H39, (see Appendix V)

Table 8: National Biodiversity Data Centre species records

Taxon Common Name	Taxon Latin Name	Event Date	Sample Spatial Reference
Smooth Newt	*Lissotriton vulgaris*	1972	H39
Common Frog	*Rana temporaria*	1966	H39
Irish Hare	*Lepus timidus* subsp. *hibernicus*	1991	C30
Sika Deer	*Cervus nippon*	2008	C30
Sika Deer	*Cervus nippon*	2008	H39
Common Frog	*Rana temporaria*	1979	C30
Sea Lamprey	*Petromyzon marinus*	0	C340000
Irish Stoat	*Mustela erminea* subsp. *hibernica*	1972	H39

Common Frog	*Rana temporaria*	1966	C30
Eurasian Badger	*Meles meles*	1991	H39
Irish Hare	*Lepus timidus* subsp. *hibernicus*	1991	H39
West European	*Erinaceus europaeus*	1969	H39
West European	*Erinaceus europaeus*	1972	H39
West European	*Erinaceus europaeus*	1972	C30
Irish Stoat	*Mustela erminea* subsp. *hibernica*	1972	C30

4.9 Phase 1 Habitat Survey (Fossitts ROI)

A habitat classification map (*see* Appendix VI) was created based on information obtained during site walkovers, previous habitat studies carried out by the previous project ecologist Eamonn Delaney at Delichon Ecology and from the most recent aerial imagery for the site.

Improved Agricultural Grassland (GA1)

The proposed development site supports this habitat on the Lifford side within the hare coursing grounds and near the southern and eastern margins of the Strabane side of the study area. The improved grassland areas located on the Lifford side of the study area are cut for silage annually and are otherwise used for hare coursing. Those located on the Strabane side are used for silage harvesting and low intensity grazing. Plant species composition comprise the usual suite of grasses and herbs associated with this habitat such as perennial rye grass (*Lolium perenne*), red fescue (*Festuca rubra*), Yorkshire fog (*Holcus lanatus*), creeping thistle (*Cirsium arvense*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*) and broadleaved dock (*Rumex obtusifolius*).

The improved grassland fields located near the southern boundary of the Strabane side of the study area are slightly poorer draining and consequently support timothy, floating sweet grass (local), marsh foxtail and common rush, in addition to the species previously listed.

Amenity grassland (GA2)

This is associated with the Lifford Celtic soccer pitch located on the Lifford side of the study area between the hare coursing grounds and the flood embankment of the River Foyle. This is a routinely maintained grassland habitat comprising red fescue (*Festuca rubra*), white clover (*Trifolium repens*) and red clover (*Trifolium pratense*).

Wet grassland (GS4)

This habitat is located on the Strabane side of the study area beyond the south-eastern boundary and norther boundary bordering the dirt path that runs along the eastern boundary. This is a common rush dominated wet grassland in addition to Yorkshire fog (*Holcus lanatus*), greater bird's foot trefoil (*Lotus pedunculatus*), common bent (*Agrostis capillaris*), meadow vetchling (*Lathyrus pratensis*), common sorrel (*Rumex acetosa*) and spreading grey willow (*Salix cinerea*) shrubs. The south-eastern corner of this wet grassland habitat, located beyond the north-west boundary on the Strabane Side, adjoins a line of Japanese knotweed (*Fallopia japonica*) plants, which are fringing an access track located immediately east of this habitat.

Wet grassland with recolonised spoil mounds (GS4/ED3)

The habitat is located on the Strabane side of the site just beyond the eastern boundary within the central area below of the GS4 habitat, (see Appendix: VI). This habitat exhibits the same features and species present as those outlined in habitat GS4, however, there are several old spoil mounds located towards the north-eastern corner of this habitat. These mounds have become to be recolonised by ruderal vegetation species such as common nettle (*Urtica dioica*) and dicotyledons sp.

Improved wet agricultural grassland (GS4/GA1)

The habitat is located on the Strabane side of the side just beyond the eastern boundary in the most southern area below GS4/GA1, (see Appendix: VI). This habitat exhibits some of the same features as the rest of the GS4 habitat area, however, due to historical intensive agricultural use many of the species present in the previous two habitats are not present here. The area is dominated by bright green swards of perennial ryegrass (*Lolium perenne*) and crested dog's-tail (*Cynosurus cristatus*) with scattered clumps of white clover (*Trifolium repens*) and sorrel (*Rumex acetosa*). Grazing is still carried out in this area due to the observed presence of a small number of cattle and/or goats.

Hedgerows (WL1)

Hedgerows fringe the improved grassland fields located on the Strabane side of the study area. These comprise hawthorn (*Crataegus monogyna*) and occasional elder (*Sambucus nigra*), overtopped by semi-mature ash (*Fraxinus excelsior*) trees.

Treelines (WL2)

Treelines are located on both sides of the study area. Treelines line the improved grassland areas used for hare coursing on the Lifford side of the study area. The westernmost areas of the Lifford side supports maturing lines of Sitka spruce (*Picea sitchensis*) trees, in addition to occasional sycamore and elder. Another treeline in this area supports sycamore (*Acer pseudoplatanus*), ash, grey willow (*Salix cinerea*), alder (*Alnus glutinosa*), dog rose (*Rosa canina*), broom (*Cytisus scoparius*), gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus* agg.)

Treelines located on the Strabane side of the study area line the pastoral fields and comprise ash, sycamore (*Acer pseudoplatanus*), elder, hawthorn and grey willow.

Scrub (WS1)

Scrub is very localised within the study area and occurs along the riverbank margins on the Lifford side, in addition to another small area near the north-eastern boundary, where it occurs in mosaic with dry meadows and grassy verge habitat. Plant species composition included bramble (*Rubus fruticosus* agg.), willow and gorse (*Ulex europaeus*). Invasive species such as Himalayan balsam (*Impatiens glanfulifera*) and Giant hogweed (*Heracleum mantegazzianum*) were also observed growing in this area along the riverbanks.

Depositing Lowland River (FW2)

This habitat relates to the River Finn and River Foyle which separates the Lifford and Strabane sides of the study area. Instream or emergent aquatics were not evident. The fringes of the river comprise reed and large sedge swamp establishing on areas of accumulated aggregates and alluvium. This habitat is described in further detail below.

Reed and Large Sedge Swamp (FS1)

This habitat is located on the margins of the River Foyle and has established on areas of accumulated alluvium and flood deposited aggregate and detritus. Plant species composition includes reed canary grass, marsh ragwort (*Senecio aquaticus*), broadleaved dock (*Rumex obtusifolius*), angelica (*Angelica sylvestris*), meadowsweet (*Filipendula ulmaria*), water forget-me-not (*Myosotis scorpioides*), water mint (*Mentha aquatica*), marsh marigold (*Caltha*

palustris), creeping buttercup (*Ranunculus repens*), common valerian (*Valeriana officinalis*), redshank (*Persicaria maculosa*) and amphibious bistort (*Persicaria amphibia*). These habitats where they occur along the fringes of the River Foyle support occasional to frequent occurrences of Himalayan balsam (*Impatiens glandulifera*).

Dry meadows and Grassy Verges (GS2)

This is characteristic habitat along the margins of the river body, typically along the embankment areas and walkways set back from the riparian and riverbank margins on the Strabane side of the site. Plant species includes false oat grass (*Arrhenatherum elatius*), field horsetail (*Equisetum arvense*), bramble, cleavers (*Galium aparine*), bush vetch (*Vicia sepium*), meadowsweet, nettle (*Urtica dioica*), lesser stitchwort (*Stellaria graminea*), cock's-foot (*Dactylis glomerata*), sweet vernal grass (*Anthoxanthum odoratum*), meadow vetchling (*Lathyrus pratensis*) and ribwort plantain (*Plantago lanceolata*).

Mixed Broadleaved Woodland (WD1)

A small pocket of mixed broadleaved woodland occurs on the northernmost boundary of the Lifford section. This is a young woodland with ash, sycamore and grey willow in the canopy layer and hawthorn and elder in the canopy and shrub layers. The ground layer remains underdeveloped and supports localised abundances of bramble, with ivy (*Hedera hibernica*), male fern (*Dryopteris filis-mas*) and locally abundant Himalayan balsam (*Impatiens glandulifera*). Wetter parts of the ground layer exhibit the absence of bramble and the emergence of common rush (*Juncus effusus*), remote sedge (*Carex remota*), creeping buttercup and broad buckler fern (*Dryopteris dilatata*).

Mixed broadleaved conifer woodland (WD3)

This woodland habitat is located immediately south of the mixed broadleaved woodland described above. This woodland supports fir, cypress and spruce trees, planted for cover ca. 50 years ago. This woodland supports elder and common privet in the understorey (locally frequent), in addition to ivy, and broad buckler fern in the ground layer.

Wet willow alder-ash-woodland (WN6)

The Strabane side of the study area supports a large are of fen carr type woodland that has developed on impounded wetland areas to create a wet woodland area prone to seasonal flooding. Water levels within the woodland ground layer fluctuate seasonally but are almost all waterlogged or are submerged for large parts of the year. The woodland canopy is dominated by grey willow (*Salix cinerea*) trees and shrubs with occasional alder (*Alnus glutinosa*). The woodland is heavily shaded and in places densely crowded by close growing

grey willow trees. Area of open water or waterlogged soils are often spanned horizontally by the limbs and boles of willow trees. Ground layer species are localised and not abundant and include water horsetail (*Equisetum fluviatile*), tufted hair grass (*Deschampsia cespitosa*), reed canary grass, marsh bedstraw (*Galium palustre*) and meadowsweet. Himalayan balsam is located throughout the woodland understorey possibly spread through the rising and falling flood waters of the nearby River Finn.

Buildings and Artificial Surfaces (BL3)

This habitat includes the existing buildings within the study area such as the viewing stand small shed/storage structure on the Lifford side.

Bare Ground (ED2)

Access leading into the site's interior on both sides, (Lifford and Strabane), of the site with the Lifford side's bare ground entrance road running parallel to the riverbank until it reaches the entrance to the hare coursing ground. On the Strabane side the entrance consists of an old concrete area which becomes a path that runs parallel to the eastern boundary before curving around to the riverbank in the northern area of the site. The old concreted area located on the Strabane side has been abandoned in recent years and has witnessed the proliferation of ruderal plant species including cat's ear (*Hypochaeris radicata*), herb Robert (*Geranium robertianum*), spear thistle (*Cirsium vulgare*), red fescue (*Festuca rubra*), white clover (*Trifolium repens*), mouse-ear chickweed (*Cerastium fontanum*), smooth hawk's-beard (*Crepis capillaris*), black medick (*Medicago lupulina*), common sow thistle (*Sonchus oleraceus*), field horsetail (*Equisetum arvense*), tufted vetch (*Vicia cracca*), greater plantain (*Plantago major*), lesser burdock (*Arctium minus*), hedge mustard (*Sisymbrium officinale*), perforate St. John's wort (*Hypericum perforatum*), colt's-foot (*Tussilago farfara*) and American willowherb (*Epilobium ciliatum*).

Eutrophic standing water body (FL8)

This habitat is located within the northern area of the Strabane side of the site and is a moderate sized pond dating back to 1907 of standing water separated from the larger wet woodland area treelines set on raised ground bordering the Nancy Burn storm drain system. This habitat is highly eutrophic experiencing a large algal bloom at the time of survey with little other vegetative growth. Several small clumps of bull rush (*Typha angustifolia*) was observed growing along its western bank.

4.10 Phase 1 Habitat Survey (JNCC NI)

A habitat classification map (*see* Appendix VII) was created based on information obtained during site walkovers, previous habitat studies carried out by the previous project ecologist Eamonn Delaney at Delichon Ecology and from the most recent aerial imagery for the site.

Improved Grassland (B.4)

The proposed development site supports this habitat on the Lifford side within the hare coursing grounds and near the southern and eastern margins of the Strabane side of the study area. The improved grassland areas located on the Lifford side of the study area are cut for silage annually and are otherwise used for hare coursing. Those located on the Strabane side are used for silage harvesting and low intensity grazing. Plant species composition comprise the usual suite of grasses and herbs associated with this habitat such as perennial rye grass (*Lolium perenne*), red fescue (*Festuca rubra*), Yorkshire fog (*Holcus lanatus*), creeping thistle (*Cirsium arvense*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*) and broadleaved dock (*Rumex obtusifolius*).

The improved grassland fields located near the southern boundary of the Strabane side of the study area are slightly poorer draining and consequently support timothy, floating sweet grass (local), marsh foxtail and common rush, in addition to the species previously listed.

Amenity Grassland (J.1.2)

This is associated with the Lifford Celtic soccer pitch located on the Lifford side of the study area between the hare coursing grounds and the flood embankment of the River Foyle. This is a routinely maintained grassland habitat comprising red fescue (*Festuca rubra*), white clover (Trifolium repens) and red clover (*Trifolium pratense*).

Marshy Grassland (B.5)

This habitat is located on the Strabane side of the study area beyond the south-eastern boundary and norther boundary bordering the dirt path that runs along the eastern boundary. This is a common rush dominated wet grassland in addition to Yorkshire fog (*Holcus lanatus*), greater bird's foot trefoil (*Lotus pedunculatus*), common bent (*Agrostis capillaris*), meadow vetchling (*Lathyrus pratensis*), common sorrel (*Rumex acetosa*) and spreading grey willow (*Salix cinerea*) shrubs. The south-eastern corner of this wet grassland habitat, located beyond

the north-west boundary on the Strabane Side, adjoins a line of Japanese knotweed (*Fallopia japonica*) plants, which are fringing an access track located immediately east of this habitat.

Marshy grassland with recolonised spoil mounds (B.5)

The habitat is located on the Strabane side of the site just beyond the eastern boundary within the central area below of the B.5 habitat, (see Appendix: VI). This habitat exhibits the same features and species present as those outlined in habitat B.5, however, there are several old spoil mounds located towards the north-eastern corner of this habitat. These mounds have become to be recolonised by ruderal vegetation species such as common nettle (*Urtica dioica*) and dicotyledons sp.

Improved Marshy Agricultural Grassland (B.5)

The habitat is located on the Strabane side of the side just beyond the eastern boundary in the most southern area below B.5, (see Appendix: VI). This habitat exhibits some of the same features as the rest of the B.5 habitat area, however, due to historical intensive agricultural use many of the species present in the previous two habitats are not present here. The area is dominated by bright green swards of perennial ryegrass (*Lolium perenne*) and crested dog's-tail (*Cynosurus cristatus*) with scattered clumps of white clover (*Trifolium repens*) and sorrel (*Rumex acetosa*). Grazing is still carried out in this area due to the observed presence of a small number of cattle and/or goats.

Native species Rich Hedge and Treeline Boundaries (J.2.3.1)

Treelines are located on both sides of the study area. Treelines line the improved grassland areas used for hare coursing on the Lifford side of the study area. The westernmost areas of the Lifford side supports maturing lines of Sitka spruce (*Picea sitchensis*) trees, in addition to occasional sycamore and elder. Another treeline in this area supports sycamore (*Acer pseudoplatanus*), ash, grey willow (*Salix cinerea*), alder (*Alnus glutinosa*), dog rose (*Rosa canina*), broom (*Cytisus scoparius*), gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus* agg.)

Treelines located on the Strabane side of the study area line the pastoral fields and comprise ash, sycamore (*Acer pseudoplatanus*), elder, hawthorn and grey willow.

Unimproved Neutral Grassland with Continuous Scrub (B.2.1/A.2.1)

Scrub is very localised within the study area and occurs along the riverbank margins on the Lifford side, in addition to another small area near the north-eastern boundary, where it occurs in mosaic with dry meadows and grassy verge habitat. Plant species composition included bramble (*Rubus fruticosus* agg.), willow and gorse (*Ulex europaeus*). Invasive species such as Himalayan balsam and Giant hogweed were also observed growing in this area along the riverbanks.

Mesotropic Running Water (G.2.2)

This habitat relates to the River Finn and River Foyle which separates the Lifford and Strabane sides of the study area. Instream or emergent aquatics were not evident. The fringes of the river comprise reed and large sedge swamp establishing on areas of accumulated aggregates and alluvium. This habitat is described in further detail below.

Marginal Vegetation (F.2.1)

This habitat is located on the margins of the River Foyle and has established on areas of accumulated alluvium and flood deposited aggregate and detritus. Plant species composition includes reed canary grass, marsh ragwort (*Senecio aquaticus*), broadleaved dock (Rumex obtusifolius), angelica (*Angelica sylvestris*), meadowsweet (*Filipendula ulmaria*), water forget-me-not (*Myosotis scorpioides*), water mint (*Mentha aquatica*), marsh marigold (*Caltha palustris*), creeping buttercup (*Ranunculus repens*), common valerian (*Valeriana officinalis*), redshank (*Persicaria maculosa*) and amphibious bistort (*Persicaria amphibia*). These habitats where they occur along the fringes of the River Foyle support occasional to frequent occurrences of Himalayan balsam (*Impatiens glandulifera*).

Unimpacted Neutral Grassland (B.2.1)

This is characteristic habitat along the margins of the river body, typically along the embankment areas and walkways set back from the riparian and riverbank margins on the Strabane side of the site. Plant species includes false oat grass (*Arrhenatherum elatius*), field horsetail (*Equisetum arvense*), bramble, cleavers (*Galium aparine*), bush vetch (*Vicia sepium*), meadowsweet, nettle (*Urtica dioica*), lesser stitchwort (*Stellaria graminea*), cock's-foot

(*Dactylis glomerata*), sweet vernal grass (*Anthoxanthum odoratum*), meadow vetchling (*Lathyrus pratensis*) and ribwort plantain (*Plantago lanceolata*).

Broad Leaved Plantation Woodland (A.1.1.2)

A small pocket of mixed broadleaved woodland occurs on the northernmost boundary of the Lifford section. This is a young woodland with ash, sycamore and grey willow in the canopy layer and hawthorn and elder in the canopy and shrub layers. The ground layer remains underdeveloped and supports localised abundances of bramble, with ivy (*Hedera hibernica*), male fern (*Dryopteris filis-mas*) and locally abundant Himalayan balsam (*Impatiens glandulifera*). Wetter parts of the ground layer exhibit the absence of bramble and the emergence of common rush (*Juncus effusus*), remote sedge (*Carex remota*), creeping buttercup and broad buckler fern (*Dryopteris dilatata*).

Coniferous Plantation Woodland (A.1.2.2)

This woodland habitat is located immediately south of the mixed broadleaved woodland described above. This woodland supports fir, cypress and spruce trees, planted for cover ca. 50 years ago. This woodland supports elder and common privet in the understorey (locally frequent), in addition to ivy, and broad buckler fern in the ground layer.

Semi-Natural Broadleaved Woodland (A.1.1.1)

The Strabane side of the study area supports a large are of fen carr type woodland that has developed on impounded wetland areas to create a wet woodland area proneto seasonal flooding. Water levels within the woodland ground layer fluctuate seasonally but are almost all waterlogged or are submerged for large parts of the year. The woodland canopy is dominated by grey willow (*Salix cinerea*) trees and shrubs with occasional alder (*Alnus glutinosa*). The woodland is heavily shaded and in places densely crowded by close growing grey willow trees. Area of open water or waterlogged soils are often spanned horizontally by the limbs and boles of willow trees. Ground layer species are localised and not abundant and include water horsetail (Equisetum fluviatile), tufted hair grass (Deschampsia cespitosa), reed canary grass, marsh bedstraw (*Galium palustre*) and meadowsweet. Himalayan balsam is located throughout the woodland understorey possibly spread through the rising and falling flood waters of the nearby River Finn.

Buildings (J.3.6)

This habitat includes the existing buildings within the study area such as the viewing stand small shed/storage structure on the Lifford side.

Bare Ground (ED2)

Access leading into the site's interior on both sides, (Lifford and Strabane), of the site with the Lifford side's bare ground entrance road running parallel to the riverbank until it reaches the entrance to the hare coursing ground. On the Strabane side the entrance consists of an old concrete area which becomes a path that runs parallel to the eastern boundary before curving around to the riverbank in the northern area of the site. the old concreted area located on the Strabane side has been abandoned in recent years and has witnessed the proliferation of ruderal plant species including cat's ear (*Hypochaeris radicata*), herb Robert (*Geranium robertianum*), spear thistle (*Cirsium vulgare*), red fescue (*Festuca rubra*), white clover (*Trifolium repens*), mouse-ear chickweed (*Cerastium fontanum*), smooth hawk's-beard (*Crepis capillaris*), black medick (*Medicago lupulina*), common sow thistle (*Sonchus oleraceus*), field horsetail (*Equisetum arvense*), tufted vetch (*Vicia cracca*), greater plantain (*Plantago major*), lesser burdock (*Arctium minus*), hedge mustard, perforate St. John's wort (*Hypericum perforatum*), colt's-foot (*Tussilago farfara*) and American willowherb (*Epilobium ciliatum*).

Eutrophic standing water (G.1.1)

This habitat is located within the northern area of the Strabane side of the site and is a moderate sized pond dating back to 1907 of standing water separated from the larger wet woodland area treelines set on raised ground bordering the Nancy Burn storm drain system. This habitat is highly eutrophic experiencing a large algal bloom at the time of survey with little other vegetative growth. Several small clumps of bull rush (*Typha angustifolia*) was observed growing along its western bank.

4.11 Fauna

The Previous study, carried out by Delichon Ecology, highlighted the presence and activity of several fauna species such as otter, badger, bats and birds.

Bats

Habitats present on the site i.e. tree lines are known to support roosting bats, similarly hedgerows with trees on site are also likely to support foraging and commuting bats as well as wooded areas are known to support foraging, roosting and commuting bats. The Lifford side of the site consists primarily of open grassland with few potential sites suitable for bat roosting. However, there are two tree lines along the Lifford side's western boundary which would support commuting and foraging bats. There are also two small structures on the Lifford side, a small, shed storage unit as well as a sport viewing stand which may offer roosting and foraging potential for local bat species.

On the Strabane side an extensive area of wet woodland has been identified which would provide high potential for roosting, foraging and commuting bats within the area. Several trees were also identified along the eastern boundary of the Strabane side of the site exhibiting potential features such as ivy growth on the main stems of trees.

Previous bat surveys carried out by Declichon Ecology recorded bat activity and species present through passive bat surveys carried out by walking transects, (see Appendix II).

Badger

A systematic search was conducted to identify evidence of badger activity within the site and 25 meters beyond the site boundary. Mammal trails were identified throughout the entirety of the site. These were followed and revealed that on the Lifford side of the site an old presumable abandoned badger sett was located just beyond the northern boundary of the site on the Lifford side within an area of coniferous woodland. On the Strabane side there is evidence of greater badger activity with a greater number of mammals trails throughout the site. Following of these trails revealed a large badger sett located towards the western boundary of the Strabane side of the site located within the side of the historical railway embankment.

Previous badger surveys carried out by Declichon Ecology recorded the presence of badgers and identified sett locations on site, (see Appendix III).

Otter

The entire site and 30m beyond the site were systematically examined for otter activity; this included spraints, tracks, feeding sites, holts and couches. The search results indicated that otter activity and presence was high throughout the site and along the banks of the River Foyle, however, no holts were found onsite or within 30m of the site.

Previous otter surveys carried out by Declichon Ecology recorded he presence of otters on site identifying prints and feed remains along with sightings of otters in the area, (see Appendix III).

Nesting Birds

Grassland and scrub provide breeding opportunities for a range of birds. During site walkovers, various species were observed visually, however most data was gathered through singing male behaviour. Table 8 lists all species encountered during site walkovers.

Table 9: Avian fauna

Date	Species	Latin	BOCCI
10/05/21	Great tit	*Parus major*	GREEN
	Blackbird	*Turdus merula*	GREEN
	Wren	*Troglodytes troglodytes*	GREEN
	Robin	*Erithacus rubecula*	GREEN
	Magpie	*Pica pica*	GREEN
	Rook	*Corvus frugilegus*	GREEN
	Jackdaw	*Coloeus monedula*	GREEN
	Raven	*Corvus corax*	GREEN
	Swallow	*Hirundo rustica*	AMBER
	Wood Pigeon	*Columba palumbus*	GREEN
	Buzzard	*Buteo buteo*	AMBER

Amphibians

A search for pools and suitable habitat was conducted to establish the potential for smooth newts occurring on site as well as the immediate area. No suitable habitat was located for smooth newts on the Lifford side of the site while the Strabane side of the site contains extensive areas of flooded wet woodland and wet grassland areas which may provide suitable habitat, as well as ample dense vegetation which would provide suitable refuge and

hibernaculum. It is recommended that further investigations are carried out in order to determine the presence and abundance of smooth newts in the area.

Other mammals

Mammal trails were prevalent throughout the site, after finding definitive evidence that the trails are due to the presence and activity of badgers and otters throughout the site. Some are also attributed to rabbits and foxes as evidence of these species have also been found, the site is accessible by the public and members of the public have been observed walking the area with their dogs which will also have attributed certain trails. However, No other signs of mammals including Irish hare, pine marten, red squirrel or hedgehogs were observed during the site visit.

Other protected or priority species

No other priority species of plants, invertebrates and reptiles were observed on site during the May 2021 field visit.

Invasive Species

Extensive invasive non-native was observed throughout the main body of the site and along the perimeters as well as along the banks of the River Foyle on both the Lifford and Strabane side of the site. Japanese knoteweed, (*Fallopia japonica*), and Himalayan balsam, (*Impatiens glandulifera*), are prevalent throughout the Strabane area of the site and have become densely overgrown throughout. Giant hogweed, (*Heracleum mantegazzianum*), is present in both the Lifford and Strabane side of the site but is primarily located towards the banks of the River Foyle.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Species Records

A Preliminary Ecological Appraisal, also known as an Extended Phase 1 habitat Survey, was undertaken, to provide information to accompany a planning application for the proposed Riverine Scheme for Lifford and Strabane.

The site area is not located within any International designated sites or SLNC's, however, the site is located on the banks of the River Foyle and Tributaries SAC and ASSI this raises concerns on the potential impacts to aquatic species and habitats due to the proposed

natures of the development which includes abridge structure. There are also 15 other international and national designated sites within 15km of the proposed development site. However, due to set back distances and the nature of the proposed development there are no concerns to these other designations. There are no local wildlife sites located within the proposed development site, however, Strabane quarry is located 0.8km from the site boundary. There are also another 7 wildlife sites located within 5km of the proposed development site but again, are of no concern due to their setback distance and nature of the proposal.

There is a hydrological linkage between the site and the wider surrounding area due to its location on the banks of the River Foyle ASSI and SAC which leads into nearby river systems such as the River Finn and the Mourne River. A detailed suitable surface water management plan (SWMP) detailed within the CEMP and where possible a 10m buffer between the waterway and any construction should be implemented in order to reduce the potential impacts of the proposed works for site development.

The data search from CEDaR identifies various species protected under Schedule 1 Part 1, Schedule 5 and Schedule 8 Part 1 of the Wildlife Order (NI) and the Habitat regulations (NI). 132 records were identified within a 2km radius of the proposed site, several were identified outside the 2km radius, however, no records were identified within the proposed site boundary. Those mentioned within the Wildlife (NI) order 1985 are listed in Table 5.

Other species recorded within 2km of the site were listed as Northern Ireland Priority Species (NIPS), red or amber listed birds of conservation concern within Ireland. There were also some notable plant species which are red listed as threatened, recorded within 2km of the site. A full species list can be found in Appendix I.

Records of rare, protected and invasive species of flora and fauna from the hectad supporting the study area was obtained from the National Biodiversity Data Centre (NBDC) online database. 94 records were returned for the 10x10km hectad H39 which encompasses the proposed Riverine Scheme site.

The data search from the National Biodiversity Data Centre of rare, protected and invasive species of flora and fauna yielded 84 results from a 10x10km hectad supporting the proposed

development site. The National Parks and Wildlife Services for protected species yielded 15 results. However, no records were identified within the proposed site boundary.

5.2 Potential Impacts & Mitigation

Bats

Woodland areas, trees, hedgerows and riverine habitats are of importance to many bat species and can provide suitable areas for foraging and roosting as well as providing safe corridors for bats to commute to other foraging and roosting habitats in the wider area. Due to the abundance of suitable habitat for bats a preliminary ground roost potential survey should be undertaken following best practice guidance produced by the Bat Conservation Trust (Collins 2016). The Bat Roost Potential Survey (BRP) is used to identify potential bat roosts which are likely to be affected by site development and determine whether specialist bat surveys are required for works to proceed.

Evidence that these potential roosting features are currently occupied or previously used by bats would include staining and/or bat droppings, urine staining, as well as bats. These signs should recorded wherever they were present. The presence of cobwebs, rainwater and general detritus within the features should also recorded as these indicate that PRFs are likely to be unsuitable.

It is in the ecologist's opinion that tree maintenance work should be avoided if possible; however if required, further surveys will be needed. It is recommended that a light management plan be implemented to help reduce the potential impact on roosting, foraging or commuting bats within the area that may continue to use the trees that are not designated for felling during and after the development's completion.

Birds

Trees, hedgerows and scrub are of importance to breeding and nesting birds. Similarly, the marshy grassland provides suitable breeding habitat for waders. Removal of hedgerows, trees, scrub along with the grassland vegetation during the breeding season will negatively impact upon nesting birds during the breeding season. This is in direct violation of the Irish Wildlife Act 1976 (as amended), the EU Habitats Directive of the Bern convention via the European Communities (Birds and Natural Habitats Regulations 2011 (S. I. No. 477 of 2011)

under which it is an offence. Any scrub clearance should be kept to a minimum and undertaken outside of the breeding season (1st March – 31st August).

Due to proposed site activities including the felling and clearance of trees and other vegetation to allow for proposed site activities, it is recommended that breeding bird surveys be carried out in order to determine presence and abundance of bird species as well as to determine their use of the site and its value as a nesting ground. Breeding bird, non-breeding bird and vantage point surveys have already been carried out by the previous project ecologist Eamonn Delaney from Delichon Ecology. It should also be noted that should clearance of trees/or scrub during the breeding season be required, this must be undertaken under the supervision of a qualified ecologist and appropriate surveys undertaken prior to any scrub clearance i.e. pre-clearance nest inspection/breeding bird survey, this is also true for trees recommended for felling.

Any vegetation which is removed/chipped prior to the bird breeding season should be removed from the site completely, in order to prevent birds along with other species using stored debris a nesting/resting sites.

Newts

No newts were located on site; however, extensive areas of suitable habitat were located in the form of a man-made pond located in the northern area of the Strabane side of the site as well as the extensive wet woodland area within the Strabane side's central area. Newts are listed Schedule 5 of the Wildlife Act, 1976 and Appendix III of the Convention on the Conservation of European Wildlife and Natural Habitats (The Bern Convention). Under the Order it is an offence to intentionally or recklessly kill, injure or take a newt; or intentionally or recklessly damage or destroy, or obstruct access to, any structure or place that newts use for shelter or protection. There is the potential that site activities during the project's lifespan could negatively impact this area should it be occupied by breeding newts. A SWMP is recommended to be put in place to help reduce the potential risk of spills impacting the water quality and the suitability for this field for suspected breeding newts. It is also recommended that newt surveys are carried out to further determine the presence of newts and further investigate the suitability for newts on the Strabane side of the proposed site.

Otters

The development is considered to impact on otters as survey results indicated that otters are present both on site and within the wider area with high levels of activity along the banks of the River Foyle. While no holts were found during the initial site walk over further surveys are required to determine otter activity levels and to determine if any holts are present within the area. Additional native planting should occur along the bank. This will facilitate foraging, connectivity and commuting of otters while also providing cover and improving overall biodiversity to mitigate potential losses due to the schemes proposed works.

Badger

The development is considered to impact on badgers as the initial site walkover has confirmed the presence of a badger sett located on the Strabane side of the proposed scheme site. Further badger surveys are recommended in order to fully map out the located sett and determine the presence of other annex/subsidiary setts along with determining the badger's activity throughout the site. The badger sett located on the Lifford side will also require further surveying to fully map it out and determine if this is still active. Suitable mitigation and management plans in relation to the badgers and their setts will be required due to proposed works for this scheme.

Aquatics and Marine

Further investigation into the impacts of the proposed development on the riverine habitats is recommended. The River Foyle runs through the centre of the proposed site and proposed site operations include the construction of a small bridge structure. The River Foyle is an important passage during the salmon run for Atlantic salmon allowing them to travel to other water courses and tributaries from the Ocean and as such the potential impacts will need to be assessed. Due to time constraints an in-depth desk study is recommended in order to determine potential impacts and provide suitable mitigation.

Collision Risk Assessment

The River Foyle operates as an avifauna commuting corridor, as identified by Eamon Delaney of Delichon Ecology. As such a collision risk assessment has been requested due to the proposition of incorporating a single span bridge structure into the Riverine Scheme in order to determine the potential risk of wild birds colliding with the structure while using this corridor.

5.3 Conclusion

Extensive regions of invasive Japanese knotweed, Himalayan balsam and giant hogweed have been identified through the site on both the Lifford and Strabane sides of the site. It is recommended that an invasive species management plan is developed promptly in accordance with NIEA guidelines to control and eradicate the invasive species to prevent further spread.

Evidence of protected species found throughout the site along with extensive records from several sources indicating the site's surrounding area offers suitable habitat for a number of protected/priority species. The site itself is considered to be of high value for species such as bats and birds with confirmed evidence of badgers and otters present on site. Due to the proposed works for the scheme, it is recommended that further survey work be carried out for badgers, bats, newts and birds in order to assess site activity and to produce suitable mitigation is implemented, with best practise used throughout.

Report Prepared By: -	**Reviewed By: -**
Ryan Boyle BSc (Hons), MSc	**Emily Taylor BSc (Hons)**
Consultant Ecologist	**Graduate Ecologist**

6.0 REFERENCES

CIEEM (2017) Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester

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National Parks and Wildlife Service. Legislation. On-line. Available at: https://www.npws.ie/legislation

FIGURES

Figure 3. Old concrete area at site entrance on Strabane side

Figure 4. Eutrophic water body northern area of Strabane side

Figure 5. Dense wet woodland area on Strabane side

Figure 6. Overview of grassland on Lifford side

Figure 7. Riverine habitat on Strabane side

Figure 8. View of Lifford Banks from Strabane side

Figure 9. Overview of Riverine habitat at proposed bridge location

Figure 10. Overgrown eastern boundary with Himalayan balsam

Figure 11. Entrance to wet woodland area on Strabane side

Figure 12. Overview of Lifford Sides hare coursing ground in its northern area

Figure 13. Flooded interior of Strabane side's wet woodland area

Figure 14. Old shed storage structure on Lifford side

Figure 15. Old hare coursing sports viewing stand on the Lifford side

APPENDICIES

River Foyle

Marsh

Wetland

SUDs

Overhead Electric Lines

Park Road

Barnhill Road

Existing Water Level +(2.00)

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road influences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

N

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of the items in the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Ghoirtha Báin
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · ZO · XX · DR · LA · 102 · P00

Project Number: 1383

Status code & Description: PLANNING

LEGEND

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- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

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- **Vehicular Upstand Kerb** — 125mm upstand. Pre Cast Concrete
- **Vehicular Flush Kerb** — Pre Cast Concrete
- **Pin Kerb** — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

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4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	15.02.21	Issued for planning	DM
P02	17.03.21	Issued for planning	DM

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

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Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: LIFFORD LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	ZO	XX	DR	LA	101	DRAFT

Project Number: 1383
Status code & Description: PLANNING

Appendix III: CEDaR species records

Taxon Common Name	Event Date	Sample Spatial Reference	All Designations - Short Names
Peltigera canina	12/05/1988	H358990	
Peltigera canina	25/05/1988	H358990	
Giant Fescue	04/05/2005	H358982	
Ribwort Plantain	04/05/2005	H358982	
Polypody	04/05/2005	H358982	
Common Ragwort	04/05/2005	H358982	
Bluebell	04/05/2005	H358982	WACA-Sch8
Elder	04/05/2005	H358982	FEP-001
False-Brome	04/05/2005	H358982	
Blackthorn	04/05/2005	H358982	FEP-001
Alder	04/05/2005	H358982	FEP-001
Meadowsweet	04/05/2005	H358982	
Dotted Thyme-moss	04/05/2005	H358982	
Festuca rubra sens. lat.	04/05/2005	H358982	
Meadow Buttercup	04/05/2005	H358982	
Creeping Bent	04/05/2005	H358982	
Hart's-tongue Thyme-moss	04/05/2005	H358982	
Meadow Foxtail	04/05/2005	H358982	
Greater Stitchwort	04/05/2005	H358982	
Hart's-Tongue	04/05/2005	H358982	
Broad Buckler-Fern	04/05/2005	H358982	
Wood Anemone	04/05/2005	H358982	
Common Striated Feather-moss	04/05/2005	H358982	
Wood-Sorrel	04/05/2005	H358982	RedList_ENG_post2001-NT
Bramble	04/05/2005	H358982	
Bugle	04/05/2005	H358982	
Soft Shield-Fern	04/05/2005	H358982	
Broad-Leaved Dock	04/05/2005	H358982	
Common Male Fern	04/05/2005	H358982	
Goat Willow	04/05/2005	H358982	FEP-001
Crested Dog's-Tail	04/05/2005	H358982	
Marsh Marigold	04/05/2005	H358982	
Horse-Chestnut	04/05/2005	H358982	
Hairy Brome	04/05/2005	H358982	
Hart's-tongue Thyme-moss	05/05/2005	H358989	
Opposite-Leaved Golden-Saxifrage	05/05/2005	H358989	
Guelder-Rose	05/05/2005	H358989	FEP-001
Ash	05/05/2005	H358989	FEP-001
Common Feather-moss	05/05/2005	H358989	

Common Sorrel	05/05/2005	H358989	
Shining Hookeria	05/05/2005	H358989	
Common Ragwort	05/05/2005	H358989	
Barren Strawberry	05/05/2005	H358989	
Enchanter's-Nightshade	05/05/2005	H358989	
Common Mouse-Ear	05/05/2005	H358989	
Bracken	05/05/2005	H358989	
Bugle	05/05/2005	H358989	
Yellow Pimpernel	05/05/2005	H358989	
Wood Fescue	05/05/2005	H358989	
Herb-Robert	05/05/2005	H358989	
Herb Bennet	05/05/2005	H358989	
Hairy Brome	05/05/2005	H358989	
Greater Tussock-Sedge	05/05/2005	H358989	
Primrose	05/05/2005	H358989	W(NI)O-Sch8_part2
Elder	05/05/2005	H358989	FEP-001
False Oat-Grass	05/05/2005	H358989	
Polypody	05/05/2005	H358989	
Waved Silk-moss	05/05/2005	H358989	
Dog Rose	05/05/2005	H358989	FEP-001
Meadowsweet	05/05/2005	H358989	
Cat's-Ear	05/05/2005	H358989	
Heath Bedstraw	05/05/2005	H358989	
Tufted Hair-Grass	05/05/2005	H358989	
Broad Buckler-Fern	05/05/2005	H351987	
Meadow Foxtail	05/05/2005	H351987	
Pedunculate Oak	05/05/2005	H351987	FEP-001
Hairy Wood-Rush	05/05/2005	H351987	
Common Ragwort	05/05/2005	H351987	
Cleavers	05/05/2005	H351987	
Wood-Sedge	05/05/2005	H351987	
Navelwort	05/05/2005	H351987	
Yellow Pimpernel	05/05/2005	H351987	
Greater Stitchwort	05/05/2005	H351987	
Wood Speedwell	05/05/2005	H351987	
Common Male Fern	05/05/2005	H351987	
Wood Melick	05/05/2005	H351987	
Pignut	05/05/2005	H354990	
Crack Willow	05/05/2005	H354990	FEP-001
Common Bent	05/05/2005	H354990	
Yorkshire-Fog	05/05/2005	H354990	
Rosebay Willowherb	05/05/2005	H354990	
Brooklime	05/05/2005	H354990	
Gorse	05/05/2005	H354990	FEP-001

Opposite-Leaved Golden-Saxifrage	05/05/2005	H354990	
False Oat-Grass	05/05/2005	H354990	
Remote Sedge	05/05/2005	H354990	
Herb Bennet	05/05/2005	H354990	
Swan's-neck Thyme-moss	05/05/2005	H354990	
Common Feather-moss	05/05/2005	H354990	
Hawthorn	05/05/2005	H354990	FEP-001
Pedunculate Oak	05/05/2005	H354990	FEP-001
Primrose	05/05/2005	H354990	W(NI)O-Sch8_part2
Norway Spruce	05/05/2005	H354990	
Herb-Robert	05/05/2005	H354990	
Wood Anemone	05/05/2005	H354990	
Blackthorn	05/05/2005	H354990	FEP-001
Broad Buckler-Fern	05/05/2005	H354990	
Ash	05/05/2005	H354990	FEP-001
Cat's-Ear	05/05/2005	H354990	
Creeping Bent	05/05/2005	H354990	
Barren Strawberry	05/05/2005	H354990	
Lady Fern	05/05/2005	H354990	
Common Mouse-Ear	05/05/2005	H358993	
Red Campion	05/05/2005	H358993	
Common Chickweed	05/05/2005	H358993	
Fox-tail Feather-moss	05/05/2005	H358993	
Big Shaggy-moss	05/05/2005	H358993	
Rowan	05/05/2005	H358993	FEP-001
Wood-Sedge	05/05/2005	H358993	
Smooth-Stalked Sedge	05/05/2005	H358993	
Greater Stitchwort	05/05/2005	H358993	
Wych Elm	05/05/2005	H358993	FEP-001
Bush Vetch	05/05/2005	H358993	
Wild Cherry	05/05/2005	H358993	FEP-001
Lesser Stitchwort	05/05/2005	H358993	
Herb-Robert	05/05/2005	H358993	
Soft Shield-Fern	05/05/2005	H358993	
Bifid Crestwort	05/05/2005	H358993	
Hard Fern	05/05/2005	H358993	
Cladonia chlorophaea	07/08/2002	H359990	
Enterographa crassa	07/08/2002	H359990	
Lepraria incana	07/08/2002	H359990	
Amandinea punctata	07/08/2002	H359990	

Ramalina farinacea	07/08/2002	H359990	
Script Lichen	07/08/2002	H359990	
Ionaspis lacustris	07/08/2002	H359990	
Parmotrema perlatum	07/08/2002	H359990	
Anisomeridium biforme	07/08/2002	H359990	
Candle-Snuff Fungus	07/08/2002	H359990	
Hazel Woodwart	07/08/2002	H359990	
Lecanora expallens	07/08/2002	H359990	
Lecidella elaeochroma	07/08/2002	H359990	
Pertusaria leioplaca	07/08/2002	H359990	
Peltigera membranacea	07/08/2002	H359990	
Peltigera praetextata	07/08/2002	H359990	
Arthonia radiata	07/08/2002	H359990	
Buellia disciformis	07/08/2002	H359990	
Netted Shield Lichen	07/08/2002	H359990	
Usnea cornuta	07/08/2002	H359990	
Graphina anguina	07/08/2002	H359990	
Lecanora chlarotera	07/08/2002	H359990	
Lepraria lobificans	07/08/2002	H359990	
Arthonia punctiformis	07/08/2002	H359990	
Oak Moss	07/08/2002	H359990	
Pertusaria pertusa	07/08/2002	H359990	
Ramalina fastigiata	07/08/2002	H359990	
Hysterium pulicare	07/08/2002	H359990	
Opegrapha vulgata	07/08/2002	H359990	
Arthonia cinnabarina	07/08/2002	H359990	
Leparia incana agg	07/08/2002	H359990	
Melanelia subaurifera	07/08/2002	H359990	
Opegrapha atra	07/08/2002	H359990	
Pyrenula macrospora	07/08/2002	H359990	
Gorse	04/05/2005	H358982	FEP-001
Lady Fern	04/05/2005	H358982	
Ivy	04/05/2005	H358982	
Hawthorn	04/05/2005	H358982	FEP-001
Bilberry	04/05/2005	H358982	
Bracken	04/05/2005	H358982	
Wych Elm	04/05/2005	H358982	FEP-001
Wild Angelica	04/05/2005	H358982	
Soft Rush	04/05/2005	H358982	

Common Tamarisk-moss	04/05/2005	H358982	
Wild Cherry	04/05/2005	H358982	FEP-001
Sanicle	04/05/2005	H358982	RedList_ENG_post2001-NT
Scaly Male Fern	04/05/2005	H358982	
Guelder-Rose	04/05/2005	H358982	FEP-001
Hard Fern	04/05/2005	H358982	
Common Sorrel	04/05/2005	H358982	
Yellow Iris	04/05/2005	H358982	
Swan's-neck Thyme-moss	04/05/2005	H358982	
Great Wood-Rush	04/05/2005	H358982	
Eared Willow	04/05/2005	H358982	FEP-001
Yorkshire-Fog	04/05/2005	H358982	
Pedunculate Oak	04/05/2005	H358982	FEP-001
Cow Parsley	04/05/2005	H358982	
Tutsan	04/05/2005	H358982	
Hazel	04/05/2005	H358982	FEP-001
Raspberry	04/05/2005	H358982	
Ash	04/05/2005	H358982	FEP-001
Meadow Foxtail	05/05/2005	H358989	
Pignut	05/05/2005	H358989	
Common Bent	05/05/2005	H358989	
Wild Cherry	05/05/2005	H358989	FEP-001
Gorse	05/05/2005	H358989	FEP-001
Navelwort	05/05/2005	H358989	
Broad-Leaved Willowherb	05/05/2005	H358989	
Cow Parsley	05/05/2005	H358989	
Creeping Buttercup	05/05/2005	H358989	
Wood-Sedge	05/05/2005	H358989	
Wood Speedwell	05/05/2005	H358989	
Nipplewort	05/05/2005	H358989	
Foxglove	05/05/2005	H358989	
Bush Vetch	05/05/2005	H358989	
Woodruff	05/05/2005	H358989	
Remote Sedge	05/05/2005	H358989	
Thyme-Leaved Speedwell	05/05/2005	H358989	
Common Dog-Violet	05/05/2005	H358989	
Lesser Celandine	05/05/2005	H358989	
Pill Sedge	05/05/2005	H358989	
Hart's-Tongue	05/05/2005	H358989	
Bluebell	05/05/2005	H358989	WACA-Sch8
Rough Meadow-Grass	05/05/2005	H358989	
Swan's-neck Thyme-moss	05/05/2005	H358989	
Sycamore	05/05/2005	H351987	

Germander Speedwell	05/05/2005	H351987	
Rowan	05/05/2005	H351987	FEP-001
Heath Speedwell	05/05/2005	H351987	RedList_ENG_post2001-NT
Honeysuckle	05/05/2005	H351987	
Pignut	05/05/2005	H351987	
Common Chickweed	05/05/2005	H351987	
Bracken	05/05/2005	H351987	
Common Dog-Violet	05/05/2005	H351987	
Hazel	05/05/2005	H351987	FEP-001
Barren Strawberry	05/05/2005	H351987	
Hypnum cupressiforme	05/05/2005	H351987	
Bramble	05/05/2005	H351987	
Thyme-Leaved Speedwell	05/05/2005	H351987	
Common Bent	05/05/2005	H351987	
Elegant Silk-moss	05/05/2005	H351987	
Lesser Spearwort	05/05/2005	H354990	RedList_ENG_post2001-VU
Beech	05/05/2005	H354990	FEP-001
Dotted Thyme-moss	05/05/2005	H354990	
Bugle	05/05/2005	H354990	
Wavy Bitter-Cress	05/05/2005	H354990	
Broad-Leaved Willowherb	05/05/2005	H354990	
Bush Vetch	05/05/2005	H354990	
Honeysuckle	05/05/2005	H354990	
Common Dog-Violet	05/05/2005	H354990	
Water Figwort	05/05/2005	H354990	
Sycamore	05/05/2005	H354990	
Great Wood-Rush	05/05/2005	H354990	
Common Marsh-Bedstraw	05/05/2005	H354990	
Nipplewort	05/05/2005	H354990	
Cleavers	05/05/2005	H354990	
English Elm	05/05/2005	H354990	FEP-001
Shining Hookeria	05/05/2005	H354990	
Ash	05/05/2005	H358993	FEP-001
Heath Speedwell	05/05/2005	H358993	RedList_ENG_post2001-NT
Great Wood-Rush	05/05/2005	H358993	
Bluebell	05/05/2005	H358993	WACA-Sch8
Meadow Foxtail	05/05/2005	H358993	
Selfheal	05/05/2005	H358993	
Wood-Sorrel	05/05/2005	H358993	RedList_ENG_post2001-NT
Bracken	05/05/2005	H358993	
Tufted Hair-Grass	05/05/2005	H358993	
Opposite-Leaved Golden-Saxifrage	05/05/2005	H358993	

Scaly Male Fern	05/05/2005	H358993	
Hart's-Tongue	05/05/2005	H358993	
Sweet Chestnut	05/05/2005	H358993	
Herb Bennet	05/05/2005	H358993	
Wild Angelica	05/05/2005	H358993	
Bilberry	05/05/2005	H358993	
Pill Sedge	05/05/2005	H358993	
Lesser Celandine	05/05/2005	H358993	
Pedunculate Oak	05/05/2005	H358993	FEP-001
Common Bent	05/05/2005	H358993	
Primrose	05/05/2005	H358993	W(NI)O-Sch8_part2
Bramble	05/05/2005	H358993	
Broom	05/05/2005	H358993	FEP-001
Bugle	05/05/2005	H358993	
False Oat-Grass	05/05/2005	H358993	
Enchanter's-Nightshade	05/05/2005	H358993	
Pendulus Sedge	05/05/2005	H358993	
Gorse	05/05/2005	H358993	FEP-001
Holly	05/05/2005	H358993	FEP-001
Dog Rose	05/05/2005	H358993	FEP-001
Wood Speedwell	05/05/2005	H358993	
Heather	05/05/2005	H358993	RedList_ENG_post2001-NT
English Elm	05/05/2005	H358993	FEP-001
Death's Head Hawk-Moth	21/09/1956	H3497	
Striped Hawk-Moth	April 1985	C30	
Muslin Footman	1993	H39	
Peppered Moth	1993	H39	
Poplar Hawk-Moth	1993	H39	
Light Emerald	1993	H39	
Burnished Brass	1993	H39	
Buff Arches	1993	H39	
Buff Ermine	1993	H39	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Brown Silver-Line	1993	H39	
Common Heath	1993	H39	
Common Wave	1993	H39	
Double Square-Spot	1993	H39	
Double Dart	1993	H39	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Single-Dotted Wave	1993	H39	
Dark Arches	1993	H39	
Frizzled Pincushion	28/04/1993	H3497	
Welsh Poppy	June 2001	H344982	NS-excludes
Borage	23/09/2002	H328971	
Bitter-Vetch	23/09/2002	H345998	RedList_ENG_post2001-NT

Amphibious Bistort	23/09/2002	C3400	
Yellow-Rattle	23/09/2002	C3400	
Slender Rush	23/09/2002	C346002	
Goldenrod	23/09/2002	H3398	RedList_ENG_post2001-NT
Green Alkanet	23/09/2002	H3398	
Tomato	23/09/2002	H3398	
Slender Rush	23/09/2002	H3398	
Petty Spurge	23/09/2002	H336985	ECCITES-B
Alsike Clover	23/09/2002	H336986	
Perfoliate Pondweed	23/09/2002	H339987	
Black Medick	22/06/2003	H339981	
Common Poppy	19/08/2003	H338977	
Pellitory-Of-The-Wall	16/04/2005	H348973	
Strawberry Snail	01/03/1992	H358993	
Brown Snail	01/03/1992	H358993	NIPS
Copse Snail	01/03/1992	H358993	NIPS
Brown Lipped Snail	01/03/1992	H358993	
Smooth Glass Snail	01/03/1992	H358993	
Common Chrysalis Snail	01/03/1992	H358993	
Clear Glass Snail	01/03/1992	H358993	
English Chrysalis Snail	01/03/1992	H358993	NIPS
Short-toothed Herald Snail	01/03/1992	H358993	
Southern Bracket	01/03/1992	H358995	
Deroceras invadens	01/03/1992	H358995	
Candle-Snuff Fungus	01/03/1992	H358995	
Common Striped Woodlouse	01/03/1992	H358995	
Dusky Slug	01/03/1992	H358995	
Great Black Slug	01/03/1992	H358995	RedList_GB_post2001-DD
Rounded Snail	01/03/1992	H358995	
Green Cellar Slug	01/03/1992	H358995	
Garlic Mustard	1950 - 1959	H3497	
Lady's-Mantle	1950 - 1959	H3497	
Rough Hawk's-Beard	1950 - 1959	H3497	
Pale Sedge	1950 - 1959	H3497	
Hard Shield-Fern	1950 - 1959	H3497	
Marsh Cudweed	1950 - 1959	H3497	
Short-Fruited Willowherb	1950 - 1959	H3497	
Corn Mint	1950 - 1959	H3497	RedList_ENG_post2001-NT, Scottish_Biodiversity_List
Field Forget-Me-Not	1950 - 1959	H3497	

Square-Stalked St. John's-Wort	1950 - 1959	H3497	
Pendulus Sedge	1950 - 1959	H3497	
Harebell	1950 - 1959	H3497	RedList_ENG_post2001-NT
Water Purslane	1950 - 1959	H3497	
Broad-Leaved Ragwort	1950 - 1959	H3498	
Slender St. John's-Wort	1950 - 1951	H3497	
Hoary Willowherb	12/05/1988	H358990	
Water Horsetail	12/05/1988	H358990	
Wavy Bitter-Cress	12/05/1988	H358990	
Water Mint	12/05/1988	H358990	
Enchanter's-Nightshade	12/05/1988	H358990	
Common Sorrel	12/05/1988	H358990	
Barren Strawberry	12/05/1988	H358990	
Hedge Woundwort	12/05/1988	H358990	
Primrose	12/05/1988	H358990	W(NI)O-Sch8_part2
Creeping Soft-Grass	12/05/1988	H358990	
Hazel	12/05/1988	H358990	FEP-001
Raspberry	12/05/1988	H358990	
Yorkshire-Fog	12/05/1988	H358990	
Hairy Brome	12/05/1988	H358990	
Slender St. John's-Wort	12/05/1988	H358990	
Early-Purple Orchid	12/05/1988	H358990	ECCITES-B
Holly	12/05/1988	H358990	FEP-001
Yellow Iris	12/05/1988	H358990	
Thyme-Leaved Speedwell	12/05/1988	H358990	
Wood Fescue	12/05/1988	H358990	
Polypody	12/05/1988	H358990	
Ash	12/05/1988	H358990	FEP-001
Great Wood-Rush	12/05/1988	H358990	
Bog Stitchwort	12/05/1988	H358990	
Blackthorn	12/05/1988	H358990	FEP-001
Wild Angelica	12/05/1988	H358990	
Creeping Buttercup	12/05/1988	H358990	
Spear Thistle	12/05/1988	H358990	
Common Male Fern	12/05/1988	H358990	
Greater Stitchwort	12/05/1988	H358990	
Daisy	12/05/1988	H358990	
Common Ragwort	12/05/1988	H358990	
Ash	12/05/1988	H358990	FEP-001
Herb-Robert	12/05/1988	H358990	
Germander Speedwell	12/05/1988	H358990	
Wood Speedwell	25/05/1988	H358990	

Opposite-Leaved Golden-Saxifrage	25/05/1988	H358990	
Honeysuckle	25/05/1988	H358990	
Rough Meadow-Grass	25/05/1988	H358990	
Meadowsweet	25/05/1988	H358990	
Great Wood-Rush	25/05/1988	H358990	
Opposite-Leaved Golden-Saxifrage	25/05/1988	H358990	
Ivy	25/05/1988	H358990	
Hedge Woundwort	25/05/1988	H358990	
Hawthorn	25/05/1988	H358990	FEP-001
Wood-Sorrel	25/05/1988	H358990	RedList_ENG_post2001-NT
Common Dog-Violet	25/05/1988	H358990	
Broad Buckler-Fern	25/05/1988	H358990	
Hart's-Tongue	May 1993	H358990	
Elmis aenea	1991	H339980	
Oulimnius tuberculatus	1991	H339980	
Irish Stoat	18/03/1998	H39	Bern-A3
Fox	11/07/1998	H343985	
Fox	03/09/1998	H342987	
Fox	05/05/2000	H347988	
Red Squirrel	1995	H359986	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Mistle Thrush	12/05/1988	H358990	Bird-Red, BirdsDir-A2.2
Chiffchaff	12/05/1988	H358990	
Willow Warbler	12/05/1988	H358990	Bird-Amber
Raven	12/05/1988	H358990	
Rook	12/05/1988	H358990	BirdsDir-A2.2
Woodpigeon	12/05/1988	H358990	BirdsDir-A2.1
Chaffinch	12/05/1988	H358990	
Blackbird	12/05/1988	H358990	BirdsDir-A2.2
Yellowhammer	12/05/1988	H358990	BAP-2007, Bern-A2, Bird-Red, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Goldcrest	12/05/1988	H358990	Bern-A2

Wren	12/05/1988	H358990	Bern-A2
Magpie	12/05/1988	H358990	BirdsDir-A2.2
Bay Willow	1973	C30	FEP-001
Greater Celandine	1987 - 1999	H355996	Scottish_Biodiversity_List
Toothwort	1987 - 1999	H359985	
Willow	1988	H39	FEP-001
Italian Rye-Grass	1981	H358980	
Greater Tussock-Sedge	1981	H358980	
Snowberry	1981	H358994	
Woodruff	1981	H358994	
Eyebright	September 2006	C3500	
Marsh Foxtail	September 2006	C3500	
Carnation Sedge	September 2006	C3500	
Yellow Loosestrife	September 2006	C3500	
Large-Flowered Hemp-Nettle	September 2006	C3500	FEP-007_tab3, RedList_ENG_post2001-VU, RedList_GB_post2001-VU, Scottish_Biodiversity_List, Wales_NERC_S.42
Sycamore	September 2006	C3500	
Tall Fescue	September 2006	C3500	
Common Orache	September 2006	C3500	
Silver Hair-Grass	11/10/2008	H3597	
Guelder-Rose	1987 - 1999	C30	FEP-001
Heath Bedstraw	1987 - 1999	C3500	
Common Orache	1987 - 1999	C3500	
Herb Bennet	1987 - 1999	C3500	
Cross-Leaved Heath	1987 - 1999	C3500	RedList_ENG_post2001-NT
Black Bindweed	1987 - 1999	C3500	Scottish_Biodiversity_List
Wood Dock	1987 - 1999	C3500	
Timothy	1987 - 1999	C3500	
Carnation Sedge	1987 - 1999	C3500	
Meadow Buttercup	1987 - 1999	C3500	
Wild Oat	1987 - 1999	C3500	
Corn Spurrey	1987 - 1999	C3500	RedList_ENG_post2001-VU, RedList_GB_post2001-VU
Tormentil	1987 - 1999	C3500	RedList_ENG_post2001-NT
Trailing St. John's-Wort	1987 - 1999	C3500	
Cuckooflower	1987 - 1999	C3500	
Heath Groundsel	1987 - 1999	C3500	
Bog Myrtle	1987 - 1999	C3500	RedList_ENG_post2001-NT
Slender St. John's-Wort	1987 - 1999	C3500	
Greater Stitchwort	1987 - 1999	C3500	
Wood White	1993	H39	BAP-2007, England_NERC_S.41, NIPS, RedList_GB_post2001-EN, WACA-Sch5_sect9.5a,

			Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Large White	1993	H39	
Small Heath	1993	H39	BAP-2007, England_NERC_S.41, NIPS, RedList_GB_post2001-NT, Scottish_Biodiversity_List, Wales_NERC_S.42
Small Tortoiseshell	1993	H39	
Orange Tip	1993	H39	
Green-Veined White	1993	H39	
Green Hairstreak	1993	C30	
Small Tortoiseshell	1993	C30	
Ringlet	1993	C30	
Orange Tip	1993	C30	
Meadow Brown	1993	C30	
Large Heath	1993	C30	BAP-2007, England_NERC_S.41, NIPS, RedList_GB_post2001-VU, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.5a, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Speckled Wood	11/05/1993	H358986	
Orange Tip	11/05/1993	H358989	
Green-Veined White	11/05/1993	H358989	
Orange Tip	21/05/1993	H358989	
Large White	21/05/1993	H358989	
Clouded Border	1993	H39	
Magpie Moth	1993	H39	
Clouded Magpie	1993	H39	
Green Carpet	1993	H39	
Twin-spot Carpet	1993	H39	
Flame Shoulder	1993	H39	
Common Carpet	1993	H39	
Fan-Foot	1993	H39	
Grey Dagger	1993	H39	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Silver-ground Carpet	1993	H39	
Lilac Beauty	1993	H39	
Beautiful Golden Y	1993	H39	
White Ermine	1993	H39	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Small Fan-Foot	1993	H39	
Large Emerald	1993	H39	
Emperor	1993	C30	

Clouded Magpie	1993	H39	
Ash-Grey Slug	01/03/1992	H358989	NIPS
New Zealand Flatworm	01/03/1992	H358989	
Tawny Soil Slug	01/03/1992	H358989	
English Chrysalis Snail	01/03/1992	H358989	NIPS
Winter Semi-slug	01/03/1992	H358989	
Arion (Carinarion) circumscriptus	01/03/1992	H358989	
Deroceras invadens	01/03/1992	H358989	
Rayed Glass Snail	01/03/1992	H358989	
Marsh Slug	01/03/1992	H358989	
Columella edentula seg.	01/03/1992	H358989	
Budapest Keeled Slug	01/03/1992	H358989	
Great Black Slug	01/03/1992	H358989	RedList_GB_post2001-DD
Common Garden Slug	01/03/1992	H358991	
Netted Slug	01/03/1992	H358991	
Scarlet Elf Cup	01/03/1992	H358991	Scottish_Biodiversity_List
Hazel Woodwart	01/03/1992	H358991	
Columella edentula seg.	01/03/1992	H358991	
White Stonecrop	Unknown	C30	
Hart's-Tongue	Unknown	H358995	
Lemon-Scented Fern	Unknown	H358995	
Hard Fern	Unknown	H358995	
Hay-Scented Buckler-Fern	Unknown	H358995	
Royal Fern	Unknown	H3598	
Lemon-Scented Fern	Unknown	H3599	
Bristle Oat	1975	H39	
Wild Oat	1975	H39	
Rosebay Willowherb	1981	H358980	
Hairy Brome	1981	H358980	
Early Hair-Grass	1981	H358980	
Lady's-Mantle	1981	H358980	
Pendulus Sedge	1981	H358980	
Hard Shield-Fern	1981	H358980	
Wavy Hair-Grass	1981	H358980	
Square-Stalked St. John's-Wort	1981	H358980	
Sweet Chestnut	12/05/1988	H358990	
Wood Speedwell	12/05/1988	H358990	

Scaly Male Fern	12/05/1988	H358990	
Lady Fern	12/05/1988	H358990	
Rowan	12/05/1988	H358990	FEP-001
Herb-Robert	12/05/1988	H358990	
Herb Bennet	12/05/1988	H358990	
Marsh Marigold	12/05/1988	H358990	
Ribwort Plantain	12/05/1988	H358990	
Broad-Leaved Willowherb	12/05/1988	H358990	
Bracken	12/05/1988	H358990	
Sessile Oak	12/05/1988	H358990	FEP-001
Guelder-Rose	12/05/1988	H358990	FEP-001
Sweet Vernal Grass	12/05/1988	H358990	
Ivy	12/05/1988	H358990	
Red Campion	12/05/1988	H358990	
Pignut	12/05/1988	H358990	
Wood Anemone	12/05/1988	H358990	
Common Bent	12/05/1988	H358990	
Hard Fern	12/05/1988	H358990	
False-Brome	12/05/1988	H358990	
Sycamore	12/05/1988	H358990	
Downy Birch	12/05/1988	H358990	FEP-001
Meadowsweet	12/05/1988	H358990	
Hard Fern	12/05/1988	H358990	
Common Nettle	12/05/1988	H358990	
Common Dog-Violet	12/05/1988	H358990	
Opposite-Leaved Golden-Saxifrage	12/05/1988	H358990	
Downy Birch	12/05/1988	H358990	FEP-001
Enchanter's-Nightshade	12/05/1988	H358990	
Common Figwort	12/05/1988	H358990	
Herb Bennet	12/05/1988	H358990	
Ivy	12/05/1988	H358990	
Meadowsweet	25/05/1988	H358990	
Lesser Celandine	25/05/1988	H358990	
Bugle	25/05/1988	H358990	
Rough Meadow-Grass	25/05/1988	H358990	
Bramble	25/05/1988	H358990	
Hazel	25/05/1988	H358990	FEP-001
Great Wood-Rush	25/05/1988	H358990	
Hard Fern	25/05/1988	H358990	
Wood-Sedge	25/05/1988	H358990	
Downy Birch	25/05/1988	H358990	FEP-001
Wood-Sorrel	25/05/1988	H358990	RedList_ENG_post2001-NT
Herb Bennet	25/05/1988	H358990	
Wood Anemone	25/05/1988	H358990	
Lady Fern	25/05/1988	H358990	

Opposite-Leaved Golden-Saxifrage	25/05/1988	H358990	
Ivy	25/05/1988	H358990	
Lesser Celandine	25/05/1988	H358990	
White Beak-Sedge	1987 - 1999	C3500	RedList_ENG_post2001-NT
Marsh Thistle	1987 - 1999	C3500	
Jointed Rush	1987 - 1999	C3500	
Heath Wood-Rush	1987 - 1999	C3500	
Gooseberry	1987 - 1999	C3500	FEP-001
Toad Rush	1987 - 1999	C3500	
Colt's-Foot	1987 - 1999	C3500	
Thale Cress	1987 - 1999	C3500	
Equal-Leaved Knotgrass	1987 - 1999	C3500	
Bog Asphodel	1987 - 1999	C3500	
Broad Buckler-Fern	1987 - 1999	C3500	
Pendulus Sedge	1987 - 1999	C3500	
Common Hemp-Nettle	1987 - 1999	C3500	
Rowan	1987 - 1999	C3500	FEP-001
Sheep's Sorrel agg.	1987 - 1999	C3500	
Eyebright	1987 - 1999	C3500	
Feverfew	1987 - 1999	C3500	
Opium Poppy	1987 - 1999	C3500	
Sessile Oak	1987 - 1999	C3500	FEP-001
Common Poppy	1987 - 1999	C3500	
Annual Meadow-Grass	1987 - 1999	C3500	
Field Horsetail	1987 - 1999	C3500	
Downy Birch	1987 - 1999	C3500	FEP-001
Red Campion	1987 - 1999	C3500	
Round-Leaved Sundew	1987 - 1999	C3500	RedList_ENG_post2001-NT
Marsh Pennywort	1987 - 1999	C3500	RedList_ENG_post2001-NT
Eared Willow	1987 - 1999	C3500	FEP-001
Thyme-Leaved Speedwell	1987 - 1999	C3500	
Hazel	1987 - 1999	C3500	FEP-001
Tall Fescue	1987 - 1999	C3500	
Sherard's Downy-Rose	1987 - 1999	C3500	FEP-001
Hare's-Tail Cottongrass	1987 - 1999	C3500	
Creeping Forget-Me-Not	1987 - 1999	C3500	
Devil's-Bit Scabious	1987 - 1999	C3500	RedList_ENG_post2001-NT
Purple Moor-Grass	1987 - 1999	C3500	
Common Ramping-Fumitory	1987 - 1999	C3500	

Deergrass	1987 - 1999	C3500	
Upright Hedge-Parsley	1987 - 1999	C3500	
Yellow-Rattle	1987 - 1999	C3500	
Eyebright	1987 - 1999	C3500	RedList_ENG_post2001-VU, RedList_GB_post2001-DD
Monkeyflower	1987 - 1999	C3500	
Perennial Sow-Thistle	1987 - 1999	C3500	
Prickly Sow-Thistle	1987 - 1999	C3500	
Common Bird's-Foot-Trefoil	1987 - 1999	C3500	
Perennial Rye-Grass	1987 - 1999	C3500	
Tufted Hair-Grass	1987 - 1999	C3500	
Foxglove	1987 - 1999	C3500	
Snowberry	1987 - 1999	C3500	
Floating Sweet-Grass	1987 - 1999	C3500	
Perforate St. John's-Wort	1987 - 1999	C3500	
Cat's-Ear	1987 - 1999	C3500	
Nipplewort	1987 - 1999	C3500	
Meadow Vetchling	1987 - 1999	C3500	
Yorkshire-Fog	1987 - 1999	C3500	
Selfheal	1987 - 1999	C3500	
Common Sorrel	1987 - 1999	C3500	
Bottle Sedge	1987 - 1999	C3500	
Bulrush	1987 - 1999	C3500	
Common Chickweed	1987 - 1999	C3500	
Rosebay Willowherb	1987 - 1999	C3500	
Cock's-Foot	1987 - 1999	C3500	
Wild Privet	1987 - 1999	C3500	FEP-001
Trailing Tormentil	1987 - 1999	C3500	
Silverweed	1987 - 1999	C3500	
Marsh Yellow-Cress	1987 - 1999	C3500	
Brooklime	1987 - 1999	C3500	
Broom	1987 - 1999	C3500	FEP-001
Purple-Loosestrife	1987 - 1999	C3500	
Pineapple Weed	1987 - 1999	C3500	
White Stonecrop	1987 - 1999	C3500	
Gorse	1987 - 1999	C3500	FEP-001
Spleenwort	1987 - 1999	C3500	
Lady Fern	1987 - 1999	C3500	
Red Clover	1987 - 1999	C3500	
Reed Canary-Grass	1987 - 1999	C3500	
Herb-Robert	1987 - 1999	C3500	
Scentless Mayweed	1987 - 1999	C3500	

Lesser Spearwort	1987 - 1999	C3500	RedList_ENG_post2001-VU
Procumbent Pearlwort	1987 - 1999	C3500	
Curled Pondweed	1987 - 1999	C3500	
Common Couch	1987 - 1999	C3500	
Green Hairstreak	1960 - 2000	C30	
Small Tortoiseshell	1960 - 1993	C30	
Red Admiral	1960 - 1993	C30	
Meadow Brown	1960 - 1993	C30	
Ringlet	1960 - 1993	C30	
Green-Veined White	1960 - 1993	C30	
Small Copper	1960 - 1993	C30	
Peacock	1960 - 1993	C30	
Speckled Wood	1960 - 1993	C30	
Wood White	1960 - 2008	H39	BAP-2007, England_NERC_S.41, NIPS, RedList_GB_post2001-EN, WACA-Sch5_sect9.5a, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Whooper Swan	28/10/1995	H39	Bern-A2, Bird-Amber, BirdsDir-A1, CMS_A2, CMS_AEWA-A2, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Tree Sparrow	22/11/1997	H39	BAP-2007, Bird-Red, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Black Redstart	07/04/1999	H39	Bern-A2, Bird-Red, WACA-Sch1_part1
Haller's Apple-moss	1914	H39	
Rusty Feather-moss	November 1897	H358990	
Spotty Scalewort	July 1887	H3599	
Straight-leaved Apple-moss	1883	H358990	NIPS
Grove Earwort	1882	H358990	
Yellow Starry Feather-moss	12/05/1988	H358990	
Hypnum cupressiforme	12/05/1988	H358990	
Rough-stalked Feather-moss	12/05/1988	H358990	
Hair-pointed Feather-moss	12/05/1988	H358990	
Big Shaggy-moss	12/05/1988	H358990	
Fox-tail Feather-moss	12/05/1988	H358990	

Smaller Lattice-moss	12/05/1988	H358990	
Curled Hook-moss	12/05/1988	H358990	
Bifid Crestwort	12/05/1988	H358990	
Greater Water-moss	12/05/1988	H358990	
Shining Hookeria	12/05/1988	H358990	
Lesser Pocket-moss	12/05/1988	H358990	
Greasewort	12/05/1988	H358990	
Swan's-neck Thyme-moss	12/05/1988	H358990	
Common Striated Feather-moss	12/05/1988	H358990	
Tamarisk Scalewort	12/05/1988	H358990	
Garden Daffodil	May 2000	C3500	
Hard Fern	May 2000	C3500	
Yellow Iris	May 2000	C3500	
Wood-Sorrel	May 2000	C3500	RedList_ENG_post2001-NT
Hairy Bitter-Cress	May 2000	C3500	
Wood Speedwell	May 2000	C3500	
Hogweed	May 2000	C3500	
Blinks	May 2000	C3500	
Tall Ramping-Fumitory	May 2000	C3500	FEP-007_tab3
Snowdrop	May 2000	C3500	ECCITES-B
Wood Horsetail	May 2000	C3500	
Wood Anemone	May 2000	C3500	
Lesser Celandine	May 2000	C3500	
Scaly Male Fern	May 2000	C3500	
Bluebell	May 2000	C3500	WACA-Sch8
Hydroporus striola	29/09/1936	C30	
Oreodytes sanmarki	1991	H339980	
Red Squirrel	2006	H358987	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Red Squirrel	09/03/2009	H358987	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-

			Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Common Bent	18/06/2009	H3498	
Creeping Bent	18/06/2009	H3498	
Hedge Bindweed	18/06/2009	H3498	
Hairy Sedge	18/06/2009	H3498	
Hare's-foot sedge	18/06/2009	H3498	NR-excludes, RedList_GB_post2001-NT, Scottish_Biodiversity_List
Creeping Thistle	18/06/2009	H3498	
Cock's-foot	18/06/2009	H3498	
Tufted Hair-grass	18/06/2009	H3498	
Common Couch	18/06/2009	H3498	
Field Horsetail	18/06/2009	H3498	
Red Fescue	18/06/2009	H3498	
Cleavers	18/06/2009	H3498	
Yorkshire-fog	18/06/2009	H3498	
Creeping Soft-grass	18/06/2009	H3498	
Lesser Burdock	25/06/2009	H3498	
False Oat-grass	25/06/2009	H3498	
Silver Birch	25/06/2009	H3498	FEP-001
Hedge Bindweed	25/06/2009	H3498	
Common Knapweed	25/06/2009	H3498	
Common Mouse-ear	25/06/2009	H3498	
Redshank	25/06/2009	H3498	
Rosebay Willowherb	25/06/2009	H3498	
Creeping Thistle	25/06/2009	H3498	
Dogwood	25/06/2009	H3498	FEP-001
Franchet's Cotoneaster	25/06/2009	H3498	
Hawthorn	25/06/2009	H3498	FEP-001
Montbretia	25/06/2009	H3498	
Crested Dog's-tail	25/06/2009	H3498	
Broom	25/06/2009	H3498	FEP-001
Cock's-foot	25/06/2009	H3498	
White Clover	25/06/2009	H3498	
Colt's-foot	25/06/2009	H3498	
Gorse	25/06/2009	H3498	FEP-001
Common Nettle	25/06/2009	H3498	
Common Valerian	25/06/2009	H3498	RedList_ENG_post2001-NT
Germander Speedwell	25/06/2009	H3498	

Tufted Vetch	25/06/2009	H3498	
Bush Vetch	25/06/2009	H3498	
Creeping Bent	18/06/2009	H3297	
Pointed Spear-moss	18/06/2009	H3297	
Hare's-foot sedge	18/06/2009	H3297	NR-excludes, RedList_GB_post2001-NT, Scottish_Biodiversity_List
Common Mouse-ear	18/06/2009	H3297	
Creeping Thistle	18/06/2009	H3297	
Marsh Thistle	18/06/2009	H3297	
Crested Dog's-tail	18/06/2009	H3297	
Cock's-foot	18/06/2009	H3297	
Common Couch	18/06/2009	H3297	
Swan's-neck Thyme-moss	10/03/2009	H3599	
Flat Neckera	10/03/2009	H3599	
Wood Bristle-moss	10/03/2009	H3599	
White-tipped Bristle-moss	10/03/2009	H3599	
Elegant Bristle-moss	10/03/2009	H3599	
Craven Featherwort	10/03/2009	H3599	Scottish_Biodiversity_List
Endive Pellia	10/03/2009	H3599	
Greater Featherwort	10/03/2009	H3599	
Lesser Featherwort	10/03/2009	H3599	
Dented Silk-moss	10/03/2009	H3599	
Long-beaked Water Feather-moss	10/03/2009	H3599	
Bank Haircap	10/03/2009	H3599	
Elegant Silk-moss	10/03/2009	H3599	
Even Scalewort	10/03/2009	H3599	
Dotted Thyme-moss	10/03/2009	H3599	
Clustered Feather-moss	10/03/2009	H3599	
Common Spike-rush	05/08/2009	H3498	
Great Willowherb	05/08/2009	H3498	
Water Horsetail	05/08/2009	H3498	
Crescent-cup Liverwort	05/08/2009	H3498	
Common Liverwort	05/08/2009	H3498	
Goat Willow	05/08/2009	H3498	FEP-001
Crack-willow	05/08/2009	H3498	FEP-001
Schistidium	05/08/2009	H3498	
Wild Angelica	03/08/2009	H3397	
Sedge	03/08/2009	H3397	
Smaller Lattice-moss	03/08/2009	H3397	
Common Spike-rush	03/08/2009	H3397	

Canadian Waterweed	03/08/2009	H3397	
Water Horsetail	03/08/2009	H3397	
Meadowsweet	03/08/2009	H3397	
Greater Water-moss	03/08/2009	H3397	
Indian Balsam	03/08/2009	H3397	
Crescent-cup Liverwort	03/08/2009	H3397	
Water Mint	03/08/2009	H3397	
Water Forget-me-not	03/08/2009	H3397	
Spruce's Bristle-moss	03/08/2009	H3397	NIPS, Scottish_Biodiversity_List, Wildlife (NI) Order Sch 8
Amphibious Bistort	03/08/2009	H3397	
Reed Canary-grass	03/08/2009	H3397	
Broad-leaved Pondweed	03/08/2009	H3397	
Perfoliate Pondweed	03/08/2009	H3397	
Water Dock	03/08/2009	H3397	
Willow	03/08/2009	H3397	FEP-001
Sycamore	October 2010	H3297	
Atlantic Salmon	October 2010	H3297	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Sea Trout	October 2010	H3297	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Elder	October 2010	H3297	FEP-001
Bog Moss	October 2010	H3297	HabDir-A5
Gorse	October 2010	H3297	FEP-001
Elm	October 2010	H3297	FEP-001
Common Nettle	October 2010	H3297	
Fox	October 2010	H3297	
Hawthorn	October 2010	H3396	FEP-001
Tufted Hair-Grass	October 2010	H3396	
Horsetail	October 2010	H3396	
Beech	October 2010	H3396	FEP-001
Cherry Laurel	October 2010	H3396	
Sycamore	October 2010	H3397	
Creeping Bent	October 2010	H3397	
Eel	October 2010	H3397	BAP-2007, England_NERC_S.41, NIPS, OSPAR, RedList_Global_post2001-CR, Scottish_Biodiversity_List, Wales_NERC_S.42

Creeping Buttercup	15/04/2014	H3483799106	
Lesser Celandine	15/04/2014	H3483799106	
Bramble	15/04/2014	H3483799106	
Raspberry	15/04/2014	H3483799106	
Common Sorrel	15/04/2014	H3483799106	
Willow	15/04/2014	H3483799106	FEP-001
Elder	15/04/2014	H3483799106	FEP-001
Red Campion	15/04/2014	H3483799106	
Hedge Woundwort	15/04/2014	H3483799106	
Greater Stitchwort	15/04/2014	H3483799106	
Snowberry	15/04/2014	H3483799106	
Gorse	15/04/2014	H3483799106	FEP-001
Wych Elm	15/04/2014	H3483799106	FEP-001
Navelwort	15/04/2014	H3483799106	
Common Nettle	15/04/2014	H3483799106	
Common Dog-violet	15/04/2014	H3483799106	
Soft-Brome	26/04/2011	H3299	
Long-Eared Owl	10/10/2014	H39	Bern-A2, ECCITES-A, W(NI)O-Sch1_part1
Long-Eared Owl	05/03/2014	C30	Bern-A2, ECCITES-A, W(NI)O-Sch1_part1
Rose-Coloured Starling	14/10/2013	H39	Bern-A2
Swift	09/05/2013	H39	Bird-Amber, NIPS, Scottish_Biodiversity_List
Kestrel	18/10/2013	H39	Bern-A2, Bird-Amber, CMS_A2, ECCITES-A, FEP-007_tab2, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, Wales_NERC_S.42
Buzzard	18/10/2013	H39	CMS_A2, ECCITES-A, W(NI)O-Sch1_part1
Swift	08/05/2014	H39	Bird-Amber, NIPS, Scottish_Biodiversity_List
Mesites tardii	June 1938	H3497	Notable-B
Hedge Bedstraw	02/07/2012	H335974	
Long-headed Poppy	11/08/2012	H3397	
Two-rowed Barley	14/09/2013	H3397	
Wood Anemone	30/04/2015	H3598	
Wild Angelica	30/04/2015	H3598	
Lady-fern	30/04/2015	H3598	
Hard-fern	30/04/2015	H3598	
Marsh-marigold	30/04/2015	H3598	
Greater Tussock-sedge	30/04/2015	H3598	
Remote Sedge	30/04/2015	H3598	
Wood-sedge	30/04/2015	H3598	
Sweet Chestnut	30/04/2015	H3598	

Opposite-leaved Golden-saxifrage	30/04/2015	H3598	
Enchanter's-nightshade	30/04/2015	H3598	
Pignut	30/04/2015	H3598	
Hazel	30/04/2015	H3598	FEP-001
Foxglove	30/04/2015	H3598	
Scaly Male-fern	30/04/2015	H3598	
Broad Buckler-fern	30/04/2015	H3598	
New Zealand Willowherb	30/04/2015	H3598	
Broad-leaved Willowherb	30/04/2015	H3598	
Water Horsetail	30/04/2015	H3598	
Wood Fescue	30/04/2015	H3598	
Woodruff	30/04/2015	H3598	
Herb-Robert	30/04/2015	H3598	
Wood Avens	30/04/2015	H3598	
Floating Sweet-grass	30/04/2015	H3598	
Bluebell	30/04/2015	H3598	WACA-Sch8
Tutsan	30/04/2015	H3598	
Holly	30/04/2015	H3598	FEP-001
Yellow Iris	30/04/2015	H3598	
Sharp-flowered Rush	30/04/2015	H3598	
Common Dog-violet	30/04/2015	H3598	
Lesser Periwinkle	30/04/2015	H3598	
Bush Vetch	30/04/2015	H3598	
Wood Speedwell	30/04/2015	H3598	
Ivy-leaved Speedwell	30/04/2015	H3598	
Common Mouse-ear	30/04/2015	H3599	
Sticky Mouse-ear	30/04/2015	H3599	
Rosebay Willowherb	30/04/2015	H3599	
Greater Celandine	30/04/2015	H3599	Scottish_Biodiversity_List
Spear Thistle	30/04/2015	H3599	
Hawthorn	30/04/2015	H3599	FEP-001
Broom	30/04/2015	H3599	FEP-001
Cock's-foot	30/04/2015	H3599	
Great Willowherb	30/04/2015	H3599	
Short-fruited Willowherb	30/04/2015	H3599	
Japanese Knotweed	30/04/2015	H3599	
Red Fescue	30/04/2015	H3599	
Meadowsweet	30/04/2015	H3599	
Ash	30/04/2015	H3599	FEP-001

Cleavers	30/04/2015	H3599	
Cut-leaved Crane's-bill	30/04/2015	H3599	
Hoary Willowherb	22/06/2017	H347975	
Biting Stonecrop	22/06/2017	H347975	
Fool's Parsley	22/06/2017	H348974	
Mugwort	22/06/2017	H348974	
Butterfly-bush	22/06/2017	H348974	
Red Valerian	22/06/2017	H348974	
Greater Celandine	22/06/2017	H348974	Scottish_Biodiversity_List
Fuchsia magellanica	22/06/2017	H348974	
Cut-leaved Crane's-bill	22/06/2017	H348974	
Giant Hogweed	22/06/2017	H348974	
Dame's-violet	22/06/2017	H348974	
Two-Rowed Barley	22/06/2017	H348974	
Oxeye Daisy	22/06/2017	H348974	
Field Forget-me-not	22/06/2017	H348974	
Pellitory-of-the-wall	22/06/2017	H348974	
Redshank	22/06/2017	H348974	
Stream Water-crowfoot	22/06/2017	H348974	
Flowering Currant	22/06/2017	H348974	
Osier	22/06/2017	H348974	FEP-001
Elder	22/06/2017	H348974	FEP-001
English Elm	1987 - 1999	C3500	FEP-001
Wild Pansy	1987 - 1999	C3500	FEP-007_tab3, RedList_ENG_post2001-NT, RedList_GB_post2001-NT, Scottish_Biodiversity_List
Common Sedge	1987 - 1999	C3500	
Elder	1987 - 1999	C3500	FEP-001
Blackthorn	1987 - 1999	C3500	FEP-001
Bracken	1987 - 1999	C3500	
Bog Stitchwort	1987 - 1999	C3500	
Dog Rose	1987 - 1999	C3500	FEP-001
Common Centaury	1987 - 1999	C3500	
Mouse-Ear-Hawkweed	1987 - 1999	C3500	
Common Cottongrass	1987 - 1999	C3500	RedList_ENG_post2001-VU
Opposite-Leaved Golden-Saxifrage	1987 - 1999	C3500	
Wavy Hair-Grass	1987 - 1999	C3500	
Red Bartsia	1987 - 1999	C3500	
Ivy-Leaved Crowfoot	1987 - 1999	C3500	
Autumnal Hawkbit	1987 - 1999	C3500	
Squirrel-Tail Fescue	1987 - 1999	C3500	

Spear Thistle	1987 - 1999	C3500	
Water Forget-Me-Not	1987 - 1999	C3500	
Slender Speedwell	1987 - 1999	C3500	
Montbretia	1987 - 1999	C3500	
Ivy-Leaved Toadflax	1987 - 1999	C3500	
Timothy	1987 - 1999	C3500	
Smooth Sow-Thistle	1987 - 1999	C3500	
Common Field-Speedwell	1987 - 1999	C3500	
Osier	1987 - 1999	C3500	FEP-001
Marsh Cudweed	1987 - 1999	C3500	
Marsh Cinquefoil	1987 - 1999	C3500	RedList_ENG_post2001-NT
Bramble	1987 - 1999	C3500	
Hart's-Tongue	1987 - 1999	C3500	
Water-Plantain	1987 - 1999	C3500	
Marsh Horsetail	1987 - 1999	C3500	
Cyprinidae	July 2009	H3498	
Three-Spined Stickleback	July 2009	H3498	
Gudgeon	July 2009	H3498	
Lamprey Sp.	July 2009	H3498	
Flounder	July 2009	H3498	
Atlantic Salmon	July 2009	H3498	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Sea Trout	July 2009	H3498	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Stone Loach	July 2009	H3397	
Cyprinidae	July 2009	H3397	
Three-Spined Stickleback	July 2009	H3397	
Lamprey Sp.	July 2009	H3397	
Flounder	July 2009	H3397	
Atlantic Salmon	July 2009	H3397	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Water-Starwort	04/08/2009	H3498	
Smaller Lattice-moss	04/08/2009	H3498	
Willowherb	04/08/2009	H3498	
Japanese Knotweed	04/08/2009	H3498	

Physcia tenella subsp. tenella	27/01/2010	H352969	
Porpidia tuberculosa	27/01/2010	H352969	
Protoblastenia rupestris	27/01/2010	H352969	
Punctelia subrudecta	27/01/2010	H352969	
Ramalina farinacea	27/01/2010	H352969	
Rhizocarpon geographicum	27/01/2010	H352969	
Rhizocarpon petraeum	27/01/2010	H352969	
Rhizocarpon reductum	27/01/2010	H352969	
Trapelia glebulosa	27/01/2010	H352969	
Trapelia placodioides	27/01/2010	H352969	
Verrucaria nigrescens f. nigrescens	27/01/2010	H352969	
Common Orange Lichen	27/01/2010	H352969	
Jay	06/03/2011	H39	BirdsDir-A2.2
Sparrowhawk	06/03/2011	H39	CMS_A2, ECCITES-A, W(NI)O-Sch1_part1
Buzzard	06/03/2011	H39	CMS_A2, ECCITES-A, W(NI)O-Sch1_part1
Badger	March 2012	H355992	Bern-A3, Protection_of_Badgers_Act_1992, W(NI)O-Sch5, Wildlife (NI) Order Sch 5
Shining Flapwort	1950	H39	
Otter	June 2009	H3498	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Otter	June 2009	H3398	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-

			Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Ash	25/05/1988	H358990	FEP-001
Ash	25/05/1988	H358990	FEP-001
Goldilocks Buttercup	25/05/1988	H358990	
Meadowsweet	25/05/1988	H358990	
Honeysuckle	25/05/1988	H358990	
Soft Shield-Fern	25/05/1988	H358990	
Great Wood-Rush	25/05/1988	H358990	
Lady Fern	25/05/1988	H358990	
Hazel	25/05/1988	H358990	FEP-001
Honeysuckle	25/05/1988	H358990	
Bluebell	25/05/1988	H358990	WACA-Sch8
Wavy Bitter-Cress	25/05/1988	H358990	
Soft Shield-Fern	25/05/1988	H358990	
Wood Speedwell	25/05/1988	H358990	
Scaly Male Fern	25/05/1988	H358990	
Holly	25/05/1988	H358990	FEP-001
Primrose	25/05/1988	H358990	W(NI)O-Sch8_part2
Ash	25/05/1988	H358990	FEP-001
Common Smoothcap	12/05/1988	H358990	
Common Pincushion	12/05/1988	H358990	
Common Tamarisk-moss	12/05/1988	H358990	
Slender Mouse-tail Moss	12/05/1988	H358990	
Common Feather-moss	12/05/1988	H358990	
Notched Pouchwort	12/05/1988	H358990	
Hart's-tongue Thyme-moss	12/05/1988	H358990	
Fox-tail Feather-moss	12/05/1988	H358990	
Common Feather-moss	12/05/1988	H358990	
Common Striated Feather-moss	12/05/1988	H358990	
Common Tamarisk-moss	12/05/1988	H358990	
Hair-pointed Feather-moss	12/05/1988	H358990	
Hart's-tongue Thyme-moss	12/05/1988	H358990	
Fox-tail Feather-moss	12/05/1988	H358990	

Slender Mouse-tail Moss	12/05/1988	H358990	
Common Feather-moss	25/05/1988	H358990	
Common Striated Feather-moss	25/05/1988	H358990	
Fox-tail Feather-moss	25/05/1988	H358990	
Little Shaggy-moss	10/03/2009	H3599	
Springy Turf-moss	10/03/2009	H3599	
Elder	10/03/2009	H3599	FEP-001
Fox-tail Feather-moss	10/03/2009	H3599	
Common Tamarisk-moss	10/03/2009	H3599	
Bruch's Pincushion	10/03/2009	H3599	
Frizzled Pincushion	10/03/2009	H3599	
Eel	July 2009	H3398	BAP-2007, England_NERC_S.41, NIPS, OSPAR, RedList_Global_post2001-CR, Scottish_Biodiversity_List, Wales_NERC_S.42
Stone Loach	July 2009	H3398	
Cyprinidae	July 2009	H3398	
Three-Spined Stickleback	July 2009	H3398	
Gudgeon	July 2009	H3398	
Lamprey Sp.	July 2009	H3398	
Flounder	July 2009	H3398	
Atlantic Salmon	July 2009	H3398	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Sea Trout	July 2009	H3398	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Eel	July 2009	H3498	BAP-2007, England_NERC_S.41, NIPS, OSPAR, RedList_Global_post2001-CR, Scottish_Biodiversity_List, Wales_NERC_S.42
Stone Loach	July 2009	H3498	
Lesser Stitchwort	1987 - 1999	C3500	
Wall-Rue	1987 - 1999	C3500	
Great Wood-Rush	1987 - 1999	C3500	
Smooth Meadow-Grass	1987 - 1999	C3500	

Cut-Leaved Crane's-Bill	1987 - 1999	C3500	
Common Mouse-Ear	1987 - 1999	C3500	
Shepherd's-Purse	1987 - 1999	C3500	
Broad-Leaved Pondweed	1987 - 1999	C3500	
Holly	1987 - 1999	C3500	FEP-001
Hemlock Water-Dropwort	1987 - 1999	C3500	
White Clover	1987 - 1999	C3500	
Bulbous Rush	1987 - 1999	C3500	
Ivy	1987 - 1999	C3500	
Charlock	1987 - 1999	C3500	Scottish_Biodiversity_List
Hedge Woundwort	1987 - 1999	C3500	
Red Fescue	1987 - 1999	C3500	
Spiraea salicifolia agg.	1987 - 1999	C3500	
Black Currant	1987 - 1999	C3500	
Fuchsia magellanica	1987 - 1999	C3500	
Japanese Rose	1987 - 1999	C3500	FEP-001
Dusky Crane's-Bill	1987 - 1999	C3500	
Rock Stonecrop	1987 - 1999	C3500	NS-excludes
Spear Mint	1987 - 1999	H342981	
Sand Spurrey	1987 - 1999	H342995	
Large-Flowered Hemp-Nettle	1987 - 1999	H343994	FEP-007_tab3, RedList_ENG_post2001-VU, RedList_GB_post2001-VU, Scottish_Biodiversity_List, Wales_NERC_S.42
Meadow Foxtail	1987 - 1999	H39	
Narrow-Leaved Vetch	1987 - 1999	H358978	
Meadow Foxtail	1970 - 1986	H39	
Guelder-Rose	1970 - 1986	H39	FEP-001
Common Milkwort	1970 - 1986	H39	
Wood Meadow-Grass	1970 - 1986	H39	
Red Valerian	1970 - 1986	H39	
Dichodontium pellucidum	1950 - 1958	C30	
Ulota crispa	1950 - 1958	C30	
Alpine Water-moss	1950 - 1958	C30	
Swan's-neck Thyme-moss	1950 - 1958	C30	
Shining Flapwort	1950 - 1958	C30	
Haller's Apple-moss	- 1914	H358990	
Smaller Lattice-moss	- 1953	H39	

Compact Bog-moss	Unknown	H358990	HabDir-A5
Chalk Comb-moss	27/04/1985	H358990	
Flat Neckera	27/04/1985	H358990	
Fox-tail Feather-moss	27/04/1985	H358990	
Hair-pointed Feather-moss	27/04/1985	H358990	
Ulota crispa	27/04/1985	H358990	
Swan's-neck Thyme-moss	27/04/1985	H358990	
Delicate Germanderwort	27/04/1985	H358990	
Juicy Silk-moss	27/04/1985	H358990	
Hart's-tongue Thyme-moss	25/05/1988	H358990	
Rough-stalked Feather-moss	25/05/1988	H358990	
Swan's-neck Thyme-moss	25/05/1988	H358990	
Bifid Crestwort	25/05/1988	H358990	
Plagiochila asplenioides	25/05/1988	H358990	
Common Feather-moss	25/05/1988	H358990	
Hypnum cupressiforme	25/05/1988	H358990	
Common Tamarisk-moss	25/05/1988	H358990	
Fox-tail Feather-moss	25/05/1988	H358990	
Common Feather-moss	25/05/1988	H358990	
Swan's-neck Thyme-moss	25/05/1988	H358990	
Common Pincushion	25/05/1988	H358990	
Hypnum cupressiforme	25/05/1988	H358990	
Common Smoothcap	25/05/1988	H358990	
Hart's-tongue Thyme-moss	25/05/1988	H358990	
Tamarisk Scalewort	25/05/1988	H358990	
Caloplaca holocarpa	27/01/2010	H352969	
Collema auriforme	27/01/2010	H352969	
Flavoparmelia caperata	27/01/2010	H352969	
Lecanora albescens	27/01/2010	H352969	
Lecanora campestris subsp. campestris	27/01/2010	H352969	

Lecanora carpinea	27/01/2010	H352969	
Lecanora chlarotera	27/01/2010	H352969	
Lecanora expallens	27/01/2010	H352969	
Lecanora polytropa	27/01/2010	H352969	
Lecidella elaeochroma f. elaeochroma	27/01/2010	H352969	
Lecidella elaeochroma f. soralifera	27/01/2010	H352969	
Lecidella stigmatea	27/01/2010	H352969	
Lepraria incana	27/01/2010	H352969	
Melanelixia subaurifera	27/01/2010	H352969	
Netted Shield Lichen	27/01/2010	H352969	
Parmotrema perlatum	27/01/2010	H352969	
Cuckooflower	25/06/2009	H3498	
Bottle Sedge	25/06/2009	H3498	
Cock's-foot	25/06/2009	H3498	
Tufted Hair-grass	25/06/2009	H3498	
Male-fern	25/06/2009	H3498	
Marsh Willowherb	25/06/2009	H3498	
Field Horsetail	25/06/2009	H3498	
Water Horsetail	25/06/2009	H3498	
Meadowsweet	25/06/2009	H3498	
Marsh-bedstraw	25/06/2009	H3498	
Floating Sweet-grass	25/06/2009	H3498	
Ivy	25/06/2009	H3498	
Yorkshire-fog	25/06/2009	H3498	
Soft-rush	25/06/2009	H3498	
Common Duckweed	25/06/2009	H3498	
Purple-loosestrife	25/06/2009	H3498	
Tufted Forget-me-not	25/06/2009	H3498	
Indian Balsam	25/06/2009	H3498	
Toad Rush	25/06/2009	H3498	
Bulbous Rush	25/06/2009	H3498	
Soft-rush	25/06/2009	H3498	
Nipplewort	25/06/2009	H3498	
Meadow Vetchling	25/06/2009	H3498	
Perennial Rye-grass	25/06/2009	H3498	
Greater Bird's-foot-trefoil	25/06/2009	H3498	
Butterbur	25/06/2009	H3498	
Reed Canary-grass	25/06/2009	H3498	
Ribwort Plantain	25/06/2009	H3498	

Greater Plantain	25/06/2009	H3498	
Rough Meadow-grass	25/06/2009	H3498	
Silverweed	25/06/2009	H3498	
Bracken	25/06/2009	H3498	
Meadow Buttercup	25/06/2009	H3498	
Red Clover	18/06/2009	H3297	
White Clover	18/06/2009	H3297	
Gorse	18/06/2009	H3297	FEP-001
Common Nettle	18/06/2009	H3297	
Bush Vetch	18/06/2009	H3297	
Atrichum undulatum var. undulatum	10/03/2009	H3599	
Rough-stalked Feather-moss	10/03/2009	H3599	
Capillary Thread-moss	10/03/2009	H3599	
Calliergon	10/03/2009	H3599	
Notched Pouchwort	10/03/2009	H3599	
Mueller's Pouchwort	10/03/2009	H3599	
St Winifrid's Moss	10/03/2009	H3599	
Hair-pointed Feather-moss	10/03/2009	H3599	
Great Scented Liverwort	10/03/2009	H3599	
Lateral Cryphaea	10/03/2009	H3599	
Transparent Fork-moss	10/03/2009	H3599	
Silky Forklet-moss	10/03/2009	H3599	
Sallow	October 2010	H3397	FEP-001
Atlantic Salmon	October 2010	H3397	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Sea Trout	October 2010	H3397	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Gorse	October 2010	H3397	FEP-001
Common Nettle	October 2010	H3397	
Cattle Egret	02/11/2012 - 11/11/2012	H39	CMS_AEWA-A2, ECCITES-A
Gannet	30/05/2011	H39	Bird-Amber, CMS_AEWA-A2
Swift	08/05/2011	H39	Bird-Amber, NIPS, Scottish_Biodiversity_List
Spotted Flycatcher	01/06/2011	H39	BAP-2007, Bern-A2, Bird-Red, CMS_A2, England_NERC_S.41,

			FEP-007_tab2, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Sycamore	15/04/2014	H3483799106	
Alder	15/04/2014	H3483799106	FEP-001
Wood Anemone	15/04/2014	H3483799106	
Hart's-tongue	15/04/2014	H3483799106	
Hard-fern	15/04/2014	H3483799106	
Wavy Bitter-cress	15/04/2014	H3483799106	
Greater Tussock-sedge	15/04/2014	H3483799106	
Opposite-leaved Golden-saxifrage	15/04/2014	H3483799106	
Brooklime	30/04/2015	H3598	
Navelwort	30/04/2015	H3598	
Gorse	30/04/2015	H3598	FEP-001
Bog Stitchwort	30/04/2015	H3598	
Greater Stitchwort	30/04/2015	H3598	
Hedge Woundwort	30/04/2015	H3598	
Red Campion	30/04/2015	H3598	
Marsh Ragwort	30/04/2015	H3598	RedList_ENG_post2001-NT
Sanicle	30/04/2015	H3598	RedList_ENG_post2001-NT
Elder	30/04/2015	H3598	FEP-001
Lesser Celandine	30/04/2015	H3598	
Meadow Buttercup	30/04/2015	H3598	
Bracken	30/04/2015	H3598	
Blackthorn	30/04/2015	H3598	FEP-001
Wild Cherry	30/04/2015	H3598	FEP-001
Primrose	30/04/2015	H3598	W(NI)O-Sch8_part2
Barren Strawberry	30/04/2015	H3598	
Curled Dock	30/04/2015	H3599	
Common Sorrel	30/04/2015	H3599	
Raspberry	30/04/2015	H3599	
Bramble	30/04/2015	H3599	
Creeping Buttercup	30/04/2015	H3599	
Cherry Laurel	30/04/2015	H3599	
Annual Meadow-grass	30/04/2015	H3599	
Greater Plantain	30/04/2015	H3599	
Ribwort Plantain	30/04/2015	H3599	
Honeysuckle	30/04/2015	H3599	
Perennial Rye-grass	30/04/2015	H3599	
Garden Solomon's-seal	30/04/2015	H355985	
Toothwort	30/04/2015	H355985	
Goldilocks Buttercup	30/04/2015	H355987	
Barn Owl	05/11/2016	H39	Bern-A2, ECCITES-A, FEP-007_tab2, NIPS,

			Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Oxeye Daisy	01/06/2016	H338977	
Common Orache	22/06/2017	H346993	
Zigzag Clover	1900	H3497	
Large-Flowered Hemp-Nettle	1897	H3497	FEP-007_tab3, RedList_ENG_post2001-VU, RedList_GB_post2001-VU, Scottish_Biodiversity_List, Wales_NERC_S.42
Toothwort	1896	H3598	
Pendulus Sedge	1896	H358980	
White Sedge	1896	H3597	
Stone Bramble	1896	H39	
Heath Cudweed	1896	H3497	NIPS, RedList_ENG_post2001-EN, RedList_GB_post2001-EN, Scottish_Biodiversity_List
Bromus x subsp. pseudothominei	1896	H3497	
Purple Ramping-Fumitory	1896	H39	BAP-2007, England_NERC_S.41, FEP-007_tab2, NI Rare & Scarce Plants , NIPS, NS-excludes, RedList_ENG_post2001-VU, Scottish_Biodiversity_List, Wales_NERC_S.42
Water Sedge	1896	H3397	
Cut-Leaved Dead-Nettle	1896	H3497	
Gipsywort	1896	H3497	
Pale Sedge	1896	H3497	
Annual Water-Starwort	1896	H3497	
Intermediate Wintergreen	1896	H3497	NI Rare & Scarce Plants , NIPS, NS-excludes, RedList_ENG_post2001-EN, RedList_GB_post2001-VU, Scottish_Biodiversity_List
Common Poppy	1896	H3497	
Upland Enchanter's-Nightshade	1981	H3598	
Danish Scurvygrass	1981	H39	
Bittersweet	1896	H3498	
Wood Millet	- 1933	H3598	
Wild Teasel	- 1898	H3398	
Wood Club-Rush	- 1898	H3399	
Water Crowfoot	- 1898	H3397	
Small Tortoiseshell	1997	C30	
Oxeye Daisy	23/10/1997	C328002	
Yellow Pimpernel	08/09/2005	C3500	
White Willow	08/09/2005	C3500	FEP-001

Water Cress	08/09/2005	C3500	
Nodding Bur-Marigold	08/09/2005	C3500	
Butterfly-Bush	08/09/2005	C3500	
Pale Persicaria	08/09/2005	C3500	
Mugwort	08/09/2005	C3500	
Remote Sedge	08/09/2005	C3500	
Long-headed Poppy	24/07/2006	H3396	
Timothy	September 2006	C3500	
Opium Poppy	September 2006	C3500	
Wood Sage	September 2006	C3500	
Smooth Meadow-Grass	September 2006	C3500	
Trailing Tormentil	September 2006	C3500	
Knotgrass agg.	September 2006	C3500	
Indian Balsam	September 2006	C3500	
Marsh Willowherb	September 2006	C3500	
Large Bird's-Foot-Trefoil	September 2006	C3500	
Fat-Hen	September 2006	C3500	
Butterfly-Bush	September 2006	C3500	
Autumnal Hawkbit	September 2006	C3500	
Creeping Bent	October 2010	H3297	
Alder	October 2010	H3297	FEP-001
Eel	October 2010	H3297	BAP-2007, England_NERC_S.41, NIPS, OSPAR, RedList_Global_post2001-CR, Scottish_Biodiversity_List, Wales_NERC_S.42
Stone Loach	October 2010	H3297	
Water-Starwort	October 2010	H3297	
Sedge	October 2010	H3297	
Creeping Thistle	October 2010	H3297	
Hazel	October 2010	H3297	FEP-001
Hawthorn	October 2010	H3297	FEP-001
Tufted Hair-Grass	October 2010	H3297	
Horsetail	October 2010	H3297	
Meadowsweet	October 2010	H3297	
Ash	October 2010	H3297	FEP-001
Three-Spined Stickleback	October 2010	H3297	
Rush	October 2010	H3297	
River Lamprey	October 2010	H3297	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Old Man's Beard	1960 - 2005	C30	

Verrucaria nigrescens f. nigrescens	1960 - 2005	H39	
Old Man's Beard	1960 - 2005	H39	
Punctelia subrudecta	1960 - 2005	H39	
Peltigera rufescens	- 1960	H39	
Peltigera horizontalis	- 1960	H39	
Cladonia squamosa	- 1960	H39	
Cladonia polydactyla var. polydactyla	- 1960	H39	
Caloplaca citrina	1960 - 2005	H39	
Otter	2015	H334983	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Otter	2006	H339980	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Otter	2011	H339980	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Otter	2006	H334983	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42

Otter	2011	H334983	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
New Zealand Flatworm	23/04/1993	H350989	
Giant Hogweed	21/06/2013	H333983	
Charlock	22/06/2017	H348974	Scottish_Biodiversity_List
Hedge Mustard	22/06/2017	H348974	
Common Comfrey	22/06/2017	H348974	
Hairy Tare	22/06/2017	H348974	
Loricera pilicornis	02/04/2013	H358989	
Pipistrelle Bat species	17/07/2018	H347970	BAP-2007, Bern-A2, Bern-A3, CMS_A2, CMS_EUROBATS-A1, England_NERC_S.41, FEP-007_tab2, HabDir-A4, HabReg-Sch2, NIPS, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Brown Hawker	14/08/2011	H34809954	
Amara (Zezea) plebeja	12/06/2014	H355984	
Pterostichus (Pseudomaseus) minor	02/04/2013	H335983	
Meadow Brown	22/06/2017	H347992	
Speckled Wood	22/06/2017	H347992	
Haplophthalmus mengei agg.	01/03/1992	H358992	
Common Shiny Woodlouse	01/03/1992	H358992	
Trichoniscus pusillus agg.	01/03/1992	H358992	
Haplophthalmus mengei agg.	01/03/1992	H358991	
Indian Balsam	01/05/2018	H34619743	
Giant Hogweed	01/05/2018	H34619743	
Smelt	14/03/2017	H33979801	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Swift	17/07/2014	H3396	Bird-Amber, NIPS, Scottish_Biodiversity_List

Swift	09/08/2014	H3396	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	18/07/2014	C3500	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	08/05/2014	H3396	Bird-Amber, NIPS, Scottish_Biodiversity_List
Opposite-Leaved Golden-Saxifrage	05/05/2005	H351987	
Common Nettle	05/05/2005	H351987	
Selfheal	05/05/2005	H351987	
Gorse	05/05/2005	H351987	FEP-001
Hawthorn	05/05/2005	H351987	FEP-001
Wood Sage	05/05/2005	H351987	
Three-Nerved Sandwort	05/05/2005	H351987	
Swan's-neck Thyme-moss	05/05/2005	H351987	
Wood Anemone	05/05/2005	H351987	
Crested Dog's-Tail	05/05/2005	H351987	
Slender St. John's-Wort	05/05/2005	H351987	
Slender Mouse-tail Moss	05/05/2005	H351987	
Cock's-Foot	05/05/2005	H351987	
Sweet Vernal Grass	05/05/2005	H351987	
Rosebay Willowherb	05/05/2005	H351987	
Bluebell	05/05/2005	H351987	WACA-Sch8
Broad-Leaved Willowherb	05/05/2005	H351987	
Creeping Buttercup	05/05/2005	H351987	
Hedge Bedstraw	1896	H3497	
English Stonecrop	1896	H3497	
Moonwort	1896	H3497	RedList_ENG_post2001-VU
Hard Shield-Fern	1896	H3497	
Dioecious Sedge	1960	H3497	
Goldenrod	1960 - 1969	H3497	RedList_ENG_post2001-NT
Woodruff	1960 - 1969	H3497	
Broad-Leaved Osier	1960 - 1969	H39	FEP-001
Celery-Leaved Buttercup	1960 - 1969	H39	
Beech Fern	1887	H358990	NI Rare & Scarce Plants
Beech Fern	1887	H3598	NI Rare & Scarce Plants
Hay-Scented Buckler-Fern	1887	H3598	
Apple	1883	H39	
Beech Fern	31/05/1878	H3599	NI Rare & Scarce Plants
Common Cow-Wheat	1878	H358990	RedList_ENG_post2001-NT

Hemlock Water-Dropwort	1957	C30	
Needle Spike-Rush	1829	H3497	RedList_ENG_post2001-NT
Stone Bramble	1820 - 1830	H3596	
Upland Enchanter's-Nightshade	- 1933	H3598	
Wood Millet	- 1933	H39	
Dioecious Sedge	- 1933	H3497	
Garlic Mustard	- 1933	H3497	
Lesser Bladderwort	- 1933	H3497	RedList_ENG_post2001-VU
Common Fumitory	- 1933	H3497	
White Ramping-Fumitory	- 1933	H3497	Scottish_Biodiversity_List
Tall Ramping-Fumitory	- 1933	H3497	FEP-007_tab3
Pellitory-Of-The-Wall	1896	H3497	
Peppermint	- 1933	H3497	
Wood Fescue	- 1868	H358980	
Great Pond-Sedge	- 1868	H3397	
Purple Ramping-Fumitory	- 1953	H39	BAP-2007, England_NERC_S.41, FEP-007_tab2, NI Rare & Scarce Plants , NIPS, NS-excludes, RedList_ENG_post2001-VU, Scottish_Biodiversity_List, Wales_NERC_S.42
Bladder-Sedge	Unknown	H3497	RedList_ENG_post2001-VU
Marsh Yellow-Cress	Unknown	H3497	
Alsike Clover	Unknown	H39	
Sea Plantain	Unknown	H39	
Brittle Bladder-Fern	Unknown	H39	
Common Cow-Wheat	1981	H358980	RedList_ENG_post2001-NT
Heath Wood-Rush	1981	H358990	
Slender Trefoil	1981	H358990	NI Rare & Scarce Plants , Scottish_Biodiversity_List
Atlantic Ivy	19/09/1983	H3497	
Navelwort	1986	H358991	
Woodruff	1986	H358994	
Toothwort	1986	H3598	
Atlantic Ivy	1988	H3497	
Primrose	28/03/1988	H358990	W(NI)O-Sch8_part2
Lesser Celandine	28/03/1988	H358990	
Opposite-Leaved Golden-Saxifrage	28/03/1988	H358990	
Marsh Hawk's-Beard	28/03/1988	H358990	
Woodruff	28/03/1988	H358990	
Sanicle	28/03/1988	H358990	RedList_ENG_post2001-NT

Bluebell	28/03/1988	H358990	WACA-Sch8
Pendulus Sedge	28/03/1988	H358990	
Ash	28/03/1988	H358990	FEP-001
Hazel	28/03/1988	H358990	FEP-001
Cat's-Ear	12/05/1988	H358990	
Elm	12/05/1988	H358990	FEP-001
Solomon's-Seal	12/05/1988	H358990	
Sanicle	12/05/1988	H358990	RedList_ENG_post2001-NT
Common Figwort	12/05/1988	H358990	
Cuckooflower	12/05/1988	H358990	
Hawthorn	12/05/1988	H358990	FEP-001
Greater Tussock-Sedge	12/05/1988	H358990	
Cow Parsley	12/05/1988	H358990	
Common Marsh-Bedstraw	12/05/1988	H358990	
Goldilocks Buttercup	12/05/1988	H358990	
Annual Meadow-Grass	12/05/1988	H358990	
Foxglove	12/05/1988	H358990	
Scaly Male Fern	12/05/1988	H358990	
Broad Buckler-Fern	12/05/1988	H358990	
Lesser Celandine	12/05/1988	H358990	
Rough Meadow-Grass	12/05/1988	H358990	
Germander Speedwell	12/05/1988	H358990	
Common Nettle	12/05/1988	H358990	
Toothwort	12/05/1988	H358990	
Bramble	12/05/1988	H358990	
Dandelion	12/05/1988	H358990	
White Clover	12/05/1988	H358990	
Common Dog-Violet	12/05/1988	H358990	
Remote Sedge	12/05/1988	H358990	
Yellow Pimpernel	12/05/1988	H358990	
Honeysuckle	12/05/1988	H358990	
Soft Rush	12/05/1988	H358990	
Bluebell	12/05/1988	H358990	WACA-Sch8
Heather	12/05/1988	H358990	RedList_ENG_post2001-NT
Navelwort	12/05/1988	H358990	
Horse-Chestnut	12/05/1988	H358990	
Marsh Hawk's-Beard	12/05/1988	H358990	
Wood-Sorrel	12/05/1988	H358990	RedList_ENG_post2001-NT
Hart's-Tongue	12/05/1988	H358990	
Broad-Leaved Dock	12/05/1988	H358990	
Pill Sedge	12/05/1988	H358990	

Floating Sweet-Grass	12/05/1988	H358990	
Willow	12/05/1988	H358990	FEP-001
Elder	12/05/1988	H358990	FEP-001
Gorse	12/05/1988	H358990	FEP-001
Pendulus Sedge	12/05/1988	H358990	
Bugle	12/05/1988	H358990	
Meadow Buttercup	12/05/1988	H358990	
Alder	12/05/1988	H358990	FEP-001
Tutsan	12/05/1988	H358990	
Soft Shield-Fern	12/05/1988	H358990	
Wood-Sedge	12/05/1988	H358990	
Opposite-Leaved Golden-Saxifrage	12/05/1988	H358990	
Cleavers	12/05/1988	H358990	
Common Bird's-Foot-Trefoil	12/05/1988	H358990	
Hairy Wood-Rush	12/05/1988	H358990	
Bush Vetch	12/05/1988	H358990	
Cock's-Foot	12/05/1988	H358990	
Lesser Celandine	12/05/1988	H358990	
Wood-Sorrel	12/05/1988	H358990	RedList_ENG_post2001-NT
Broad Buckler-Fern	12/05/1988	H358990	
Wood Speedwell	12/05/1988	H358990	
Soft Shield-Fern	12/05/1988	H358990	
Early-Purple Orchid	12/05/1988	H358990	ECCITES-B
Cleavers	12/05/1988	H358990	
Blackthorn	12/05/1988	H358990	FEP-001
Red Campion	12/05/1988	H358990	
Honeysuckle	12/05/1988	H358990	
Wood-Sedge	12/05/1988	H358990	
Bramble	12/05/1988	H358990	
Hedge Woundwort	12/05/1988	H358990	
Hairy Brome	12/05/1988	H358990	
Great Wood-Rush	12/05/1988	H358990	
Meadowsweet	12/05/1988	H358990	
Lady Fern	12/05/1988	H358990	
Holly	12/05/1988	H358990	FEP-001
Cock's-Foot	12/05/1988	H358990	
Holly	25/05/1988	H358990	FEP-001
Herb Bennet	25/05/1988	H358990	
Wood Anemone	25/05/1988	H358990	
Ivy	25/05/1988	H358990	
Herb-Robert	25/05/1988	H358990	
Soft Shield-Fern	25/05/1988	H358990	
Bugle	25/05/1988	H358990	
Scaly Male Fern	25/05/1988	H358990	
Lady Fern	25/05/1988	H358990	
Great Wood-Rush	25/05/1988	H358990	

Broad Buckler-Fern	25/05/1988	H358990	
Opposite-Leaved Golden-Saxifrage	25/05/1988	H358990	
Wood Speedwell	25/05/1988	H358990	
Enchanter's-Nightshade	25/05/1988	H358990	
Wavy Bitter-Cress	25/05/1988	H358990	
Bramble	25/05/1988	H358990	
Toothwort	28/04/1993	H358990	
Navelwort	May 1993	H358990	
Hemlock	1987 - 1999	C3500	
Marsh Marigold	1987 - 1999	C3500	
Wall Speedwell	1987 - 1999	C3500	
Creeping Buttercup	1987 - 1999	C3500	
Goat Willow	1987 - 1999	C3500	FEP-001
Sneezewort	1987 - 1999	C3500	
Cow Parsley	1987 - 1999	C3500	
Fat-Hen	1987 - 1999	C3500	
Creeping Thistle	1987 - 1999	C3500	
Wood Sage	1987 - 1999	C3500	
Lesser Trefoil	1987 - 1999	C3500	
Ground-Elder	1987 - 1999	C3500	
Lesser Burdock	1987 - 1999	C3500	
Sharp-Flowered Rush	1987 - 1999	C3500	
Groundsel	1987 - 1999	C3500	
Common Marsh-Bedstraw	1987 - 1999	C3500	
Small Pondweed	1987 - 1999	C3500	
Toad Rush agg.	1987 - 1999	C3500	
Silver Hair-Grass	1987 - 1999	C3500	
Sun Spurge	1987 - 1999	C3500	ECCITES-B, Scottish_Biodiversity_List
Polypody	1987 - 1999	C3500	
Alder	1987 - 1999	C3500	FEP-001
Ragged Robin	1987 - 1999	C3500	RedList_ENG_post2001-NT
Yellow Loosestrife	1987 - 1999	C3500	
Great Bindweed	1987 - 1999	C3500	
Common Figwort	1987 - 1999	C3500	
Marsh Willowherb	1987 - 1999	C3500	
Marsh Woundwort	1987 - 1999	C3500	
Crested Dog's-Tail	1987 - 1999	C3500	
Tufted Forget-Me-Not	1987 - 1999	C3500	
Ash	1987 - 1999	C3500	FEP-001
Red Dead-Nettle	1987 - 1999	C3500	
Barren Strawberry	1987 - 1999	C3500	
Raspberry	1987 - 1999	C3500	
Common Knapweed	1987 - 1999	C3500	

Amphibious Bistort	1987 - 1999	C3500	
Knotgrass agg.	1987 - 1999	C3500	
Hedge Mustard	1987 - 1999	C3500	
Japanese Knotweed	1987 - 1999	C3500	
Crack Willow	1987 - 1999	C3500	FEP-001
Bay Willow	1987 - 1999	C3500	FEP-001
Navelwort	1987 - 1999	C3500	
Soft Rush	1987 - 1999	C3500	
Common Bent	1987 - 1999	C3500	
Turnip	1987 - 1999	C3500	
Common Water-Starwort	1987 - 1999	C3500	
Germander Speedwell	1987 - 1999	C3500	
Common Male Fern	1987 - 1999	C3500	
Water Horsetail	1987 - 1999	C3500	
Creeping Bent	1987 - 1999	C3500	
Indian Balsam	1987 - 1999	C3500	
Dame's Violet	1987 - 1999	C3500	
Dandelion	1987 - 1999	C3500	
Meadowsweet	1987 - 1999	C3500	
Bogbean	1987 - 1999	C3500	ECCITES-D
Hawthorn	1987 - 1999	C3500	FEP-001
Rustyback	1987 - 1999	C3500	
Ribwort Plantain	1987 - 1999	C3500	
Greater Plantain	1987 - 1999	C3500	
Celery-Leaved Buttercup	1987 - 1999	C3500	
Willow	1987 - 1999	C3500	FEP-001
Russian Comfrey	1987 - 1999	C3500	
Water-Pepper	1987 - 1999	C3500	
Sycamore	1987 - 1999	C3500	
Marsh Foxtail	1987 - 1999	C3500	
Broad-Leaved Willowherb	1987 - 1999	C3500	
Large Bird's-Foot-Trefoil	1987 - 1999	C3500	
Tufted Vetch	1987 - 1999	C3500	
Red Bartsia	1987 - 1999	C3500	
Common Duckweed	1987 - 1999	C3500	
Wild Cherry	1987 - 1999	C3500	FEP-001
Curled Dock	1987 - 1999	C3500	
Velvet Bent	1987 - 1999	C3500	
False Oat-Grass	1987 - 1999	C3500	
Butterbur	1987 - 1999	C3500	
Common Nettle	1987 - 1999	C3500	
Wavy Bitter-Cress	1987 - 1999	C3500	
Smooth Hawk's-Beard	1987 - 1999	C3500	

Wild Plum	1987 - 1999	C3500	
Broad-Leaved Dock	1987 - 1999	C3500	
Common Valerian	1987 - 1999	C3500	RedList_ENG_post2001-NT
Great Mullein	1987 - 1999	C3500	
Cut-Leaved Dead-Nettle	1987 - 1999	C3500	
Common Fumitory	1987 - 1999	C3500	
Cleavers	1987 - 1999	C3500	
Redshank	1987 - 1999	C3500	
Common Ragwort	1987 - 1999	C3500	
Short-Fruited Willowherb	1987 - 1999	C3500	
Yarrow	1987 - 1999	C3500	
Wild Angelica	1987 - 1999	C3500	
Marsh Ragwort	1987 - 1999	C3500	RedList_ENG_post2001-NT
Bush Vetch	1987 - 1999	C3500	
Wood Melick	1970 - 1986	H39	
Pellitory-Of-The-Wall	1991	H344981	
Royal Fern	1991	H345993	
Narrow Buckler-Fern	1991	H347993	
Fool's Parsley	1992	H343982	
Trifid Bur-Marigold	1992	H3499	
Toothwort	1995	H358984	
Giant Fescue	1995	H358990	
Smooth-Stalked Sedge	1995	H358990	
Pendulus Sedge	1995	H358990	
Ivy-Leaved Speedwell agg.	1995	H359983	
Greater Celandine	1995	H354996	Scottish_Biodiversity_List
Red Admiral	1960 - 1993	H39	
Small Tortoiseshell	1960 - 1993	H39	
Ringlet	1960 - 1993	H39	
Speckled Wood	1960 - 1993	H39	
Large White	1960 - 1993	H39	
Orange Tip	1960 - 1993	H39	
Peacock	1960 - 1993	H39	
Common Striated Feather-moss	27/04/1985	H358990	
Big Shaggy-moss	27/04/1985	H358990	
Maidenhair Pocket-moss	27/04/1985	H358990	
Curled Hook-moss	27/04/1985	H358990	
Common Feather-moss	27/04/1985	H358990	
Frizzled Crisp-moss	27/04/1985	H358990	

Slender Mouse-tail Moss	27/04/1985	H358990	
Dotted Thyme-moss	27/04/1985	H358990	
Springy Turf-moss	27/04/1985	H358990	
Conocephalum conicum sens. lat	27/04/1985	H358990	
Common Smoothcap	27/04/1985	H358990	
Marsh Bryum	27/04/1985	H358990	
Shining Hookeria	27/04/1985	H358990	
Hypnum cupressiforme	27/04/1985	H358990	
Common Tamarisk-moss	27/04/1985	H358990	
Common Pocket-moss	27/04/1985	H358990	
Broom Fork-moss	27/04/1985	H358990	
Bank Haircap	27/04/1985	H358990	
Plagiochila asplenioides	27/04/1985	H358990	
Bifid Crestwort	25/05/1988	H358990	
Common Tamarisk-moss	25/05/1988	H358990	
Bank Haircap	25/05/1988	H358990	
Notched Pouchwort	25/05/1988	H358990	
Slender Mouse-tail Moss	25/05/1988	H358990	
Common Feather-moss	25/05/1988	H358990	
Slender Mouse-tail Moss	25/05/1988	H358990	
Hair-pointed Feather-moss	25/05/1988	H358990	
Shining Hookeria	25/05/1988	H358990	
Lesser Pocket-moss	25/05/1988	H358990	
Common Striated Feather-moss	25/05/1988	H358990	
Fox-tail Feather-moss	25/05/1988	H358990	
Common Tamarisk-moss	25/05/1988	H358990	
Plagiochila asplenioides	25/05/1988	H358990	
Puccinia umbilici	1884	H39	
Phragmidium mucronatum	1883	H39	
Sticky Mouse-Ear	May 2000	C3500	
Common Dog-Violet	May 2000	C3500	
Pignut	May 2000	C3500	

Common Pincushion	10/03/2009	H3599	
Cylindric Beard-moss	10/03/2009	H3599	
Common Striated Feather-moss	10/03/2009	H3599	
Lesser Pocket-moss	10/03/2009	H3599	
Common Pocket-moss	10/03/2009	H3599	
Dilated Scalewort	10/03/2009	H3599	
Shining Hookeria	10/03/2009	H3599	
Hypnum cupressiforme var. cupressiforme	10/03/2009	H3599	
Supine Plait-moss	10/03/2009	H3599	
Larger Mouse-tail Moss	10/03/2009	H3599	
Isothecium myosuroides var. myosuroides	10/03/2009	H3599	
Soft-rush	10/03/2009	H3599	
Common Feather-moss	10/03/2009	H3599	
Bifid Crestwort	10/03/2009	H3599	
Variable-leaved Crestwort	10/03/2009	H3599	
Crescent-cup Liverwort	10/03/2009	H3599	
Forked Veilwort	10/03/2009	H3599	
Blueish Veilwort	10/03/2009	H3599	
Meadowsweet	04/08/2009	H3498	
Greater Water-moss	04/08/2009	H3498	
Giant Hogweed	04/08/2009	H3498	
Indian Balsam	04/08/2009	H3498	
Monkeyflower	04/08/2009	H3498	
White-tipped Bristle-moss	04/08/2009	H3498	
Spruce's Bristle-moss	04/08/2009	H3498	NIPS, Scottish_Biodiversity_List, Wildlife (NI) Order Sch 8
Butterbur	04/08/2009	H3498	
Reed Canary-grass	04/08/2009	H3498	
Long-beaked Water Feather-moss	04/08/2009	H3498	
Buttercup	04/08/2009	H3498	
Willow	04/08/2009	H3498	FEP-001
Osier	04/08/2009	H3498	FEP-001
Water Screw-moss	04/08/2009	H3498	
Wild Angelica	05/08/2009	H3498	

Rough-stalked Feather-moss	05/08/2009	H3498	
Marsh-marigold	05/08/2009	H3498	
St Winifrid's Moss	05/08/2009	H3498	
Brook Lamprey	October 2010	H3297	Bern-A3, FEP-007_tab2, HabDir-A2*, Scottish_Biodiversity_List
Otter	October 2010	H3297	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Pine Marten	October 2010	H3297	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A5, HabReg-Sch4, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Badger	October 2010	H3297	Bern-A3, Protection_of_Badgers_Act_1992, W(NI)O-Sch5, Wildlife (NI) Order Sch 5
Stoat	October 2010	H3297	Bern-A3
American Mink	October 2010	H3297	
Water Forget-me-not	October 2010	H3297	
Rabbit	October 2010	H3297	
Perch	October 2010	H3297	
Sea Lamprey	October 2010	H3297	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A2*, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Reed Canary-Grass	October 2010	H3297	
Minnow	October 2010	H3297	
Blackthorn	October 2010	H3297	FEP-001
Common Frog	October 2010	H3297	Bern-A3, HabDir-A5, WACA-Sch5_sect9.5a
Creeping Buttercup	October 2010	H3297	
Bramble	October 2010	H3297	
Roach	October 2010	H3297	

Sallow	October 2010	H3297	FEP-001
Stone Loach	October 2010	H3397	
Hazel	October 2010	H3397	FEP-001
Hawthorn	October 2010	H3397	FEP-001
Tufted Hair-Grass	October 2010	H3397	
Horsetail	October 2010	H3397	
Beech	October 2010	H3397	FEP-001
Meadowsweet	October 2010	H3397	
Ash	October 2010	H3397	FEP-001
Three-Spined Stickleback	October 2010	H3397	
River Lamprey	October 2010	H3397	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Brook Lamprey	October 2010	H3397	Bern-A3, FEP-007_tab2, HabDir-A2*, Scottish_Biodiversity_List
Otter	October 2010	H3397	BAP-2007, Bern-A2, ECCITES-A, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, NIPS, RedList_Global_post2001_NT, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42
Perch	October 2010	H3397	
Sea Lamprey	October 2010	H3397	BAP-2007, Bern-A3, England_NERC_S.41, HabDir-A2*, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Reed Canary-Grass	October 2010	H3397	
Minnow	October 2010	H3397	
Cherry Laurel	October 2010	H3397	
Roach	October 2010	H3397	
Honeysuckle	05/05/2005	H358993	
Wavy Bitter-Cress	05/05/2005	H358993	
Yorkshire-Fog	05/05/2005	H358993	
Foxglove	05/05/2005	H358993	
Lady Fern	05/05/2005	H358993	
Elder	05/05/2005	H358993	FEP-001
Common Smoothcap	05/05/2005	H358993	
Meadowsweet	05/05/2005	H358993	
Waved Silk-moss	05/05/2005	H358993	
Sweet Vernal Grass	05/05/2005	H358993	
Nipplewort	05/05/2005	H358993	
Marsh Marigold	05/05/2005	H358993	

Common Feather-moss	05/05/2005	H358993	
Crested Dog's-Tail	05/05/2005	H358993	
Pignut	05/05/2005	H358993	
Bank Haircap	05/05/2005	H358993	
Broad-Leaved Dock	05/05/2005	H358993	
Broad Buckler-Fern	05/05/2005	H358993	
Western Pouncewort	October 1957	H358990	
Blunt-leaf Tufa-moss	June 1957	C30	
Western Pouncewort	June 1957	C30	
Grove Earwort	1957	H358990	
Forked Veilwort	1950 - 1958	H358990	
Greater Water-moss	1950 - 1958	H358990	
Straggling Pouchwort	1950 - 1958	H358990	
Curly Crisp-moss	1950 - 1958	H358990	
Fox-tail Feather-moss	1950 - 1958	H358990	
Western Pouncewort	1950 - 1958	H358990	
Long-beaked Water Feather-moss	1950 - 1958	H358990	
Dark-green Flapwort	1950 - 1958	C30	
Wry-leaved Tamarisk-moss	1950 - 1958	C30	
Rock Veilwort	1950 - 1958	C30	
Rough-stalked Feather-moss	1950 - 1958	C30	
Tamarisk Scalewort	1950 - 1958	C30	
Bifid Crestwort	04/05/2005	H358982	
Ground-Ivy	04/05/2005	H358982	
Enchanter's-Nightshade	04/05/2005	H358982	
Sweet Chestnut	04/05/2005	H358982	
Big Shaggy-moss	04/05/2005	H358982	
Red Campion	04/05/2005	H358982	
Wood-Sedge	04/05/2005	H358982	
Opposite-Leaved Golden-Saxifrage	04/05/2005	H358982	
Hedge Woundwort	04/05/2005	H358982	
Yellow Pimpernel	04/05/2005	H358982	
Cock's-Foot	04/05/2005	H358982	
Germander Speedwell	04/05/2005	H358982	
Wood Dock	04/05/2005	H358982	

Sycamore	04/05/2005	H358982	
Cuckooflower	04/05/2005	H358982	
Wood Fescue	04/05/2005	H358982	
Nipplewort	04/05/2005	H358982	
Rowan	04/05/2005	H358982	FEP-001
Bank Haircap	05/05/2005	H354990	
Common Chickweed	05/05/2005	H354990	
Elegant Silk-moss	05/05/2005	H354990	
Hart's-Tongue	05/05/2005	H354990	
Crested Dog's-Tail	05/05/2005	H354990	
Polypody	05/05/2005	H354990	
False-Brome	05/05/2005	H354990	
Elder	05/05/2005	H354990	FEP-001
Festuca rubra sens. lat.	05/05/2005	H354990	
Bilberry	05/05/2005	H354990	
Meadowsweet	05/05/2005	H354990	
Dog Rose	05/05/2005	H354990	FEP-001
Lesser Celandine	05/05/2005	H354990	
Ivy	05/05/2005	H354990	
Soft Rush	05/05/2005	H354990	
Wood Speedwell	05/05/2005	H354990	
Hard Fern	05/05/2005	H354990	
Hedge Woundwort	05/05/2005	H354990	
Herb-Robert	04/05/2005	H358982	
Woodruff	04/05/2005	H358982	
Smooth-Stalked Sedge	04/05/2005	H358982	
Creeping Soft-Grass	04/05/2005	H358982	
Annual Meadow-Grass	04/05/2005	H358982	
Bush Vetch	04/05/2005	H358982	
Common Dog-Violet	04/05/2005	H358982	
Common Feather-moss	04/05/2005	H358982	
Pignut	04/05/2005	H358982	
Elegant Silk-moss	04/05/2005	H358982	
Lesser Celandine	04/05/2005	H358982	
Honeysuckle	04/05/2005	H358982	
Wilson's Honeysuckle	04/05/2005	H358982	
Lilac	04/05/2005	H358982	
Cleavers	04/05/2005	H358982	
Hay-Scented Buckler-Fern	04/05/2005	H358982	
Hypnum cupressiforme	04/05/2005	H358982	
Beech	04/05/2005	H358982	FEP-001

Creeping Bent	05/05/2005	H358989	
Lesser Pocket-moss	05/05/2005	H358989	
Meadow Buttercup	05/05/2005	H358989	
Cleavers	05/05/2005	H358989	
Lady Fern	05/05/2005	H358989	
Yorkshire-Fog	05/05/2005	H358989	
Broad Buckler-Fern	05/05/2005	H358989	
Scaly Male Fern	05/05/2005	H358989	
Fox-tail Feather-moss	05/05/2005	H358989	
Wood Dock	05/05/2005	H358989	
Overleaf Pellia	05/05/2005	H358989	
Red Campion	05/05/2005	H358989	
Silver Birch	05/05/2005	H358989	FEP-001
Goat Willow	05/05/2005	H358989	FEP-001
Sycamore	05/05/2005	H358989	
Wood Anemone	05/05/2005	H358989	
Great Wood-Rush	05/05/2005	H358989	
Sweet Vernal Grass	05/05/2005	H358989	
Holly	05/05/2005	H354990	FEP-001
Common Striated Feather-moss	05/05/2005	H354990	
Silver Birch	05/05/2005	H354990	FEP-001
Sweet Vernal Grass	05/05/2005	H354990	
Foxglove	05/05/2005	H354990	
Bracken	05/05/2005	H354990	
Grey Willow	05/05/2005	H354990	FEP-001
Bramble	05/05/2005	H354990	
Red Campion	05/05/2005	H354990	
Common Nettle	05/05/2005	H354990	
Alder	05/05/2005	H354990	FEP-001
Wood Dock	05/05/2005	H354990	
Wild Cherry	05/05/2005	H354990	FEP-001
Rough Meadow-Grass	05/05/2005	H354990	
Bluebell	05/05/2005	H354990	WACA-Sch8
Eared Willow	05/05/2005	H358993	FEP-001
Elegant Silk-moss	05/05/2005	H358993	
Goat Willow	05/05/2005	H358993	FEP-001
Peregrine	1987	H358992	Bern-A2, BirdsDir-A1, CMS_A2, ECCITES-A, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Peregrine	1988	H358992	Bern-A2, BirdsDir-A1, CMS_A2, ECCITES-A, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1

Freshwater Pearl Mussel	1905	H39	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, NIPS, RedList_GB_post2001-CR, RedList_Global_post94-EN, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Freshwater Pearl Mussel	01/02/1900	H39	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, NIPS, RedList_GB_post2001-CR, RedList_Global_post94-EN, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Freshwater Pearl Mussel	05/08/1899	H39	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, NIPS, RedList_GB_post2001-CR, RedList_Global_post94-EN, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Freshwater Pearl Mussel	1899	H39	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, NIPS, RedList_GB_post2001-CR, RedList_Global_post94-EN, Scottish_Biodiversity_List,

			W(NI)O-Sch5, WACA-Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Acarospora fuscata	27/01/2010	H352969	
Amandinea punctata	27/01/2010	H352969	
Arthonia radiata	27/01/2010	H352969	
Aspicilia contorta subsp. contorta	27/01/2010	H352969	
Buellia aethalea	27/01/2010	H352969	
Caloplaca citrina	27/01/2010	H352969	
Caloplaca crenularia	27/01/2010	H352969	
Caloplaca crenulatella	27/01/2010	H352969	
Caloplaca flavescens	27/01/2010	H352969	
Caloplaca flavocitrina	27/01/2010	H352969	
Caloplaca flavovirescens	27/01/2010	H352969	
Soft Rush	05/05/2005	H358993	
Creeping Buttercup	05/05/2005	H358993	
Bog Stitchwort	05/05/2005	H358993	
Festuca rubra sens. lat.	05/05/2005	H358993	
Hawthorn	05/05/2005	H358993	FEP-001
Downy Birch	05/05/2005	H358993	FEP-001
Common Dog-Violet	05/05/2005	H358993	
Common Nettle	05/05/2005	H358993	
Common Sorrel	05/05/2005	H358993	
Broad-Leaved Willowherb	05/05/2005	H358993	
Hazel	05/05/2005	H358993	FEP-001
Wood Dock	05/05/2005	H358993	
Silver Birch	05/05/2005	H358993	FEP-001
Common Tamarisk-moss	05/05/2005	H358993	
Cow Parsley	05/05/2005	H358993	
Ivy	05/05/2005	H358993	
Navelwort	05/05/2005	H358993	
Yorkshire-Fog	05/05/2005	H351987	
Blackthorn	05/05/2005	H351987	FEP-001
Nipplewort	05/05/2005	H351987	
Wood-Sorrel	05/05/2005	H351987	RedList_ENG_post2001-NT

Herb-Robert	05/05/2005	H351987	
Common Bird's-Foot-Trefoil	05/05/2005	H351987	
Common Sorrel	05/05/2005	H351987	
Meadow Vetchling	05/05/2005	H351987	
Lesser Celandine	05/05/2005	H351987	
Wych Elm	05/05/2005	H351987	FEP-001
Silver Birch	05/05/2005	H351987	FEP-001
Herb Bennet	05/05/2005	H351987	
Tutsan	05/05/2005	H351987	
Wood Millet	05/05/2005	H351987	
Bugle	05/05/2005	H351987	
Foxglove	05/05/2005	H351987	
Ribwort Plantain	05/05/2005	H351987	
Ivy	05/05/2005	H351987	
Rowan	05/05/2005	H354990	FEP-001
Creeping Buttercup	05/05/2005	H354990	
Enchanter's-Nightshade	05/05/2005	H354990	
Guelder-Rose	05/05/2005	H354990	FEP-001
Wood Melick	05/05/2005	H354990	
Navelwort	05/05/2005	H354990	
Wood-Sorrel	05/05/2005	H354990	RedList_ENG_post2001-NT
Field Wood-Rush	05/05/2005	H354990	
Slender St. John's-Wort	05/05/2005	H354990	
Wood-Sedge	05/05/2005	H354990	
Downy Birch	05/05/2005	H354990	FEP-001
Soft Shield-Fern	05/05/2005	H354990	
Hazel	05/05/2005	H354990	FEP-001
Tufted Hair-Grass	05/05/2005	H354990	
Greater Stitchwort	05/05/2005	H354990	
Hairy Wood-Rush	05/05/2005	H354990	
Common Male Fern	05/05/2005	H354990	
Greater Plantain	04/05/2005	H358982	
Ground-Elder	04/05/2005	H358982	
Waved Silk-moss	04/05/2005	H358982	
Primrose	04/05/2005	H358982	W(NI)O-Sch8_part2
Herb Bennet	04/05/2005	H358982	
Creeping Buttercup	04/05/2005	H358982	
Remote Sedge	04/05/2005	H358982	
Wood Speedwell	04/05/2005	H358982	
Bank Haircap	04/05/2005	H358982	
False Oat-Grass	04/05/2005	H358982	
Broad-Leaved Willowherb	04/05/2005	H358982	
Common Chickweed	04/05/2005	H358982	

Fox-tail Feather-moss	04/05/2005	H358982	
Slender Mouse-tail Moss	04/05/2005	H358982	
Navelwort	04/05/2005	H358982	
Barren Strawberry	04/05/2005	H358982	
Common Nettle	04/05/2005	H358982	
Elegant Silk-moss	05/05/2005	H358989	
Big Shaggy-moss	05/05/2005	H358989	
Soft Rush	05/05/2005	H358989	
Hard Fern	05/05/2005	H358989	
Wood-Sorrel	05/05/2005	H358989	RedList_ENG_post2001-NT
Rowan	05/05/2005	H358989	FEP-001
Bifid Crestwort	05/05/2005	H358989	
Common Smoothcap	05/05/2005	H358989	
Common Sedge	05/05/2005	H358989	
Common Nettle	05/05/2005	H358989	
Ivy	05/05/2005	H358989	
Hedge Woundwort	05/05/2005	H358989	
Wavy Bitter-Cress	05/05/2005	H358989	
Hypnum cupressiforme	05/05/2005	H358989	
Bilberry	05/05/2005	H358989	
Bramble	05/05/2005	H358989	
Common Tamarisk-moss	05/05/2005	H358989	
Eared Willow	05/05/2005	H358989	FEP-001
Wild Angelica	05/05/2005	H358989	
Pedunculate Oak	05/05/2005	H358989	FEP-001
Broad-Leaved Dock	05/05/2005	H358989	
Soft Shield-Fern	05/05/2005	H358989	
Hawthorn	05/05/2005	H358989	FEP-001
Honeysuckle	05/05/2005	H358989	
Bog Stitchwort	05/05/2005	H358989	
Blackthorn	05/05/2005	H358989	FEP-001
Crested Dog's-Tail	05/05/2005	H358989	
Holly	05/05/2005	H358989	FEP-001
False-Brome	05/05/2005	H358989	
Hazel	05/05/2005	H358989	FEP-001
Festuca rubra sens. lat.	05/05/2005	H358989	
Common Chickweed	05/05/2005	H358989	
Maidenhair Spleenwort	05/05/2005	H358989	
Wych Elm	05/05/2005	H358989	FEP-001
Field Forget-Me-Not	1987 - 1999	C3500	

Changing Forget-Me-Not	1987 - 1999	C3500	
Sweet Vernal Grass	1987 - 1999	C3500	
White Ramping-Fumitory	1987 - 1999	C3500	Scottish_Biodiversity_List
Daisy	1987 - 1999	C3500	
Cranberry	1987 - 1999	C3500	
Elm	1987 - 1999	C3500	FEP-001
Marsh Violet	1987 - 1999	C3500	
White Sedge	1987 - 1999	C3500	
Creeping Soft-Grass	1987 - 1999	C3500	
Heather	1987 - 1999	C3500	RedList_ENG_post2001-NT
Winter Heliotrope	1987 - 1999	C3500	
Hoary Willowherb	1987 - 1999	C3500	
Soft Shield-Fern	1987 - 1999	C3500	
Honeysuckle	1987 - 1999	C3500	
Heath Spotted-Orchid	1987 - 1999	C3500	ECCITES-B
Bugle	1987 - 1999	C3500	
Primrose	1987 - 1999	C3500	W(NI)O-Sch8_part2
Green Hairstreak	21/05/1993	H358990	
Ringlet	21/07/1993	H358989	
Meadow Brown	21/07/1993	H358989	
Large White	21/07/1993	H352995	
Meadow Brown	05/08/1993	H358994	
Orange Tip	16/05/2002	H39	
Orange Tip	16/05/2002	H39	
Speckled Wood	23/09/2002	C346003	
Small Tortoiseshell	23/09/2002	C346003	
Small Tortoiseshell	23/09/2002	C346003	
Speckled Wood	23/09/2002	C346003	
Small Tortoiseshell	23/09/2002	C346003	
Peacock	23/09/2002	H342994	
Speckled Wood	23/09/2002	H342994	
Speckled Wood	23/09/2002	C346003	
Speckled Wood	23/07/2007	H339978	
Large White	23/07/2007	H339978	
Speckled Wood	23/07/2007	H340977	
Raspberry	05/05/2005	H358993	
Slender Mouse-tail Moss	05/05/2005	H358993	
Remote Sedge	05/05/2005	H358993	
Swan's-neck Thyme-moss	05/05/2005	H358993	
Large White	1984 - 1988	H39	
Speckled Wood	1984 - 1988	H39	
Peacock	1984 - 1988	H39	
Small Tortoiseshell	1984 - 1988	H39	
Ringlet	1984 - 1988	H39	

Peacock	1985 - 1988	C30	
Meadow Brown	1985 - 1988	C30	
Ringlet	1985 - 1988	C30	
Painted Lady	1993	H39	
Small White	1993	H39	
Green Hairstreak	1993	H39	
Ringlet	1993	H39	
Speckled Wood	1993	H39	
Meadow Brown	1993	H39	
Clouded Magpie	28/06/1993	H358990	
Lilac Beauty	28/06/1993	H39	
Small Fan-Foot	28/06/1993	H39	
Pale-Shouldered Brocade	29/06/1993	H358989	
Dark Spectacle	29/06/1993	H358989	
Spectacle	29/06/1993	H358989	
Snout	29/06/1993	H358989	
Burnished Brass	29/06/1993	H358989	
Small Fan-Foot	29/06/1993	H358992	
Double Square-Spot	22/07/1993	H358989	
Dotted Clay	22/07/1993	H358989	
Double Dart	22/07/1993	H358989	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Dark Arches	22/07/1993	H358989	
Large Emerald	22/07/1993	H39	
Curly Crisp-moss	08/10/1957	H358990	
Chalk Comb-moss	June 1957	C30	
Blunt-leaf Tufa-moss	June 1957	C30	
Transparent Fork-moss	June 1957	C30	
Enchanter's-nightshade	15/04/2014	H3483799106	
Hazel	15/04/2014	H3483799106	FEP-001
Broad Buckler-fern	15/04/2014	H3483799106	
Meadowsweet	15/04/2014	H3483799106	
Ash	15/04/2014	H3483799106	FEP-001
Cleavers	15/04/2014	H3483799106	
Herb-Robert	15/04/2014	H3483799106	
Wood Avens	15/04/2014	H3483799106	
Ivy	15/04/2014	H3483799106	
Bluebell	15/04/2014	H3483799106	WACA-Sch8
Holly	15/04/2014	H3483799106	FEP-001
Honeysuckle	15/04/2014	H3483799106	
Great Wood-rush	15/04/2014	H3483799106	
Wood-sorrel	15/04/2014	H3483799106	RedList_ENG_post2001-NT
Soft Shield-fern	15/04/2014	H3483799106	
Primrose	15/04/2014	H3483799106	W(NI)O-Sch8_part2

Sessile Oak	15/04/2014	H3483799106	FEP-001
Meadow Buttercup	15/04/2014	H3483799106	
Eastern Grey Squirrel	25/06/2015	H350986	
Japanese Knotweed	15/09/2016	H340976	
Japanese Knotweed	01/10/2014	H349989	
Collared Dove	12/04/2016	H346984	BirdsDir-A2.2
Sweet Chestnut	15/04/2014	H3584998368	
Wych Elm	15/04/2014	H3584998368	FEP-001
Grey Squirrel	07/08/2011	H34599732	
Pied Wagtail	02/06/2016	H340977	Bern-A2
Pied Wagtail	15/12/2015	H338978	Bern-A2
Blackbird	27/04/2016	H34409863	BirdsDir-A2.2
Blackbird	27/04/2016	H34569881	BirdsDir-A2.2
Blackbird	15/12/2015	H348990	BirdsDir-A2.2
Lesser Celandine	23/03/2017	H339979	
Pied Wagtail	23/03/2017	H334982	Bern-A2
Lesser Celandine	23/03/2017	H335982	
Rook	23/03/2017	H339977	BirdsDir-A2.2
Cleavers	23/03/2017	H339978	
Jackdaw	23/03/2017	H335982	BirdsDir-A2.2
Downy Birch	22/06/2017	H346993	FEP-001
Shepherd's-purse	22/06/2017	H346993	
Sticky Mouse-ear	22/06/2017	H346993	
Hoary Willowherb	22/06/2017	H346993	
Marsh Cudweed	22/06/2017	H346993	
Yellow Loosestrife	22/06/2017	H346993	
Water Forget-me-not	22/06/2017	H346993	
Red Bartsia	22/06/2017	H346993	
Tormentil	22/06/2017	H346993	RedList_ENG_post2001-NT
Celery-leaved Buttercup	22/06/2017	H346993	
Marsh Yellow-cress	22/06/2017	H346993	
Crack-willow	22/06/2017	H346993	FEP-001
Water Figwort	22/06/2017	H346993	
Branched Bur-reed	22/06/2017	H346993	
Corn Spurrey	22/06/2017	H346993	RedList_ENG_post2001-VU, RedList_GB_post2001-VU
Large Bindweed	22/06/2017	H347975	
Rustyback	22/06/2017	H347975	
Ivy-leaved Toadflax	22/06/2017	H347975	
Reed Canary-grass	25/06/2009	H3498	
Smooth Meadow-grass	25/06/2009	H3498	
Broad-leaved Pondweed	25/06/2009	H3498	
Marsh Cinquefoil	25/06/2009	H3498	RedList_ENG_post2001-NT
Lesser Spearwort	25/06/2009	H3498	RedList_ENG_post2001-VU

Bramble	25/06/2009	H3498	
Common Sallow	25/06/2009	H3498	FEP-001
Bulrush	25/06/2009	H3498	
Marsh Speedwell	25/06/2009	H3498	RedList_ENG_post2001-NT
Sycamore	25/06/2009	H3498	
Ground-elder	25/06/2009	H3498	
Common Bent	25/06/2009	H3498	
Creeping Bent	25/06/2009	H3498	
Alder	25/06/2009	H3498	FEP-001
Meadow Foxtail	25/06/2009	H3498	
Wild Angelica	25/06/2009	H3498	
Sweet Vernal-grass	25/06/2009	H3498	
Cow Parsley	25/06/2009	H3498	
Meadow Vetchling	18/06/2009	H3498	
Perennial Rye-grass	18/06/2009	H3498	
Greater Bird's-foot-trefoil	18/06/2009	H3498	
Ribwort Plantain	18/06/2009	H3498	
Smooth Meadow-grass	18/06/2009	H3498	
Creeping Cinquefoil	18/06/2009	H3498	
Creeping Buttercup	18/06/2009	H3498	
Red Clover	18/06/2009	H3498	
White Clover	18/06/2009	H3498	
Bush Vetch	18/06/2009	H3498	
Creeping Bent	25/06/2009	H3498	
Alder	25/06/2009	H3498	FEP-001
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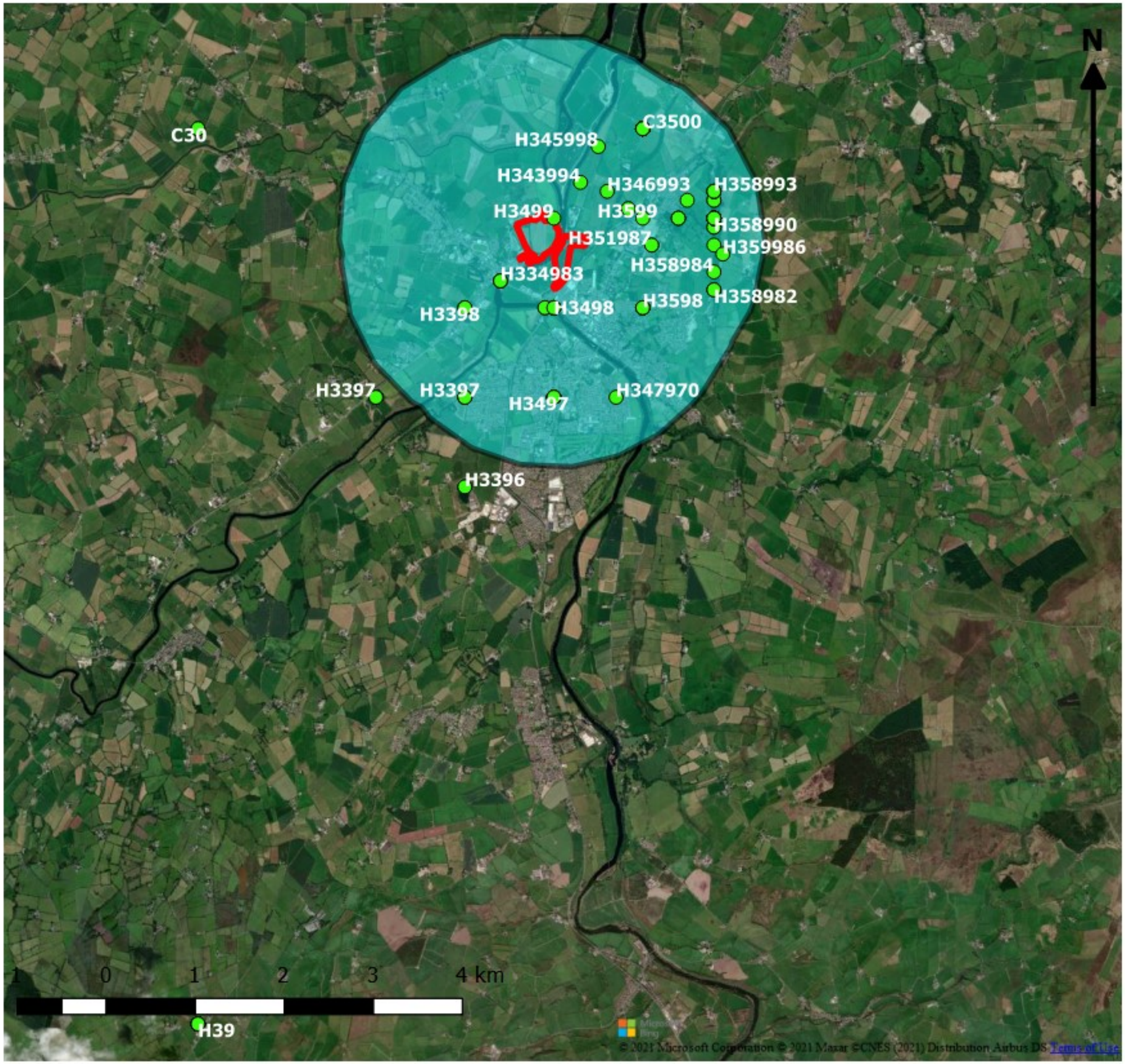
False Oat-grass	25/06/2009	H3498	
Lady-fern	25/06/2009	H3498	
Heart-leaved Spear-moss	25/06/2009	H3498	
Pointed Spear-moss	25/06/2009	H3498	
Common Water-starwort	25/06/2009	H3498	
Creeping Buttercup	25/06/2009	H3498	
Flowering Currant	25/06/2009	H3498	
Dog-rose	25/06/2009	H3498	FEP-001
Bramble	25/06/2009	H3498	
Raspberry	25/06/2009	H3498	
Common Sorrel	25/06/2009	H3498	
Curled Dock	25/06/2009	H3498	
Broad-leaved Dock	25/06/2009	H3498	
Goat Willow	25/06/2009	H3498	FEP-001
Common Sallow	25/06/2009	H3498	FEP-001
Elder	25/06/2009	H3498	FEP-001
Common Figwort	25/06/2009	H3498	
Common Ragwort	25/06/2009	H3498	
Rowan	25/06/2009	H3498	FEP-001

Hedge Woundwort	25/06/2009	H3498	
Greater Stitchwort	25/06/2009	H3498	
Snowberry	25/06/2009	H3498	
Dandelion	25/06/2009	H3498	
Red Clover	25/06/2009	H3498	
Field Horsetail	18/06/2009	H3297	
Meadowsweet	18/06/2009	H3297	
Marsh-bedstraw	18/06/2009	H3297	
Floating Sweet-grass	18/06/2009	H3297	
Yorkshire-Fog	18/06/2009	H3297	
Jointed Rush	18/06/2009	H3297	
Soft-rush	18/06/2009	H3297	
Slender Rush	18/06/2009	H3297	
Meadow Vetchling	18/06/2009	H3297	
Perennial Rye-grass	18/06/2009	H3297	
Greater Bird's-foot-trefoil	18/06/2009	H3297	
Timothy	18/06/2009	H3297	
Rough Meadow-grass	18/06/2009	H3297	
Curled Dock	18/06/2009	H3297	
Broad-leaved Dock	18/06/2009	H3297	
Common Sallow	18/06/2009	H3297	FEP-001
Lesser Trefoil	18/06/2009	H3297	
Soft Shield-fern	30/04/2015	H3598	
Polypodium vulgare sens. str.	30/04/2015	H3598	
Intermediate Polypody	30/04/2015	H3598	
Hart's-tongue	30/04/2015	H3598	
Wood-sorrel	30/04/2015	H3598	RedList_ENG_post2001-NT
Blinks	30/04/2015	H3598	
Yellow Pimpernel	30/04/2015	H3598	
Great Wood-rush	30/04/2015	H3598	
Hairy Wood-rush	30/04/2015	H3598	
Greater Bird's-foot-trefoil	30/04/2015	H3598	
Tall Ramping-fumitory	30/04/2015	H3599	FEP-007_tab3
Sycamore	30/04/2015	H3599	
Ground-elder	30/04/2015	H3599	
Creeping Bent	30/04/2015	H3599	
Thale Cress	30/04/2015	H3599	
Daisy	30/04/2015	H3599	
Wavy Bitter-cress	30/04/2015	H3599	
Cuckooflower	30/04/2015	H3599	
Scaly Male-fern	25/06/2009	H3498	
Broad Buckler-fern	25/06/2009	H3498	

Male-fern	25/06/2009	H3498	
Common Couch	25/06/2009	H3498	
American Willowherb	25/06/2009	H3498	
Great Willowherb	25/06/2009	H3498	
Broad-leaved Willowherb	25/06/2009	H3498	
Field Horsetail	25/06/2009	H3498	
Japanese Knotweed	25/06/2009	H3498	
Meadowsweet	25/06/2009	H3498	
Ash	25/06/2009	H3498	FEP-001
Cleavers	25/06/2009	H3498	
Hedge Bedstraw	25/06/2009	H3498	
Herb-Robert	25/06/2009	H3498	
Wood Avens	25/06/2009	H3498	
Ivy	25/06/2009	H3498	
Yorkshire-fog	25/06/2009	H3498	
Creeping Soft-grass	25/06/2009	H3498	
Long-toothed Herald Snail	01/03/1992	H358991	
Plated Snail	01/03/1992	H358991	NIPS
New Zealand Flatworm	01/03/1992	H358991	
Turkeytail	01/03/1992	H358991	
Milky Crystal Snail	01/03/1992	H358991	
Common Tarcrust	01/03/1992	H358991	
Two-toothed Door Snail	01/03/1992	H358991	
Puffball	01/03/1992	H358991	
Microplana terrestris	01/03/1992	H358991	
Vitrea crystallina seg.	01/03/1992	H358991	
River Limpet	01/03/1992	H358991	
White Brain	01/03/1992	H358991	
Haplophthalmus mengei agg.	01/03/1992	H358991	
Southern Bracket	01/03/1992	H358993	
Tree Slug	01/03/1992	H358993	
Garlic Snail	01/03/1992	H358993	
Cellar Snail	01/03/1992	H358993	
Barred Straw	1993	H39	
Muslin Footman	1993	H39	
Small Fan-Footed Wave	1993	H39	
Snout	1993	H39	
Dark Spectacle	1993	H39	
Spectacle	1993	H39	
Mottled Beauty	1993	H39	

Dotted Clay	1993	H39	
Drinker	1993	H39	
Shaded Broad-Bar	1993	H39	BAP-2007, England_NERC_S.41, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Coxcomb Prominent	1993	H39	
Scalloped Oak	1993	H39	
Map-Winged Swift	1993	H39	
July Highflyer	1993	H39	
Pale-Shouldered Brocade	1993	H39	
Middle-Barred Minor	1993	H39	
Peach Blossom	1993	H39	
Common Shiny Woodlouse	01/03/1992	H358995	
Arion (Carinarion) circumscriptus	01/03/1992	H358995	
New Zealand Flatworm	01/03/1992	H358996	
Atlantic Salmon	1974	C30	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, HabDir-A2*, HabDir-A5, HabReg-Sch4, NIPS, OSPAR, Scottish_Biodiversity_List, Wales_NERC_S.42
Sea Plantain	1950 - 1998	H39	
Goldilocks Buttercup	1950 - 1998	H39	
Three-Nerved Sandwort	- 1890	H39	
Three-Nerved Sandwort	- 1850	H358990	
Rigid Hornwort	- 1837	C30	NI Rare & Scarce Plants
Grey Club-Rush	1939	H39	
Sea Club-Rush	1939	H3499	
Sea Arrowgrass	1939	H3499	
Slender Spike-Rush	1930 - 1950	H3499	NI Rare & Scarce Plants
Wild Marjoram	1900	H3497	
Field Woundwort	1900	H3497	FEP-007_tab3, RedList_ENG_post2001-NT, RedList_GB_post2001-NT, Scottish_Biodiversity_List
Bluebell	16/04/2005	H348973	
Common Mallow	16/04/2005	H348973	
Red Squirrel	27/10/1984	H358984	BAP-2007, Bern-A3, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch5, WACA-

			Sch5_sect9.1(kill/injuring), WACA-Sch5_sect9.1(taking), WACA-Sch5_sect9.2, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c, Wales_NERC_S.42, Wildlife (NI) Order Sch 5
Irish Stoat	25/05/1988	H358990	Bern-A3
Agonum albipes	02/02/1992	H358989	
Philonthus varians	02/02/1992	H358989	
Agonum assimile	02/02/1992	H358989	
Nebria brevicollis	02/02/1992	H358989	
Pterostichus nigrita	02/02/1992	H358989	
Anthobium unicolor	02/02/1992	H358989	
Golden Jelly Fungus	01/03/1992	H358988	
Jenkins' Spire Snail	01/03/1992	H358988	
Euconulus alderi	01/03/1992	H358988	
Bleeding Broadleaf Crust	01/03/1992	H358989	
Common Garden Slug	01/03/1992	H358989	
Bourguignat's Slug	01/03/1992	H358989	
Ivy	30/04/2015	H3599	
Soft-rush	30/04/2015	H3599	
Nipplewort	30/04/2015	H3599	
Thyme-leaved Speedwell	30/04/2015	H3599	
Common Nettle	30/04/2015	H3599	
Colt's-foot	30/04/2015	H3599	
White Clover	30/04/2015	H3599	
Red Clover	30/04/2015	H3599	
Lesser Trefoil	30/04/2015	H3599	
Dandelion	30/04/2015	H3599	
Snowberry	30/04/2015	H3599	
Common Chickweed	30/04/2015	H3599	
Prickly Sow-thistle	30/04/2015	H3599	
Common Ragwort	30/04/2015	H3599	
Common Figwort	30/04/2015	H3599	
Rusty Willow	30/04/2015	H3599	FEP-001
Procumbent Pearlwort	30/04/2015	H3599	



Legend

- CEDaR Records
- Red Lined Boundary
- 2km Buffer

Appendix IV: CEDaR Species Records with 2km Buffer

Created by: Ryan Boyle

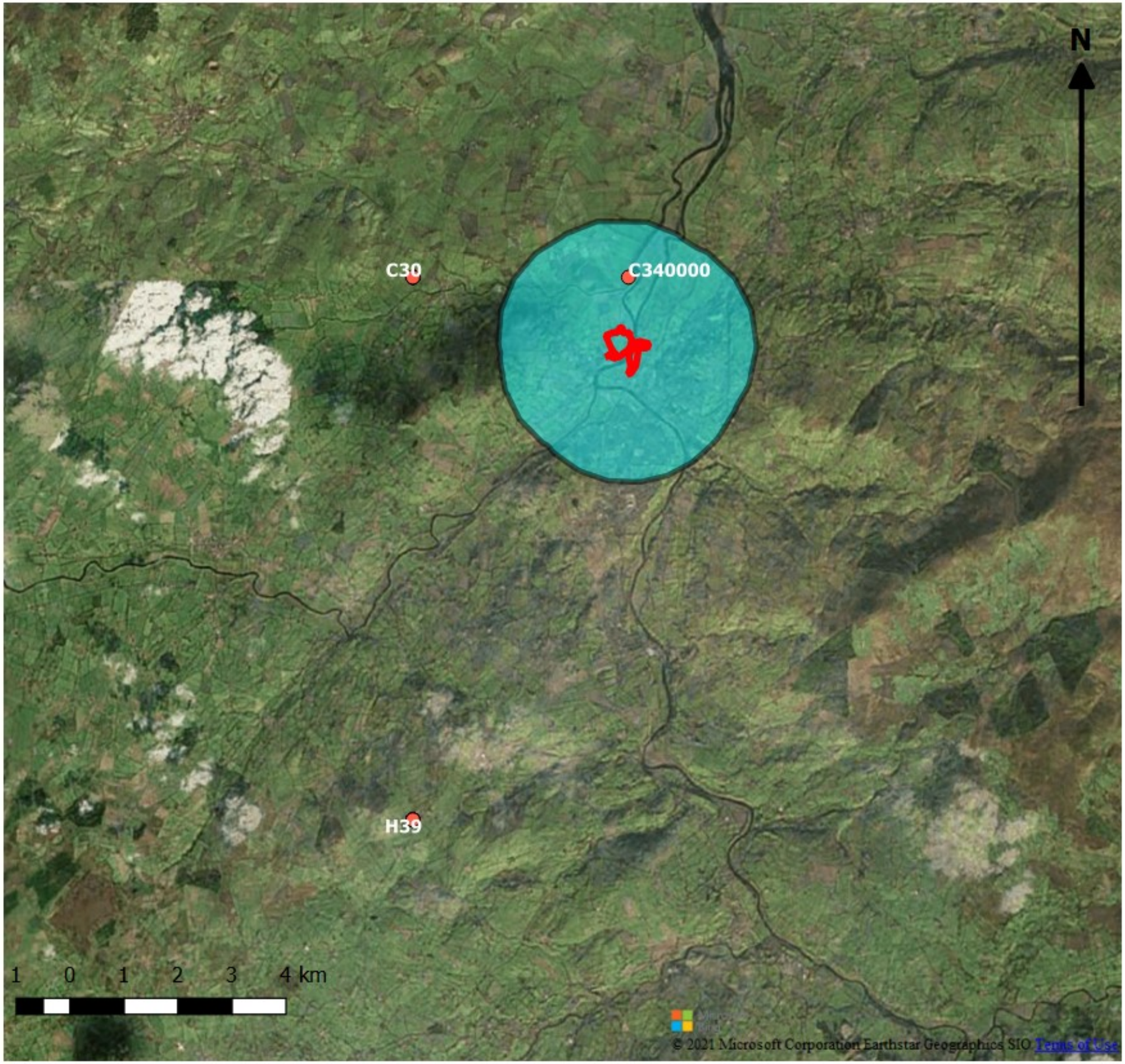
Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:60000 @ A3

Date: 26/07/2021

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

- CEDaR Records
- Red Lined Boundary
- 2km Buffer

Appendix V: NPWS Species Records with 2km Buffer

Created by: Ryan Boyle

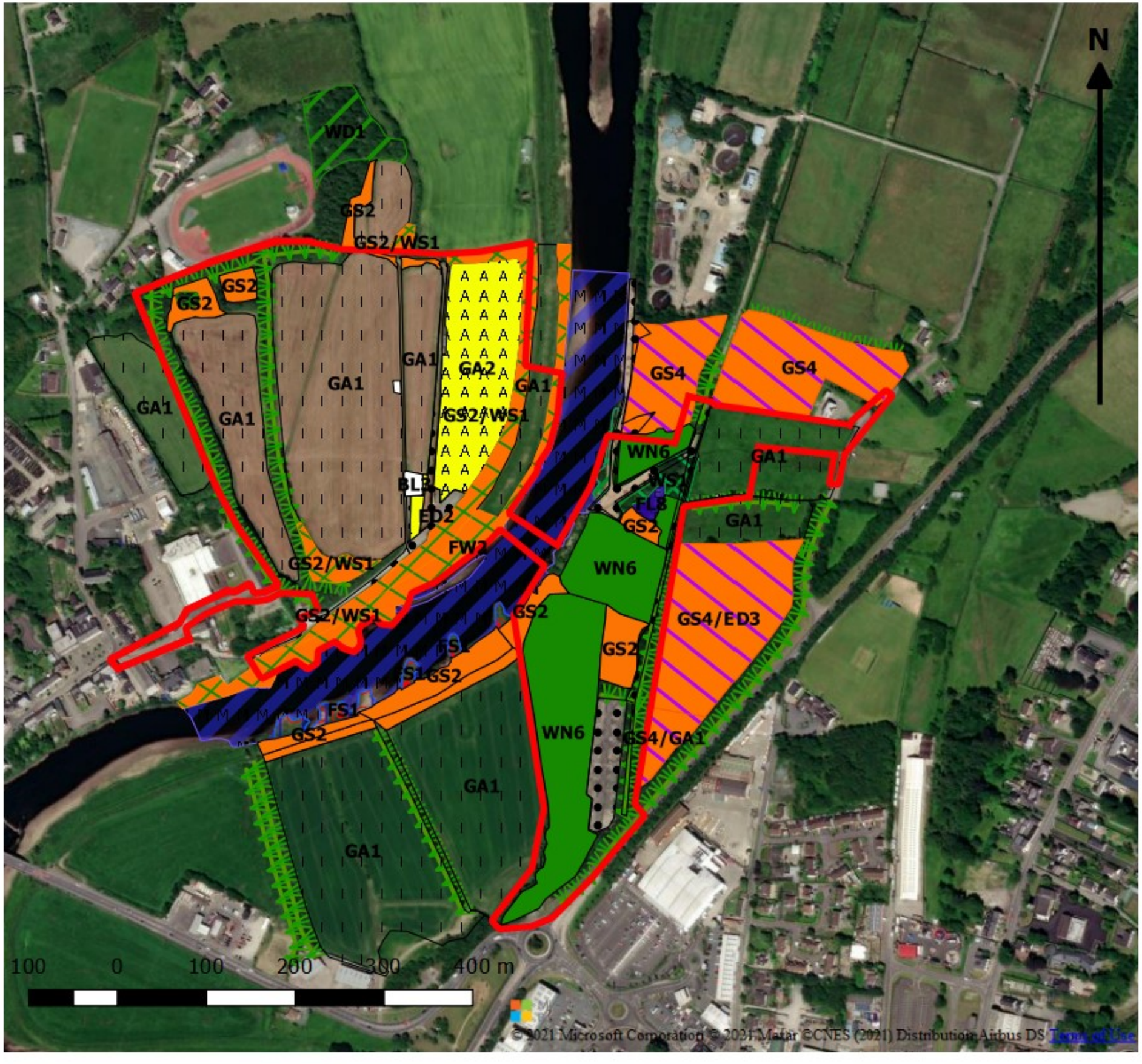
Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:60000 @ A3

Date: 26/07/2021

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

- Red Lined Boundary
- Habitat Map JNCC
- WL1/WL2
- WN6
- WD1
- WD3
- WS1
- GS2
- GS2/WS1
- GA1
- GS4
- FS1
- FL8
- FW2
- GA2
- BL3
- ED2

AppendixVI: Site Habitat Map (Fossitts)

Created by: Ryan Boyle

Reviewed by: Emily Taylor

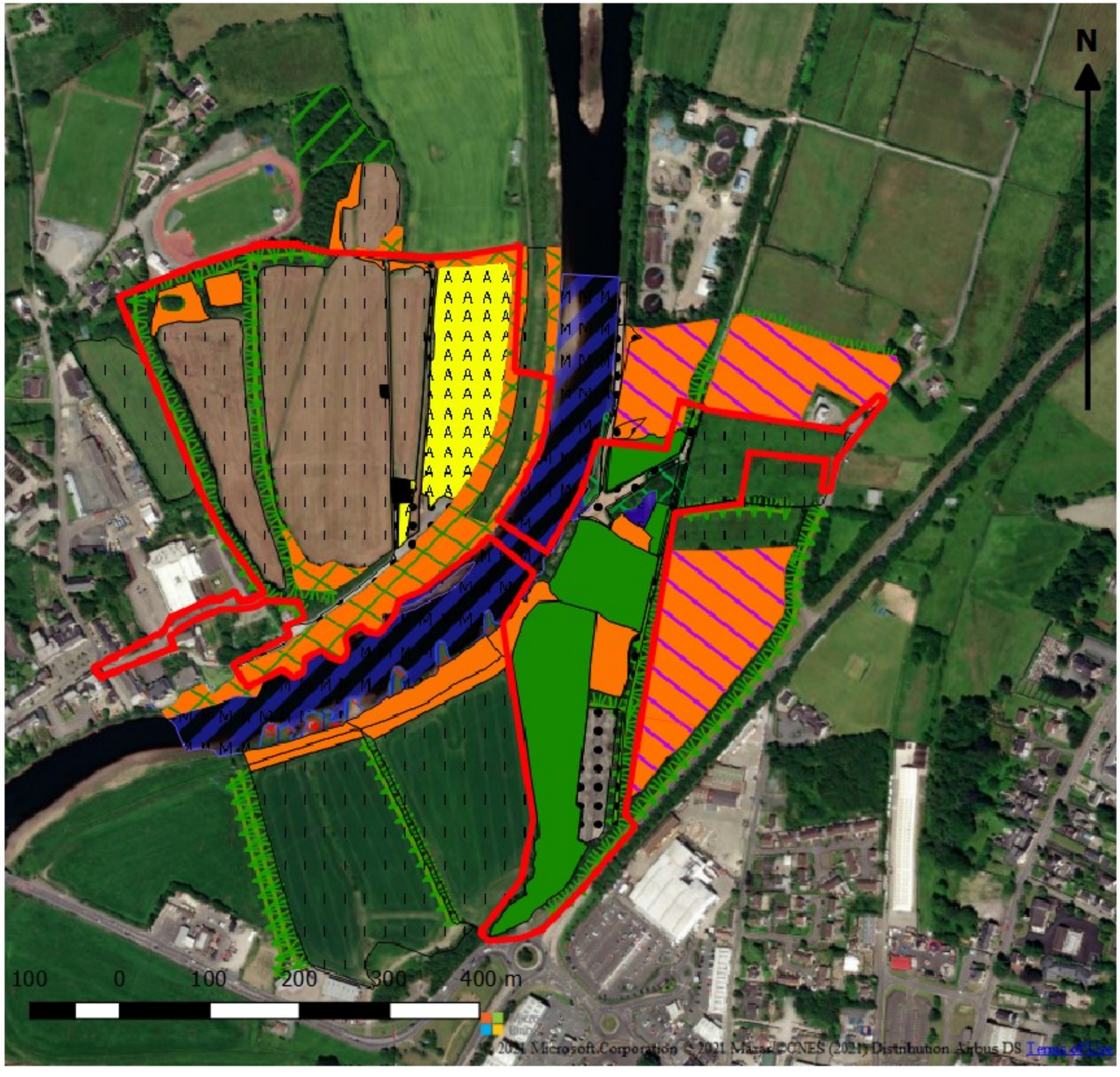
Client: McAdam Design

Scale: 1:6000 @ A3

Date: 16/05/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

- Red Lined Boundary

Habitat Map JNCC

- A.1.1.1
- A.1.1.2
- A.1.2.2
- A.2.1
- B.2.1
- B.2.1/A.2.1
- B.4
- B.5
- F.2.1
- G.1.1
- G.2.2
- J.1.2
- J.3.6
- J.4
- J.2.3.1

AppendixVII: Site Habitat Map (JNCC)

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:6000 @ A3

Date: 16/05/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766

Appendix 8-5

Badger Survey [CONFIDENTIAL]

Available on request from:

An Bord Pleanála, 64 Marlborough St, Rotunda, Dublin 1, D01 V902, Ireland

Appendix 8-6

Otter Survey

APPENDIX 8-6

Otter Survey

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: July 2021

MCL Consulting Ltd
Unit 5, Forty-Eight North
Duncrue Street
Belfast
BT3 9BJ
028 9074 7766

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APPENDICIES

1.0 INTRODUCTION

In 2021 MCL Consulting was appointed by McAdam to provide an updated otter survey on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing lands on the outskirts of Strabane and Lifford.

Figure 1. Site location

1.1 Site description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused concrete hardstand, with the rest of the site consisting of wet woodland and soil embankments.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

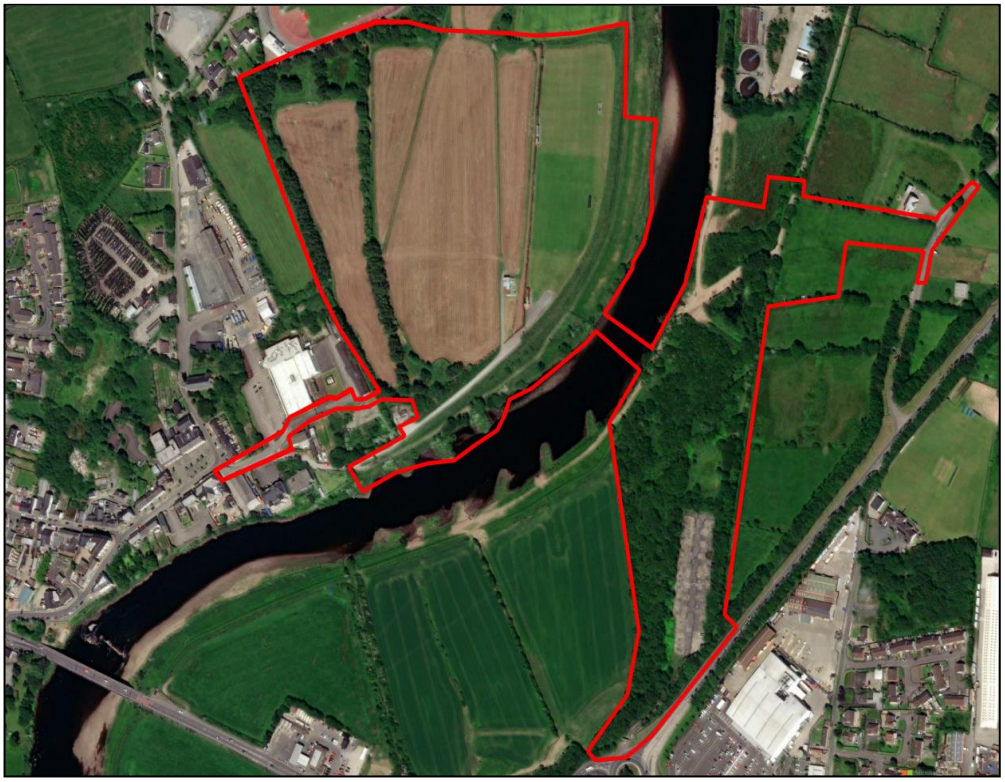


Figure 2. Site red line boundary

1.2 Proposed Development

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways, cycleways and retained wetlands. The development will be supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 11 hectares by utilising agricultural land and wetlands lying along either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The bridge will be a single span with the central, (in river), piering removed, with landing points on either side of the riverbanks. The Park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities on the Lifford side of the proposed development.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events on the Lifford side of the proposed development.
- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane will be made available on the Lifford side of the proposed development.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

1.3 Legislation

Lifford (NI) Legislation

Otters (Lutra lutra) are protected under the Irish Wildlife Act 1976 (as amended) and are listed on Annex II and Annex IV of the EU Habitats Directive. Under this it is an offence:

- Deliberately to capture, injure or kill a wild animal of a European protected species;
- Deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- Deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - impair its ability to survive, breed or reproduce, or rear or care for its young; or
    - impair its ability to hibernate or migrate;
- Deliberately to obstruct access to a breeding site or resting place of such an animal; or
- To damage or destroy a breeding site or resting place of such an animal.

There is no provision within the legislation to issue licences to kill otters for the purpose of development.

Strabane (NI) Legislation

Otters are listed on Annex IV of the EC Habitats Directive (92/43/EEC) and are protected under the Conservation (Natural Habitats etc.) Regulations 1995 (as amended), known as the Habitats Regulations. Under the Habitats Regulations it is an offence:

- Deliberately to capture, injure or kill a wild animal of a European protected species;
- Deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- Deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - impair its ability to survive, breed or reproduce, or rear or care for its young; or
    - impair its ability to hibernate or migrate;
- Deliberately to obstruct access to a breeding site or resting place of such an animal; or
- To damage or destroy a breeding site or resting place of such an animal.

There is no provision within the legislation to issue licences to kill otters for the purpose of development.

1.4 Author/ Surveyors

MCL Consulting is a Northern Ireland based multidisciplinary environmental consultancy which provides expert advice for a wide range of ecological services in support of Environmental Impact Assessments (EIA).

Ryan Boyle BSc MSc – Consultant Ecologist

Fieldwork was carried out and assisted by Ryan Boyle a consultant ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queens University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 7 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc – Graduate Ecological Consultant

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for

PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, as well as a seasonal volunteer for the Bat Conservation Trust and regularly takes part in newt, lizard and bat surveys.

Conor Finlay BSc MSc – Graduate Ecologist

All surveying and reporting were assisted by Conor Finlay, a graduate ecologist at MCL Consulting. He has a master's degree (MSc) in Ecological Management and Conservation Biology from Queens University, Belfast, a bachelor's degree (BSc) in Environmental Sciences from Ulster University, Coleraine and previous employment experience working as a Park Ranger within Stormont Estate assisting contractor ecologists in biodiversity checklists within veteran woodlands and conservation wetlands. He has professional experience assisting bat activity surveys, bat analysis, ecological biodiversity checklists, breeding bird's surveys, badger surveys and desktop study experience in Amphibian conservation working within Global Amphibian Biodiversity Project (GABiP).

1.5 Survey parameters

Site walkovers were undertaken by MCL ecologists between May 2021 and July 2021 to identify evidence of recent and historic otter activity. Table 1 below summarises the survey timings and as well as the weather conditions at the time of survey.

Table 1: Summary of weather conditions and survey periods

Surveyor	Date	Survey Start	Survey Finish	˚C	W/s	Oktas	Ppt
Ryan Boyle BSc (Hons), MSc **Emily Taylor BSc (Hons)** **Conor Finlay BSc (Hons), MSc**	11/05/21	11:00	15:00	6	3	8/8	25%
	06/07/21	12:30	15:25	12	2	8/8	25%
	15/07/21	12:30	15:30	19	3	5/8	25%
	20/07/21	12:00	15:00	21	4	0/8	0%

2.0 OTTER SURVEY

2.1 Rationale of Otter Survey

The aim of the otter survey and assessment was to:

- Determine the presence of otter through field signs onsite and within the stream, and ~30m beyond the site boundary; and
- To develop suitable mitigation plans in the event of confirmed otter species presence, as appropriate

2.2 Desk Study

A desktop study was undertaken for the site by obtaining otter records from CEDaR within a 2km radius of the site. Aerial maps were also studied to identify potential foraging and commuting habitat surrounding the site. Previous otter studies undertaken at the site and the surrounding area were also reviewed and considered.

2.3 Field Study

2.3.1 Preliminary Otter Survey

Field signs are important when determining if otters are present or absent within a site. The following field signs are used to evidence:

- Spraint;
- Anal jelly;
- Forage remains (e.g. fish heads);
- Slides;
- Couches/hovers and;
- Holts.

Surveys were undertaken during dry periods, and local weather conditions had not been subject to heavy rainfall during the days previously.

2.3.2 Survey Constraints

Otters have an amphibious nature and are capable of traversing large areas of land by both land and water. Large sections of the Riverine site, particularly on the Strabane side are covered with dense vegetation and a dense area of wet woodland habitat which made

surveying the entirety of the site area difficult with restrictive access to certain areas of the site.

2.4 Results

2.4.1 Desk study

Table 2: Summary of CEDaR otter database results

Grid	Scientific name	Common name	Date	Event Location
H3498	Lutra lutra	Otter	June 2009	Strabane (Unlocalised)
H3398	Lutra lutra	Otter	June 2009	Mourne River at Strabane
H334983	Lutra lutra	Otter	2015	Lifford
H339980	Lutra lutra	Otter	2006	Mourne Bridge, Mourne River
H339980	Lutra lutra	Otter	2011	Mourne Bridge, Mourne River
H334983	Lutra lutra	Otter	2006	Lifford
H334983	Lutra lutra	Otter	2011	Lifford
H3297	Lutra lutra	Otter	October 2010	River Finn (unlocalised)
H3397	Lutra lutra	Otter	October 2010	River Finn (unlocalised)

Centre for Environmental Data and Recording (CEDaR)

A request was submitted to CEDaR to identify if any previous historical records of otters were present within 2km of the site. The search provided 9x records of otters, H339980 is the closest to the proposed development site approximately 217m south of the site with 2x records dated 2006 and 2011.

National Biodiversity Network Atlas (NBN) 2020

No records of otter were identified within the site; however, these may be hidden/*sensitive* material.

National Parks & Wildlife Service (NPWS)

A request was submitted to CEDaR to identify if any previous historical records of otters were present within 2km of the site. No records for otter were returned.

A5 Approval of Planning Permission 2016

Previous studies carried out as part of the planning process for the proposed A5 development project included an in-depth investigation not otter presence and activities along the projects proposed site route. Part of this route runs within close proximity to the

proposed Riverine Scheme site layout and included and investigation for otters within the area. The previous studies yielded 2 confirmed accounts of otter presence at Site ID 13B and 13C which are within 2km of the proposed Riverine Scheme site, (see Appendix VI). They identified otter activity throughout the River Foyle and it's tributaries with a further 7 sites with within 10km of the Proposed Riverine Scheme site with confirmed otter presence.

2.4.2 Field Study

Four visits were made by MCL ecologists to investigate the site for otter activity and presence, a systematic search of the entire site area was undertaken, in addition to a search of 30m beyond the site boundary. This was to investigate for otter activity and determine if otters are currently occupying or present within the site, this search also included the implementation of trail camera traps.

A previous otter survey had been carried out the previous project ecologist, (Eamonn Delaney of Delichon Ecology), in 2020 and had identified evidence for the presence of otters on site in the form of tracks and visually observed foraging otters; (see Fig. 3).

The use of trail cameras and site visits by MCL ecologists identified the presence of otters actively using the site for foraging throughout the entirety of the site area. A pair of otters have been observed on several occasions along the banks of the River Foyle on both the Strabane and Lifford side, along with evidence of their presence in the form of tracks and food remains. Several mammal trails were observed leading to and from the river into the greater wooded wetland area of the Strabane side of the site along with camera trap footage of the otter actively foraging further in land on the Strabane side of the site. Trails were evident throughout the site and have been attributed to badger activity as they lead directly to and from the numerous sett entrances. However, the use of trail cameras confirmed that otters are additionally utilising these trails to traverse the site through the flooded wet woodland region as an extended foraging area. Target notes (TN) from the surveys are presented in Table 5 and Appendix I.

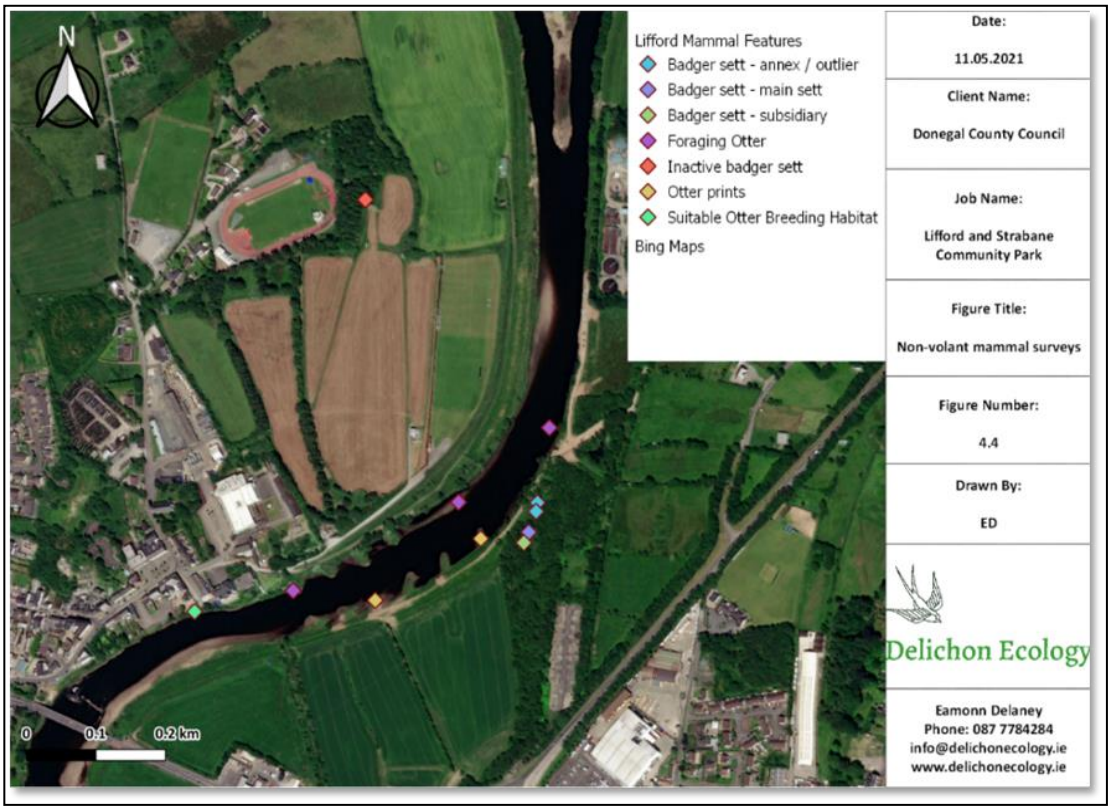


Figure 3. Map showing Delichon's previous mammal survey results.

2.4.3 Otter Survey Results

Otter Surveys were undertaken on the 11th of May, 6th, 15th and 20th of July to ascertain potential otter presence features in and around the site of the proposed for development.

A walkover of the proposed site was carried out to inspect any potential signs of otter presence including scatt, holts, slides, anal jelly and forage remains. The River Foyle runs through the centre of the site dividing the Lifford and Strabane, the banks of this river system were investigated for otter presence. Any potential trails or signs of otters entering or exiting the site along the river along with other signs of otter presence and activity were noted. Vantage point surveys were also implemented in conjunction with site walkovers to observe for otter activity along the riverbanks beyond the site boundary. Vantage point surveys utilised binoculars to observe for signs of otter presence and activity while allowing the surveyor to visually investigate certain areas of the riverbanks which were not safely accessible on foot.

Evidence that these potential access points were used by otters would include tracks, scatt and forage remains at locations where otters enter and exit the site or waterways along the

banks. These signs were recorded wherever they were present. Other tracks and potential causes for suspected trails and entry/exit points to the site were also recorded as these may indicate other causes.

Along the banks of the River Foyle there were several indicators of otter activity found both by MCL and Delichon during the survey periods with the majority of otter activity signs being located on the Strabane side of the river. Trail cameras traps located the otters actively foraging in the wider area of the Strabane side towards the eastern boundary (*See* TN1), and several otter prints were found on the extended angling platforms. Feeding remains of a large salmon were also located on the Strabane side (*See* TN2) on one of the extended angling platforms as well as numerous visual sightings during bank and VP surveys where the otters were visually observed foraging in the River Foyle. Several mammal trails were also located on the Strabane side leading to and from the rivers to the main body of the site and into the wet woodland area, (*See* TN11).

Despite the abundance of physical evidence of otter presence and activity, no otter holts were located within the area and up to 30m beyond the site boundary. Due to the extensive range otters can inhabit, along with the expanse of river they may potentially frequent it is believed that the otters primarily use the proposed site for foraging and reside further up and/or down river beyond the site boundary. Therefore, it is recommended that no further investigation for otters is required but mitigation is recommended to reduce any potential impact on the minor water courses and any potential otters in the greater area.

Table 3: Summary of findings for otter survey

Target Note (TN)	Grid reference	Description	Image
TN1		Otter caught on trail camera towards eastern boundary of the Strabane side of the site approx. 170m east of the banks of the River Foyle	 
TN2		Foraging remains located on the banks of the Strabane side of the site on one of the angling points, a large salmon head	

TN3		Foraging remains, patch of scales and small pieces of salmon meat located approximately 2m away from the head	
TN4		Otter prints located on the Strabane side of the River Foyle along the sandy banks of one of the angling points	
TN5		Otter observed towards the northern area of the site within the River Foyle. Otter was observed foraging and seen traversing north along the river surface at approximately 12:39 on the 06/07/2021	

TN6		Otter observed towards the northern area of the site within the River Foyle. Otter was observed foraging and seen traversing north along the river surface at approximately 12:58 on the 06/07/2021	
TN7		Two otters were observed floating along the surface of the river along the eastern bank on the Strabane side within the site's northern region at approximately 12:30 on the 15/07/2021	

TN8		One of the two otters remained continuously entering and exiting the water for approximately 20 minutes at 12:33, it was then observed emerging from the water whilst feeding at approximately 12:50 on the 15/07/2021	
TN9		Otter was observed emerging from the water on to the rivers western bank on the Lifford side and traversing the bank going south before disappearing west into the vegetation at approximately 12:10 on the 20/07/2021	
TN10		Otter observed on Lifford side of River Foyle, washing it's face on the banks before it disappeared into the water at approximately 12:28 on the 20/07/2021	

TN11		Mammal trails observed leading to and from the river into the greater flooded wet woodland region of the site beyond the flood embankment	

All target notes are recorded as confirmation of otter presence and activity on site during the investigation survey. However, no evidence was found of the otters residing within the site boundary as no holts were located throughout the site. The locations of these target notes can be seen in Appendix II.

2.4.4 Summary of results

The site is considered to be suitable for otters due to the presence of the River Foyle which runs through the centre of the site separating the Lifford and Strabane border. The extended area within the site boundary also offers suitable foraging habitat for the otters which has been confirmed via trail camera traps. It was suggested by Delichon that the wet woodland area within the Strabane side's central zone may provide suitable breeding habitat for otters. However, after extensive investigative surveys no holts, evidence of otter breeding or residency was found to be present, therefore the entirety of the site is considered an extended foraging zone for the local otter population with the river providing an unrestricted commuting pathway to other, potentially more suitable habitats for their holts. As such no further surveys are recommended as no holts have been found on site and all activity suggests the area is used for foraging.

It is therefore recommended that a minimum of 5 metres should be retained as a buffer between the proposed development and the surrounding water courses to reduce any

potential impact. It is also recommended that a surface water management plan be drafted and implemented to avoid potential impacts on the water courses and water quality. Consideration should also be given to otters concerning their use of the site's interior for foraging and fencing designs should facilitate free movement of otters to allow unrestricted passage throughout the site.

It is also recommended that either a small culvert or small ledge structure be worked into the bridge landing areas to allow otters free land access across the areas where the bridge makes contact with the banks of the River Foyle.

2.4.5 Mitigation Measures

During the construction phase noise may cause disturbance, therefore the adoption of best practice as defined by the Control of Pollution Act 1974 should be implemented.

All noise caused by machines should be minimised and should operate during daytime hours only as agreed with the council.

With regards to dust it should be ensured that an adequate supply of water is available on site for effective dust suppression.

Similarly, no light should be directed onto woodland features during the construction or operational phase.

During the construction phase management and protection measures should be implemented prior to works commencing on site, these include:

- No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as otters may fall in or enter in search of food and become trapped.
- No buildings or storage units are to be left open overnight, as otters may enter and become trapped.
- No poisonous or potentially harmful substances or materials are to be left unsecured overnight.
- No vehicles or machinery are to be used installing any fencing or exclusion gates.

If an otter is discovered or any activity suggesting otters have been disturbed during construction, all work must cease immediately, and the ecologist should be notified as soon as possible to detail how to proceed.

It is also recommended that compensatory planting scheme be carried out in order to re-create foraging habitat which may be lost due to the proposed site plans.

3.0 ASSESSMENT AND RECOMMENDATIONS

Otters (*Lutra lutra*) and their holts are strictly protected under the terms of the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended), known as the Habitats Regulations. They are known as a European protected species. Therefore, it is an offence to deliberately capture, injury or kill otters, disturb them or their holts, damage or destroy holts or impair their ability to hibernate or migrate as well as breeding sites.

Therefore, it is recommended that in order to reduce any potential impact on these water courses, in the event that otters are present, a minimum of 10 metres should be maintained as a buffer between the proposed development and surrounding water courses. Fencing designs should provide unrestricted access to the site for the otters in an effort to allow otters to use their extended foraging grounds. Lastly, it is recommended that a surface water management plan be drafted and implemented to avoid potential impacts on the water courses and water quality.

Report prepared By:-	Reviewed By:-
Ryan Boyle	**Conor Finlay**
Consultant Ecologist	**Graduate Ecologist**

4.0 REFERENCES

NIEA Otter Survey Specifications Available at:
Site Survey of 'Land approx 500 metres west of 77 Temple Road, Garvagh' (daera-ni.gov.uk)

FIGURES

Figure 4. River Foyle bank on the Strabane side going south

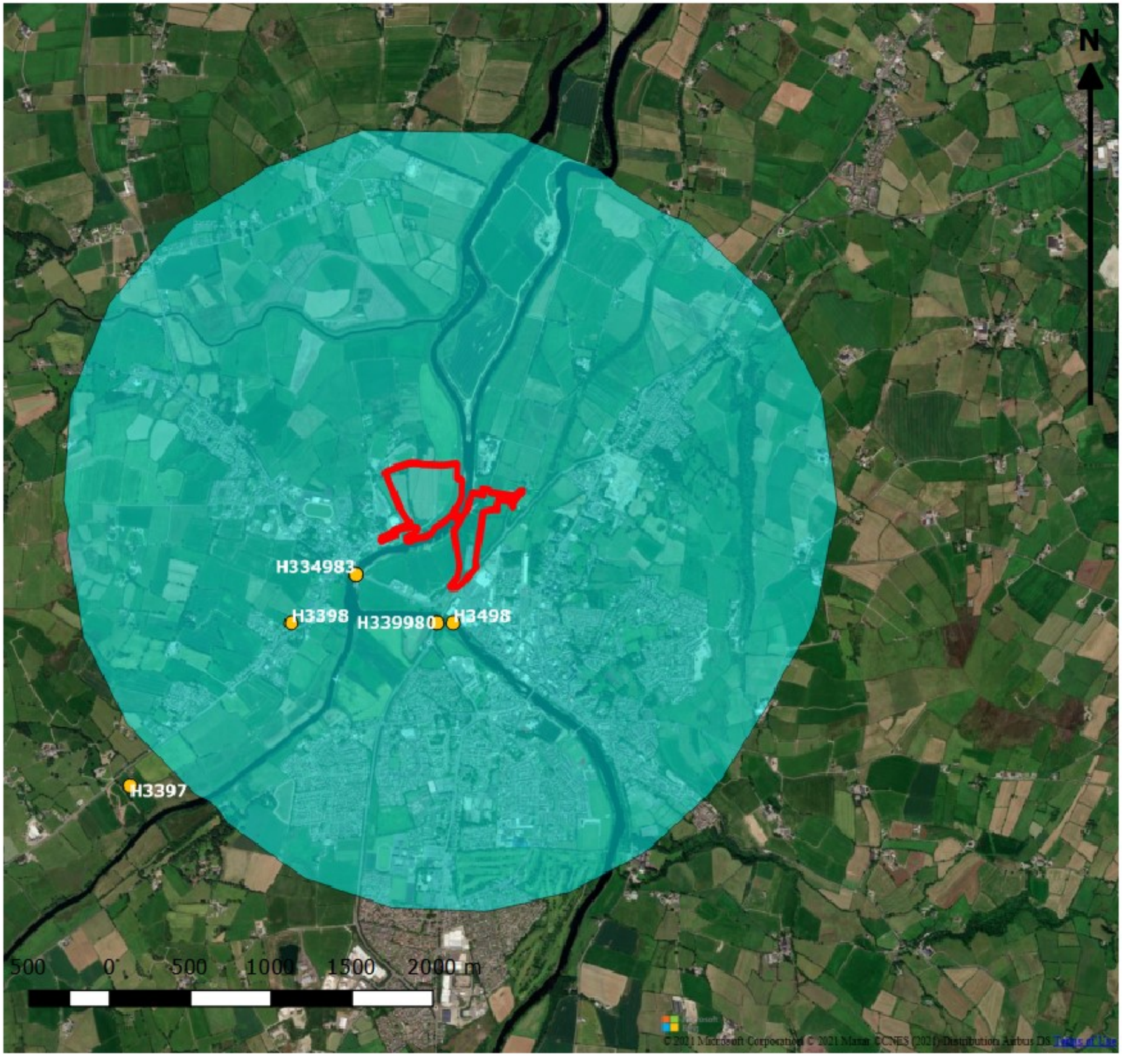
Figure 5. River Foyle bank on the Strabane side going north

Figure 6. River Foyle looking south with both Strabane and Lifford banks

Figure 7. Wet woodland area in central area of Strabane side of site

Figure 8. River Foyle looking north including the Strabane and Lifford bank

APPENDICIES



Legend

- CEDaR Otter records
- Red Lined Boundary
- Buffer

Appendix I: CEDaR Otter Records with 2km Buffer

Created by: Ryan Boyle

Reviewed by: Conor Finlay

Client: McAdam Design

Scale: 1:33000 @ A3

Date: 23/07/2021

Multidisciplinary Environmental Consultants
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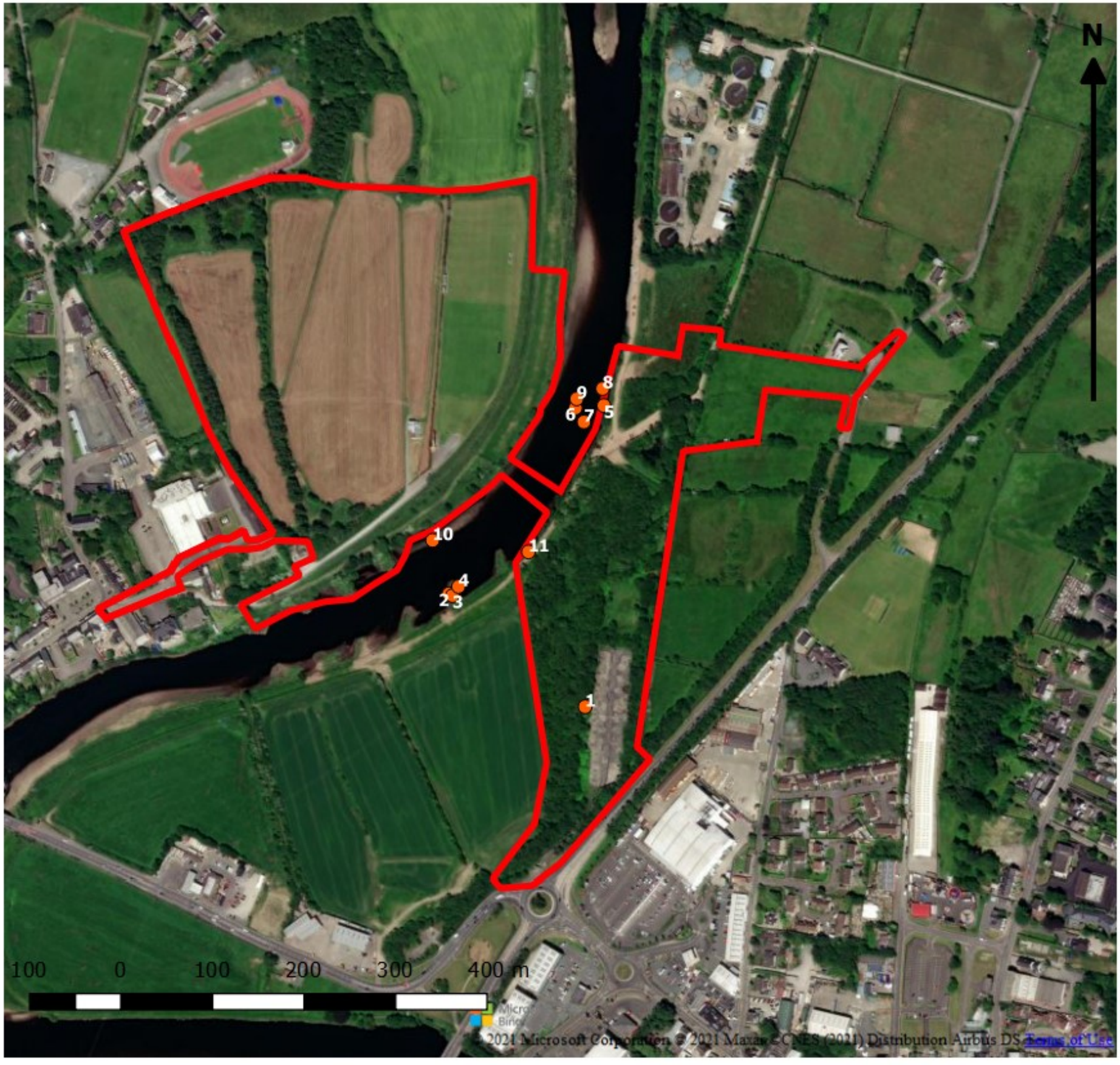
Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

- Otter Target Notes
- Red Lined Boundary

Appendix II: Target Note Locations

Created by: Ryan Boyle

Reviewed by: Conor Finlay

Client: McAdam Design

Scale: 1:5840 @ A3

Date: 23/07/2021

Multidisciplinary Environmental Consultants
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Unit 5, Forty Eight North, Duncrue Street
Belfast
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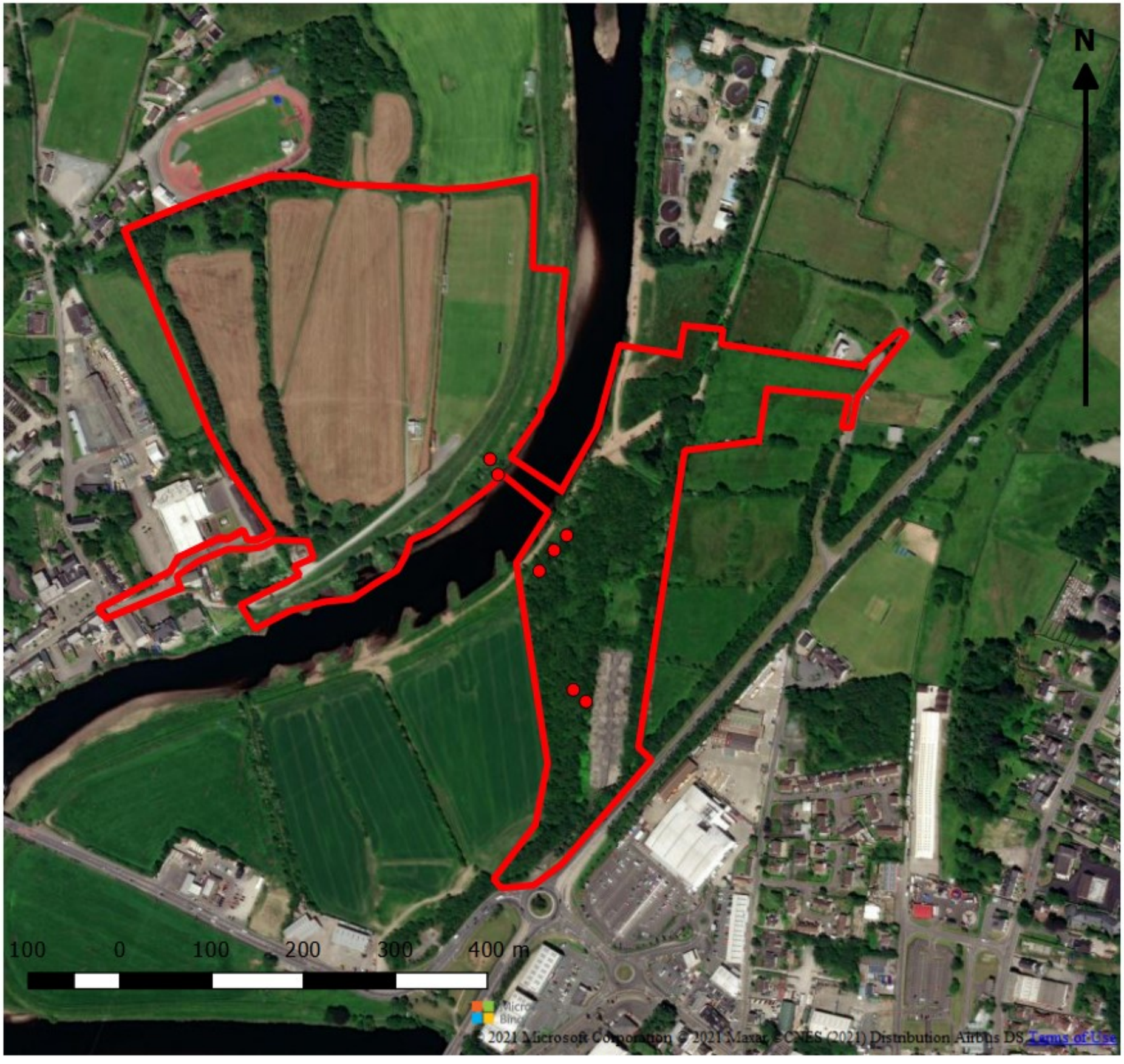

Legend

- Camera Trap Locations
- Red Lined Boundary

Appendix III: Trail Camera Locations

Created by: Ryan Boyle

Reviewed by: Conor Finlay

Client: McAdam Design

Scale: 1:5813 @ A3

Date: 23/07/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

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Belfast
BT3 9BJ
Tel: 02890747766

River Foyle

Marsh

Wetland

SUDs

Overhead Electric Lines

Park Road

Barnhill Road

Existing Water Level +(2.00)

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road influences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

N

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of the items in the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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Sammon
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Landscape Architects
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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Ghoirtha Báin
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · ZO · XX · DR · LA · 102 · P00

Project Number: 1383

Status code & Description: PLANNING

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
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- Proposed Native Wetland Trees — Refer to planting schedule
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- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- **Proposed Asphalt** — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- **Vehicular Upstand Kerb** — 125mm upstand. Pre Cast Concrete
- **Vehicular Flush Kerb** — Pre Cast Concrete
- **Pin Kerb** — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	15.02.21	Issued for planning	DM
P02	17.03.21	Issued for planning	DM

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

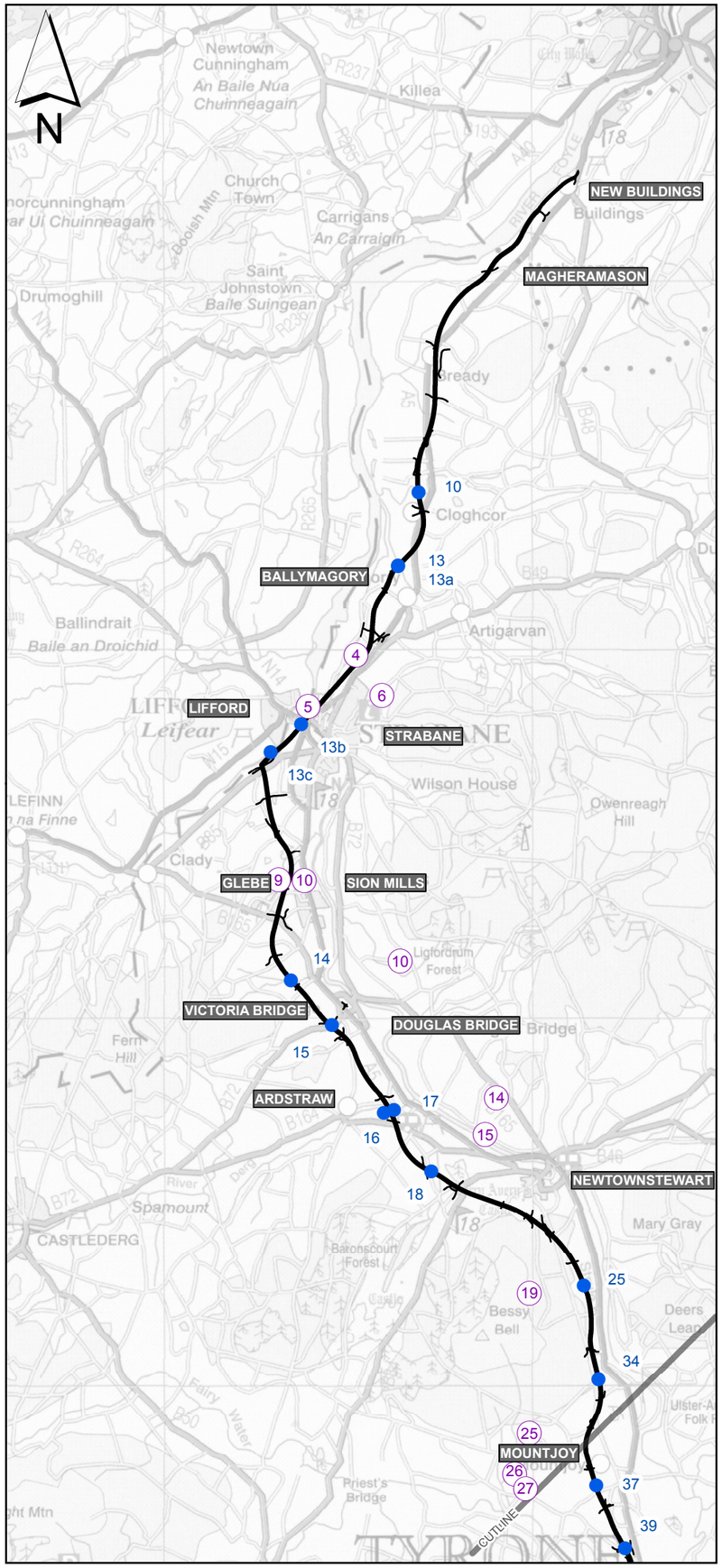
Drawing: LIFFORD LANDSCAPE LAYOUT

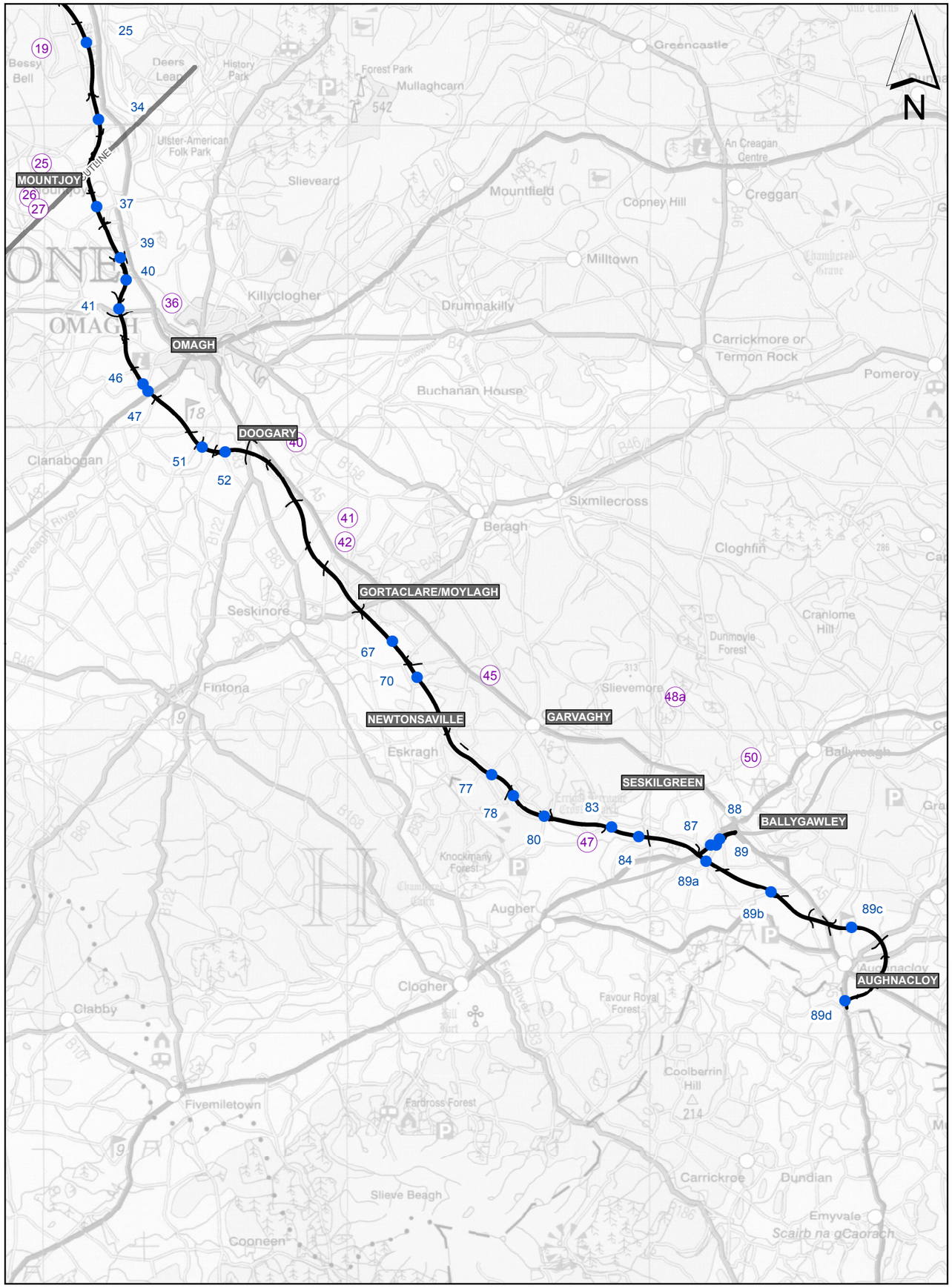
Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	ZO	XX	DR	LA	101	DRAFT

Project Number: 1383
Status code & Description: PLANNING





Legend

PROPOSED SCHEME

OTTER PRESENCE

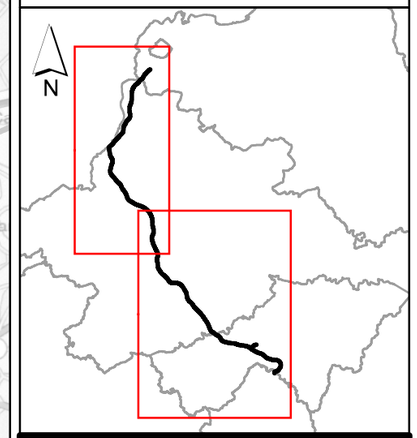
POTENTIAL OTTER BREEDING SITES

0 1 2 3 4 5 6 7 8

Kilometres

Scale @A3

1:150,000



Client

transportni

Project

A5 WTC Western Transport Corridor

mouchel

building great relationships

Drawing Title

ENVIRONMENTAL STATEMENT

OTTER SURVEY MAP

Figure No

Figure 11.36

Version

A

Appendix 8-7

Bat Roost Potential Survey

APPENDIX 8-7

Bat Roost Potential Survey

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: July 2021

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CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

In 2021 MCL Consulting was appointed by McAdam to provide an updated bat roost potential survey on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing lands on the outskirts of Strabane and Lifford.

Figure 1: Site location

1.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused concrete hardstand, with the rest of the site consisting of wet woodland and soil embankments.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

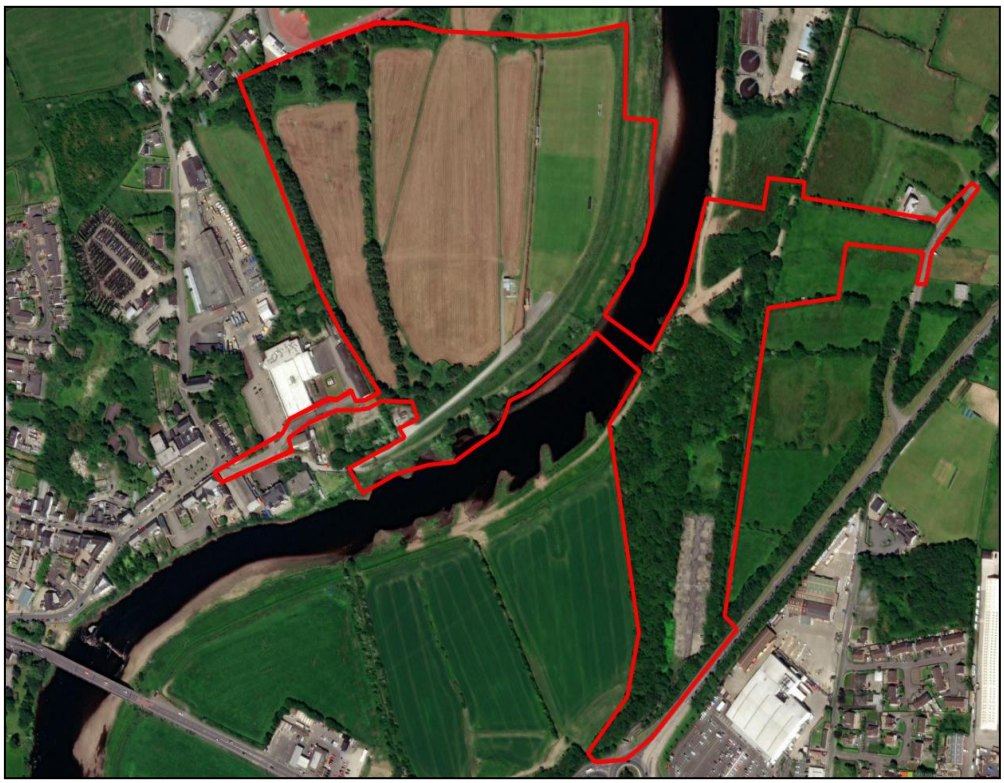

Figure 2. Site red line boundary

1.2 Proposed Development

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways, cycleways and retained wetlands. The development will be supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 11 hectares by utilising agricultural land and wetlands lying along either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The bridge will be a single span with the central, (in river), piering removed, with landing points on either side of the riverbanks. The Park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities on the Lifford side of the proposed development.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events on the Lifford side of the proposed development.
- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane will be made available on the Lifford side of the proposed development.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

1.3 Rationale of Bat Roost Potential Survey

The aim of this survey is to:

- Undertake an external & internal bat roost inspection of the required structures within the site, and;
- Identify the need for further bat survey work.

1.4 Legislation

Lifford (ROI) Legislation

All bats and their roosting sites are legally protected under the EU Habitats Directive as transposed by the Habitats Regulations. With the exception of Lesser Horseshoe bat (Rhinolophus hipposideros), which is an Annex II species, the remainder are classified as Annex IV species. They are also protected under the Wildlife Act (as amended). Across Europe, bats are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. Article 12 and 13 of the Habitats Directive relates to the establishment of a system of strict protection for certain animal and plant species, while Article 16 provides for derogations from these provisions under limited circumstances. Article 12, 13 and 16 of the Habitats Directive are transposed into Irish law by Regulation 51, 52 and 54 of the Birds and Habitats Regulations of 2011, respectively. All bats are strictly protected in Ireland and a person who deliberately captures, kills or disturbs a specimen in the wild, or who damages or destroys a breeding site or resting place of such an animal, is guilty of an offence.

As an Annex IV species may be found throughout the country, the protection of these species is not restricted in geographical terms and is not necessarily associated with areas subject to a specific nature designation. Under this it is illegal to:

- deliberately to capture, injure or kill a wild animal of a European protected species;
- deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - Impair its ability to survive, breed or reproduce, or rear or care for its young; or

- Impair its ability to hibernate or migrate;

- deliberately to obstruct access to a breeding site or resting place of such an animal; or
- damage or destroy a breeding site or resting place of such an animal.

Strabane (NI) Legislation

All species of bats (*Vespertilionidae*) are strictly protected under The Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 (as amended) (known as the Habitats Regulations). They are known as a European protected species. Under the Habitats Regulations it is an offence:

- deliberately to capture, injure or kill a wild animal of a European protected species;
- deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - Impair its ability to survive, breed or reproduce, or rear or care for its young; or
    - Impair its ability to hibernate or migrate;
- deliberately to obstruct access to a breeding site or resting place of such an animal; or
- damage or destroy a breeding site or resting place of such an animal.

2.0 METHODOLOGY

2.1 Author/ Surveyors

MCL Consulting is a Northern Ireland based multidisciplinary environmental consultancy which provides expert advice for a wide range of ecological services in support of Environmental Impact Assessments (EIA).

Ryan Boyle BSc MSc – Consultant Ecologist

Fieldwork was carried out and assisted by Ryan Boyle a consultant ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queens University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams

University. He has 7 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc – Graduate Ecological Consultant

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, as well as a seasonal volunteer for the Bat Conservation Trust and regularly takes part in newt, lizard and bat surveys.

Conor Finlay BSc MSc – Graduate Ecologist

All surveying and reporting were assisted by Conor Finlay, a graduate ecologist at MCL Consulting. He has a master's degree (MSc) in Ecological Management and Conservation Biology from Queens University, Belfast, a bachelor's degree (BSc) in Environmental Sciences from Ulster University, Coleraine and previous employment experience working as a Park Ranger within Stormont Estate assisting contractor ecologists in biodiversity checklists within veteran woodlands and conservation wetlands. He has professional experience assisting bat activity surveys, bat analysis, ecological biodiversity checklists, breeding bird's surveys, badger surveys and desktop study experience in Amphibian conservation working within Global Amphibian Biodiversity Project (GABiP).

2.2 Desk Study

A desktop study was undertaken for the site by obtaining roost records from the Northern Ireland Bat Group (NIBG) within a 2km radius of the site. Aerial maps were also studied to identify potential foraging and commuting habitat surrounding the site, as well as roost suitability.

2.3 Field Study

2.3.1 Preliminary Bat Roost Assessment

A site wide assessment for bat roost potential was undertaken. This survey was undertaken using best practice guidance produced by the Bat Conservation Trust (Collins 2016) and specified by the NIEA. The Bat Roost Potential Survey (BRP) is to identify potential bat roosts which are likely to be affected by site development and determine whether specialist bat surveys are required for works to proceed.

2.3.2 Weather Conditions

Table 1 below summarises the dates of surveys, timings and weather conditions experienced at the time of survey (temperature ˚C, Beaufort scale, cloud-cover Oktas and precipitation).

Table 1: Summary of weather conditions and survey periods

Surveyor	Date	Survey Start	Survey Finish	˚C	W/s	Oktas	Ppt
Ryan Boyle BSc, MSc **Emily Taylor BSc** **Conor Finlay BSc MSc**	15/07/21	15:40	17:00	17	4	6/8	10%

2.3.3 Survey Constraints

As bats are small opportunistic mammals, they can hide themselves in the smallest of gaps and crevices, as well as using different roost features throughout the active season. While every effort has been undertaken to observe bat roosts or bat activity, it should be kept in mind that temporal changes may occur such as roost suitability, i.e. the condition of the building structures may become such that it is no longer suitable for bat roosts.

Areas of the site had become massively overgrown and, in some areas, impassable due to excessive vegetative growth along with unsafe terrain due to the wet woodland area becoming dried out resulting in areas with deep soft mud creating potential areas where surveyors may become stuck and unable to get out. However, despite this the vast majority of the site was accessible and a thorough investigation was carried out to determine the bat roost potential across the site.

3.0 RESULTS

3.1 Desk study

A total of 17 records were returned from the Northern Ireland Bat Group for the site of the riverine scheme project within a 2km buffer.

Table 2: NIBG record results

Common name	Species	Date	Abundance	Grid
55 Khz Pipistrelle	Pipistrellus pipistrellus 55kHz	01/10/2010	/	H3297
Leisler's Bat	Nyctalus leisleri	01/10/2010	/	H3297
Nathusius' Pipistrelle	Pipistrellus nathusii	01/10/2010	/	H3297
Pipistrelle	Pipistrellus pipistrellus	01/10/2010	/	H3297
Pipistrelle	Pipistrellus species	08/10/2007	/	H353975
Pipistrelle Bat species	Pipistrellus sp.	17/07/2018	/	H347970
Bats	Chiroptera	19/05/1998	/	H348987
unidentified	bat sp.	19/05/1998	1	H348987
Common pipistrelle	Pipistrellus pipistrellus	19th June 2012	36 Counted	H348986
Bats	Chiroptera	21/08/1994	Present Count of Roost	H340967
Pipistrelle	Pipistrellus pipistrellus	23/08/2012	/	H350981
Bats	Chiroptera	23/09/1996	/	H348987
Common pipistrelle	Pipistrellus pipistrellus	23rd August 2012	/	H350981
Unidentified Bat	Myotis	24/08/2015	/	H347988
unidentified	bat sp.	26/06/1997	/	H348985
unidentified	bat sp.	26/06/1997	several hundreds	H353975
Daubenton's	Myotis daubentoni	30/06/2014	/	H347977

None of the historical records provided occurred within the proposed site boundary. The closest record was H347988 which is approximately 340m east of the site's northern area boundary, this

record is also from 2010. The most recent record provided is H347970 from 2018 which is approximately 1,438m south east from the site. No records were returned for the Lifford side of the site from the NIBG

Centre for Environmental Data and Recording (CEDaR)

Table 3: CEDaR record results

Grid	Scientific name	Common name	Date	Event Location
H347970	Pipistrellus sp.	Pipistrelle Bat species	17/07/2018	Strabane (Unlocalised)

A total of 1 record was returned from CEDaR for the site of the proposed Riverine Scheme. This record did not occur within the proposed site boundary but was located approximately 1.4km southeast of the proposed development site from 2018.

National Parks & Wildlife Service (NPWS)

No records were returned for bat species for the proposed site of the Riverine Scheme.

National Biodiversity Network Atlas (NBN) 2020

No records were returned for bat species for the proposed site of the Riverine Scheme.

A5 Approval of Planning Permission 2016

Previous studies carried out as part of the planning process for the proposed A5 development project included an in-depth investigation into the potential for roosting bats as well as bat presence and activity along the projects proposed site route. Part of this route runs within close proximity to the proposed Riverine Scheme site layout and included an investigation for bats within the area. The previous studies identified 7 species of bat along the proposed projects route with 4 of these occurring within 2km of the proposed Riverine Scheme site location, common pipistrelle, leislers, myotis and soprano pipistrelle. Each of these species was identified as occupied local tetrads around the proposed Riverine site location but not roost values were located.

3.2 Surrounding Habitat

3.2.1 Lifford

The Lifford side of the site within the ROI is predominantly made up of open fields currently used as a hare coursing ground. The western area of the Lifford side is used for the housing and rearing of hares with the northwestern corner currently closed off as it is currently being

used for the rearing of pheasant. The western boundary consists of a treeline of Lawsons Cedar (*Chamaecyparis lawsoniana*) with a second line of the same Lawsons Cedar (*Chamaecyparis lawsoniana*) approximately 62m east separating the western boundary/area from the main body of the site. These tree lines join a small area of coniferous woodland on the site's northern boundary separating the site from the Lifford greyhound track. Further to the west lies Lifford where the surrounding area becomes more residential and further agricultural lands and fields further north and south of the site. The site lies on the western bank of the River Foyle with a local GAA playing field separating the hare coursing ground from the riverbanks. There is a flood embankment established to run along the riverbanks extending past the site limits.

3.2.2 Strabane

The Strabane side of the site within NI consists primarily of a densely overgrown area. The main body of the area consists of an overgrown wet woodland consisting of willow sp. And extensive invasive species growth from Japanese knotweed (Fallopia japonica), Himalayan balsam (Impatiens glandulifera), and Giant hogweed (Heracleum mantegazzianum). A flood embankment separates the main body of the site from the eastern bank of the River Foyle with an old historical railway embankment running through the site separating the wet woodland area from the site's western boundary on the Strabane side. The site is separated from the urban town of Strabane by an area of semi-rural agricultural lands and dwellings exhibiting linear features such as hedgerows and treelines. The wider area to the north and south consists of more semi-rural agricultural lands and dwellings while further east the environment becomes much more urbanised as it borders the town of Strabane.

3.3 Bat Roost Potential Survey Results

A Bat Roost Potential Survey was undertaken on the 15th July to ascertain potential bat roost features throughout the site, in and around buildings and trees proposed for felling or demolition. The bat roost potential survey was carried out following best practice guidance produced by the Bat Conservation Trust (Collins 2016) and specified by the NIEA. The Bat Roost Potential Survey (BRP) is used to identify potential bat roosts which are likely to be affected by site development and determine whether specialist bat surveys are required for works to proceed.

The surfaces of structures and trees on site were visually inspected using binoculars and observing any signs of bats and potential entry/exit points. Features, such as small

gaps/crevices beneath eaves, along the ridges or within the brickwork; lifted or missing roofing materials; or gaps around doorways and broken windows which have potential as bat access points into the building were noted and inspected using a VITCOCO Digital industrial Endoscope.

Evidence that these potential access points were used by bats would include staining within gaps and/or bat droppings or urine staining under gaps and/or on external walls and windows. These signs were recorded wherever they were present. The presence of cobwebs and general detritus within the features were also recorded as these indicate that potential access points were likely to be inactive.

The interior of the structures was inspected using handheld torches, binoculars and a VITCOCO Digital industrial Endoscope. All cavities, cracks and gaps in the structure were inspected for presence of bats. The surfaces of structures, walls and floors were all inspected for the presence of droppings, staining and insect remains.

Table 4: Old hare coursing stands on the Lifford side

Features of the Building/Structure	Description	Bat Roost Potential
Structure/Building type	Open fronted sports stands with chairs	Negligible
Age of Structure/Building	Mid-20th Century	Moderate
Aspect of Building	West	Moderate
Wall construction, the type of brick or stone used to build the wall and whether it has cavity or rubble-filled walls.	Brick/stone with rendering. Structure only has three walls with the two side walls being only half the height of the back wall. The structure is open and exposed at the front to allow clear viewing on coursing days	Negligible
Holes in walls, pipes, gaps behind window frames, lintels and doorways, cracks and crevices in stonework and	Not present, walls are in good condition	Negligible

brickwork.		
Roof type - presence of gable ends, hipped roofs, etc. and the nature and condition of the roof covering.	Corrugated steel roof suspended over the structure on metal pillars and frame work. Corrugated steel is in poor condition showing signs of rust and gaps to the rear of the roof	Negligible
Condition of eaves - sealed by a soffit or boxed eave and the tightness of the fit to the exterior walls.	Not present	Negligible
Entry and exit points around the eaves, soffits, fascia and barge boarding and under tiles.	None as none of these features are present	Negligible
Covering of ivy on walls.	Not present	Negligible
Bat droppings on the ground, ledges, windows, sills or walls or urine on window sills.	None present	Negligible
Presence of hanging tiles, weatherboarding or other forms of cladding.	Not present	Negligible
Information or evidence of work having been undertaken that could affect use of the structure by bats.	Not present	Negligible
Conclusion of Assessment	**Negligible**	

This structure is an old sports viewing stand with concrete steps. Overall condition of the structure is good with no visible gaps or cracks present in the rendered walls. The structure exhibits a slanted corrugated steel roof which is suspended over the structure by several metal pillars and a metal framework, there are several gaps and holes present in the roof with signs of rust starting to show. The structure is very open and exposed exhibiting only 3 walls with an open face entrance.

Throughout the survey, no bats were identified nor was any evidence of external bat activity found. In addition, a search of the building's exterior provided no evidence of bat activity in the form of staining, urine, droppings or insect remains. No droppings or insect remains were noted on any of the window ledges or any surface of the structure.

Due to the open and exposed nature of the structure along with no physical evidence of roosting bats it has been determined that the sports viewing structure supports **negligible** roosting potential for bat species in the area with no visible potential roosting features.

Figure 3. Old hare coursing viewing stand on the Lifford side of the site

Table 5: Shed/outhouse on the Lifford side

Features of the Building/Structure	Description	Bat Roost Potential
Structure/Building type	Small single storage shed	Negligible
Age of Structure/Building	Mid-20th Century	Moderate
Aspect of Building	south	High
Wall construction, the type of brick or stone used to build the wall and whether it has cavity or rubble-filled walls.	Brick/stone with rendering. With some cracks and exposed areas	Moderate
Holes in walls, pipes, gaps behind window frames, lintels and doorways, cracks and crevices in stonework and brickwork.	Several cracks and gaps located in the structures rendering and around the	Moderate

	structures window frames	
Roof type - presence of gable ends, hipped roofs, etc. and the nature and condition of the roof covering.	Flat roof with felt covering in good condition and well-sealed to the structures roof	Negligible
Condition of eaves - sealed by a soffit or boxed eave and the tightness of the fit to the exterior walls.	Not present on the structure	Negligible
Entry and exit points around the eaves, soffits, fascia and barge boarding and under tiles.	2 gaps identified on the structures southwest and northwest corners where gaps in the fascia board were noted	Low
Covering of ivy on walls.	Not present	Negligible
Bat droppings on the ground, ledges, windows, sills or walls or urine on window sills.	None present	Negligible
Presence of hanging tiles, weatherboarding or other forms of cladding.	Not present	Negligible
Information or evidence of work having been undertaken that could affect use of the structure by bats.	Not present	Negligible
Conclusion of Assessment	**Negligible**	

This structure is an old single storey shed structure located to the northern area of the Lifford side of the site. The structure looks in relatively good condition with rendered brick/stonework walls and a flat roof with felt covering. Some minor cracks and gaps were identified on the structure's exterior and in the fascia board. The structure is regularly used in order to gain access to other areas of the site.

Throughout the survey, no bats were identified nor was any evidence of external bat activity found. In addition, a search of the building's exterior provided no evidence of bat activity in the form of staining, urine, droppings or insect remains. No droppings or insect remains were noted on any of the window ledges or any surface of the structure.

Due to the few visible potential roosting features and no physical evidence of roosting bats, as well as the small size and regular use to access the rest of the site; it has been determined that the shed/outhouse structure supports **negligible** roosting potential for bat species in the area.

Figure 4. Old Shed/outhouse on the Lifford side

Figure 5. Old Shed/outhouse with hole in fascia board on southwest corner of structure and gaps and cracks in render and around window frames

Figure 6. Old Shed/outhouse with missing part of fascia board on the northwest corner of structure

Table 6: Trees proposed for felling

Target Note	Tree Species	Roosting Feature	Roosting Potential	Image
1	Mature Sycamore	No visible roosting features or visible evidence of bat activity, i.e: staining/ droppings with an intact main stem and no visible broken branches in the crown. Ivy growth covering the lower area of the main stem	Low	

2	Immature Ash	Several broken branches were identified in the upper crown but consisted of the thinner limb ends with no visible entrance point. No visible roosting features or visible evidence of bat activity, i.e: staining/ droppings with ivy growth	Low	

3	Mature Sycamore	Dense ivy growth, however, no visible roosting features identified or visible evidence of bat activity, i.e: staining/ droppings	Low	
4	Immature Ash	No identifiable roosting features or visible evidence of bat activity, i.e: staining/ droppings, ivy growth present	Low	

5	immature Sycamore	No identifiable roosting features or visible evidence of bat activity, i.e: staining/ droppings	Negligible	
6	3x Semi-mature sycamore	Ivy growth on main stem No visible or identifiable roosting features or visible evidence of bat activity, i.e: staining/ droppings.	Low	

7	Treeline of Lawsons Cedar	No visible or identifiable roosting features or or visible evidence of bat activity, i.e: staining/ droppings. Cedar species are often less favoured by bats for roosting.	Low	

An extensive investigation was carried out across the site to complete the bat roost potential for the proposed Riverine Scheme site. The Lifford side does not exhibit many potential roosting features as the area is dominated by open grassland as part of the hare coursing site. The treelines of Lawsons cedar and area of coniferous woodland do not exhibit any potential roosting features as no peeling bark, rot or knot holes were observed, coniferous trees are also considered less suitable for roosting bats but can still be used should suitable roosting features be present. the two structures on the Lifford side of the site were deemed to be of negligible roosting potential as they did not exhibit suitable roosting features with the hare coursing viewing stand being very open and exposed they do not present safe and suitable roosting sites for bats in the area.

The Strabane side of the site initially appeared to provide much more suitable roosting habitat for bats as it is dominated by a deciduous wet woodland with extensive areas of dense tree growth and larger more mature trees growing along the site's entrance pathway. However, after investigation it was determined that the area does not provide much suitable roosting habitat, while the wet woodland does exhibit dense vegetative growth with

numerous trees of varying ages of maturity no potential roosting features were observed. The northern area of the Strabane side close to the river primarily contains goat willow (*Salix Caprea*), crack willow (Salix fragilis), immature oak (*Quercus robur*), and alder (*Alnus glutinosa*). The central wet woodland area of the site is also dominated by goat and crack willow all of which appear to be small due to restricted growth space and did not exhibit any potential rooting features that would be suitable for bats. The entrance path which runs along the site's eastern boundary was lined with immature and mature ash trees, (*Fraxinus* sp.), and hawthorn, (*Crataegus monogyna*), towards the entrance is an old, concreted carpark area surrounded by dense tree and vegetation growth.

The entrance lane to the site and along the eastern boundary had already experienced clearing, felling and lopping of trees and vegetation and is believed to have already been cleared of some larger more mature trees. TN1-6 were located along the entrance pathway to the site. These trees exhibited the most suitable features for bats, however, the majority of these were due to the presence of ivy growth on the trees, no other suitable roosting features were observed, and no evidence of bat presence or activity was found near any of the individual trees inspected.

Overall, it is considered that the proposed Riverine Scheme site has a high potential for foraging and commuting bats due to the abundance of linear features such as the tree lines and hedgerows both within the site boundary and beyond. As well as the extensive woodland growth within the Strabane side of the site. However, the proposed site is not considered to be of significant roosting potential for bats in the local area. The historical records provided by the NIBG and CEDaR also support the consideration that the site does not poses great potential for roosting bats as no records were provided within the site boundary.

3.4 Summary of results

There are two structures on the site proposed for demolition: no.1 the old hare coursing viewing stands and no.2 the old, shed outhouse, both of which are on the Lifford side of the site. Both structures have been established as **negligible** for roosting potential as there were no visible potential roosting features nor any physical signs of bat habitation. The first treeline of Lawsons cedar on the Lifford side, separating the western area from the rest of the site, is also proposed for felling and has been given a **low** roosting potential.

The seven trees, (4x semi-mature sycamore, 2x mature sycamore and 2x immature ash), have also been specified as **low** roosting potential score due to the lack of potential roosting features and no evidence of bat activity or presence, while one of the semi-mature sycamores is considered to be of **negligible** roosting potential for bats. Therefore, no further bat activity surveys are recommended for the investigation of roosting bats within the identified structures and trees in accordance with best practice guidance from Bat Conservation Trust as trees with a **low** roosting potential do not require emergence or re-entry surveys.

The surrounding environment of site was assessed as high potential for foraging and commuting bats. Due to the proposed layout and site plans it is recommended that further bat activity surveys be carried out to assess potential population and bat activity across the site to assess how the proposed development may impact the local bat populations activity within the site.

4.0 ASSESSMENT AND RECOMMENDATIONS

All bats and their roosting sites are legally protected under the EU Habitats Directive as transposed by the Habitats Regulations. With the exception of Lesser Horseshoe bat (*Rhinolophus hipposideros*), which is an Annex II species, the remainder are classified as Annex IV species. They are also protected under the Wildlife Act (as amended) as well as being listed under the Wildlife Act (as amended) and under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982). Therefore, it is an offence to deliberately capture, injure or kill bats, disturb them in their roosts or damage or destroy any breeding sites.

The results from the desk study indicate that there are no bat records within the area, however, that does not mean that they are not present.

Following an inspection of the proposed Riverine Scheme site and its surrounding environment it is considered that the two structures on the Lifford side have **negligible** roosting potential while TN1, 2, 3, 4, 6 and 7 have a **low** roosting potential for bats; TN5 is considered to have **negligible** roosting potential for bats. However, the site is considered to have a high potential for foraging and commuting bats and as such is considered an important habitat for bats in the local area. Therefore, no further activity surveys are recommended for

the proposed demolition of the Lifford structures or for the trees on both the Lifford and Strabane side. However, activity surveys are recommended for the site in order to determine bat activity levels throughout the site to determine the potential impacts the proposal may have on the local bat populations. This activity survey should be carried out during the 2021 season as is best practice guidance from Bat Conservation Trust specified by the NIEA.

Report prepared By:-	Reviewed By:-
Ryan Boyle	**Conor Finlay**
Consultant Ecologist	**Graduate Ecologist**

5.0 REFERENCES

Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

NIEA Bat Survey Specifications Available at:
https://www.daerani.gov.uk/sites/default/files/publications/daera/bat-survey-specifications.pdf

National Parks & Wildlife Service Legislation at:
Legislation | National Parks & Wildlife Service (npws.ie)

Office of the Attorney General (1976) Wildlife Act, 1976. [On-line]:
Wildlife Act, 1976 (irishstatutebook.ie)

FIGURES

Figure 7. Northeast corner of Strabane side of site with small area of wet woodland on the left and mixed woodland on the right

Figure 8. Northeast corner of Strabane side of site going North along Eastern Boundary

Figure 9. Strabane side eastern boundary treelines

Figure 10. Old concrete area at Strabane side entrance surrounded by trees

Figure 11. Path leading to banks of River Foyle on Strabane side

Figure 12. Entrance to wet woodland area on Strabane side

Figure 13. Open grassland area of the hare coursing ground on the Lifford side

Figure 14. Coniferous treeline on Lifford side's western area

Figure 15. Riverine habitat

APPENDICIES

River Foyle

Marsh

Wetland

SUDs

Overhead Electric Lines

Existing Water Level +(2.00)

Park Road

Barnhill Road

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road commences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Match Line to drawing ref: 1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

N

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of the items in the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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Project Manager, Civil & Structural Engineers
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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Strabha Bain
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · ZO · XX · DR · LA · 102 · P00

Project Number: 1383
Status code & Description: PLANNING

LEGEND

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- **Vehicular Flush Kerb** — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

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4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	12.02.2021	Issued for screening	DM
P02	10.02.2021	Issued for screening	HB

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Bán
Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: LIFFORD LANDSCAPE LAYOUT

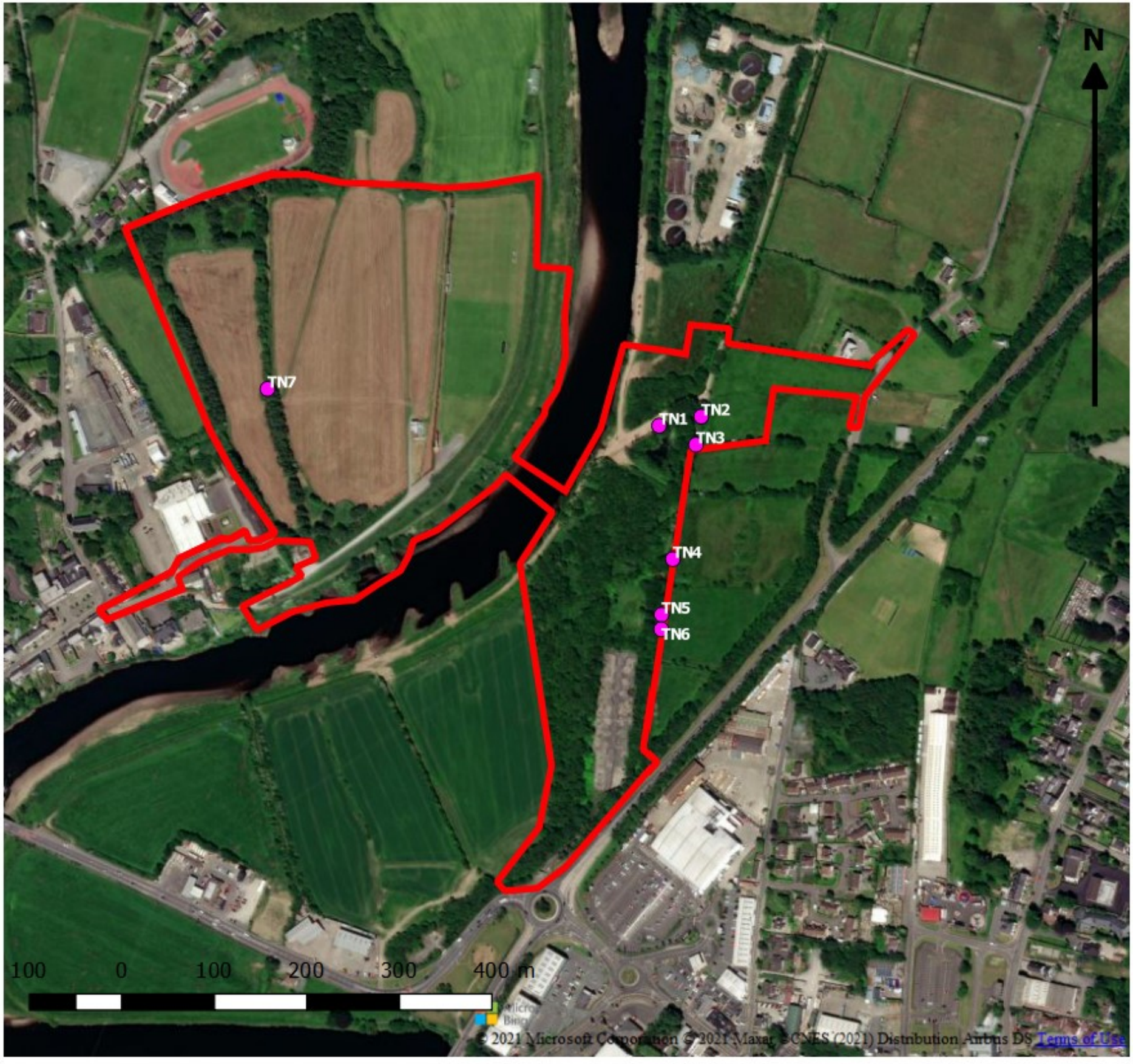
Scale: 1:500@A0

Drawn	DM	Checked	DM	Approved	AH
Date	12.02.2021	Date	12.02.2021	Date	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · Z0 · XX · DR · LA · 101 · DRAFT

Project Number: 1383

Status code & Description: PLANNING



Legend

- Bat Roost Potential Target Notes
- Red Lined Boundary

Appendix III: Target Note Locations

Created by: Ryan Boyle

Reviewed by: Conor Finlay

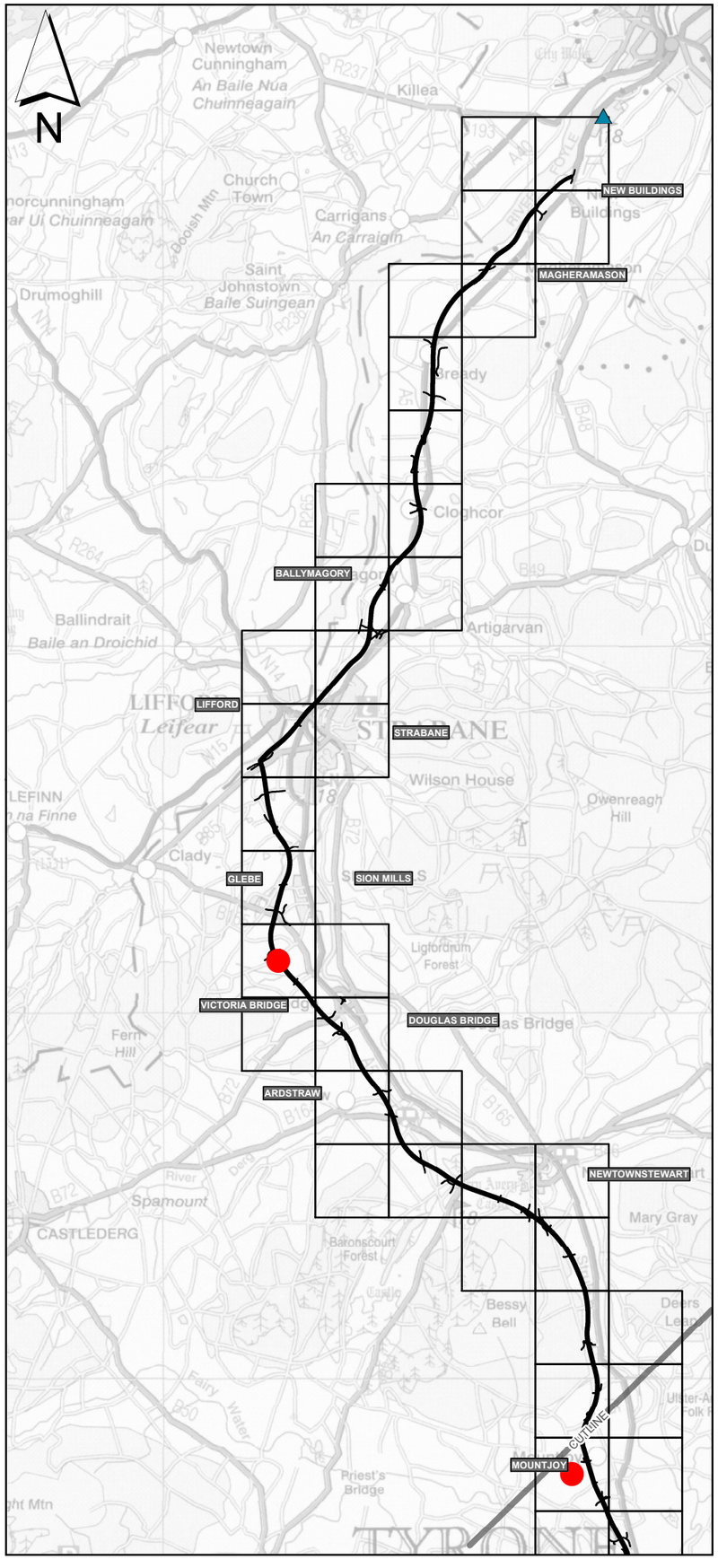
Client: McAdam Design

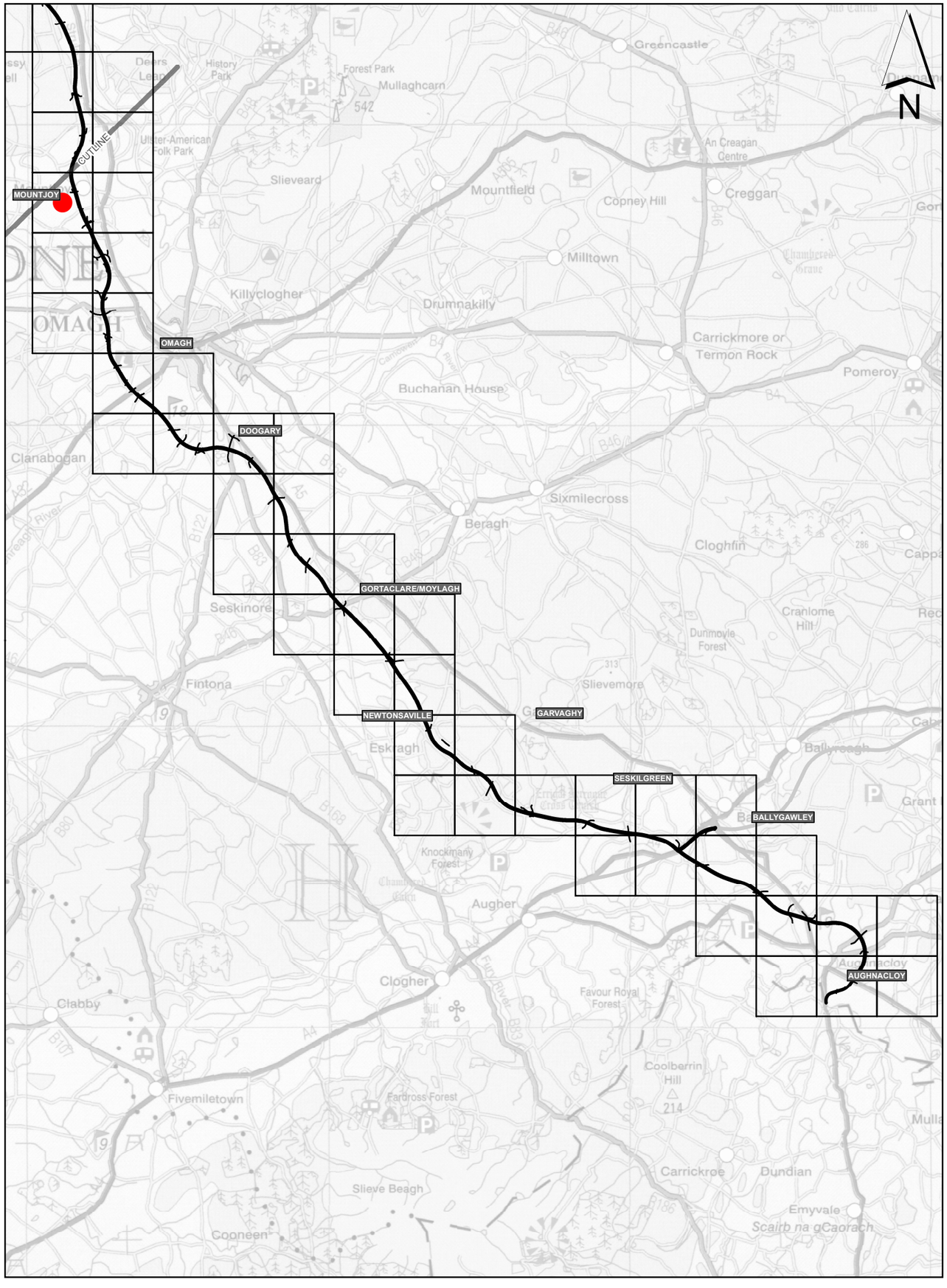
Scale: 1:5785 @ A3

Date: 16/07/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766





Legend

PROPOSED SCHEME

BROWN LONG-EARED

BROWN LONG-EARED, COUNTY

TETRADS OCCUPIED BY SPECIES, LOCAL

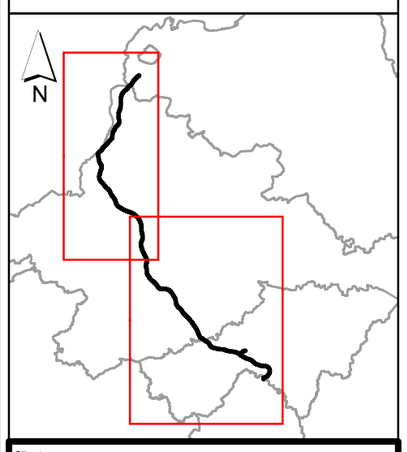
BAT ATLAS GRID

0 1 2 3 4 5 6 7 8

Kilometres

Scale @A3

1:150,000



Client

transportni

Project

A5 WTC Western Transport Corridor

mouchel

building great relationships

Drawing Title

ENVIRONMENTAL STATEMENT

BAT ATLAS - BROWN LONG-EARED

Figure No

Figure 11.37

Version

A

N

N

NEW BUILDINGS
MAGHERAMASON
BALLYMAGORY
LIFFORD
STRABANE
GLEBE
SION MILLS
VICTORIA BRIDGE
DOUGLAS BRIDGE
ARDSTRAW
NEWTOWNSTEWART
MOUNTJOY
OMAGH
DOOGARY
GORTACLARE/MOYLAGH
NEWTONSAVILLE
GARVAGHY
SESKILGREEN
BALLYGAWLEY
AUGHNACLOY
CUTLINE

Legend

PROPOSED SCHEME

PIPISTRELLE

MOUCHEL SURVEY ROOSTS AND VALUES

- COMMON AND SOPRANO PIPISTRELLE, LOCAL VALUE
- COMMON PIPISTRELLE, LOCAL VALUE
- UNKNOWN PIPISTRELLE SPECIES, LOCAL VALUE

DESK STUDY ROOSTS AND VALUES

- COMMON PIPISTRELLE, COUNTY
- UNKNOWN PIPISTRELLE SPECIES, COUNTY
- UNKNOWN PIPISTRELLE SPECIES, LOCAL

- TETRADS OCCUPIED BY SPECIES, LOCAL
- BAT ATLAS GRID

0 1 2 3 4 5 6 7 8
Kilometres

Scale @A3
1:150,000

N

Client
transportni

Project
A5 WTC Western Transport Corridor

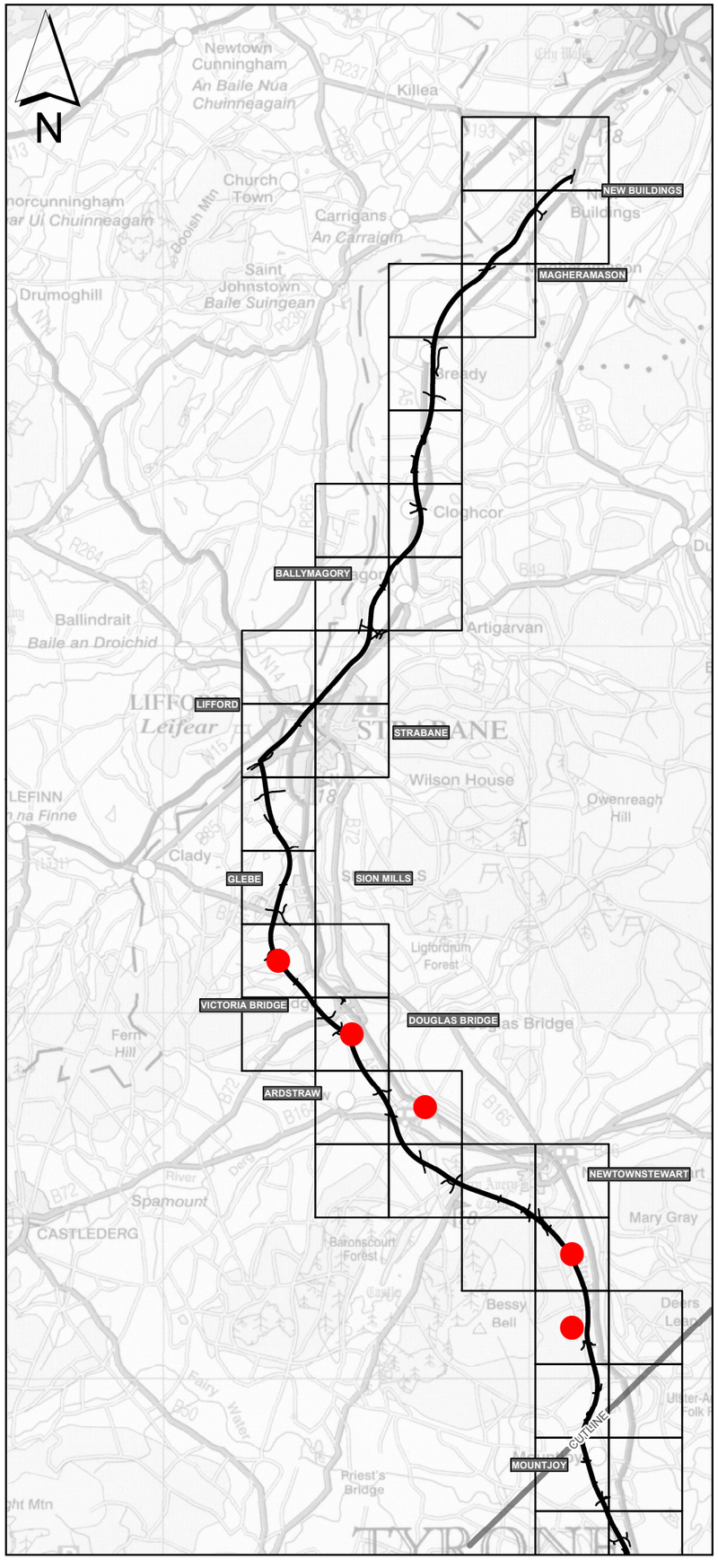
mouchel
building great relationships

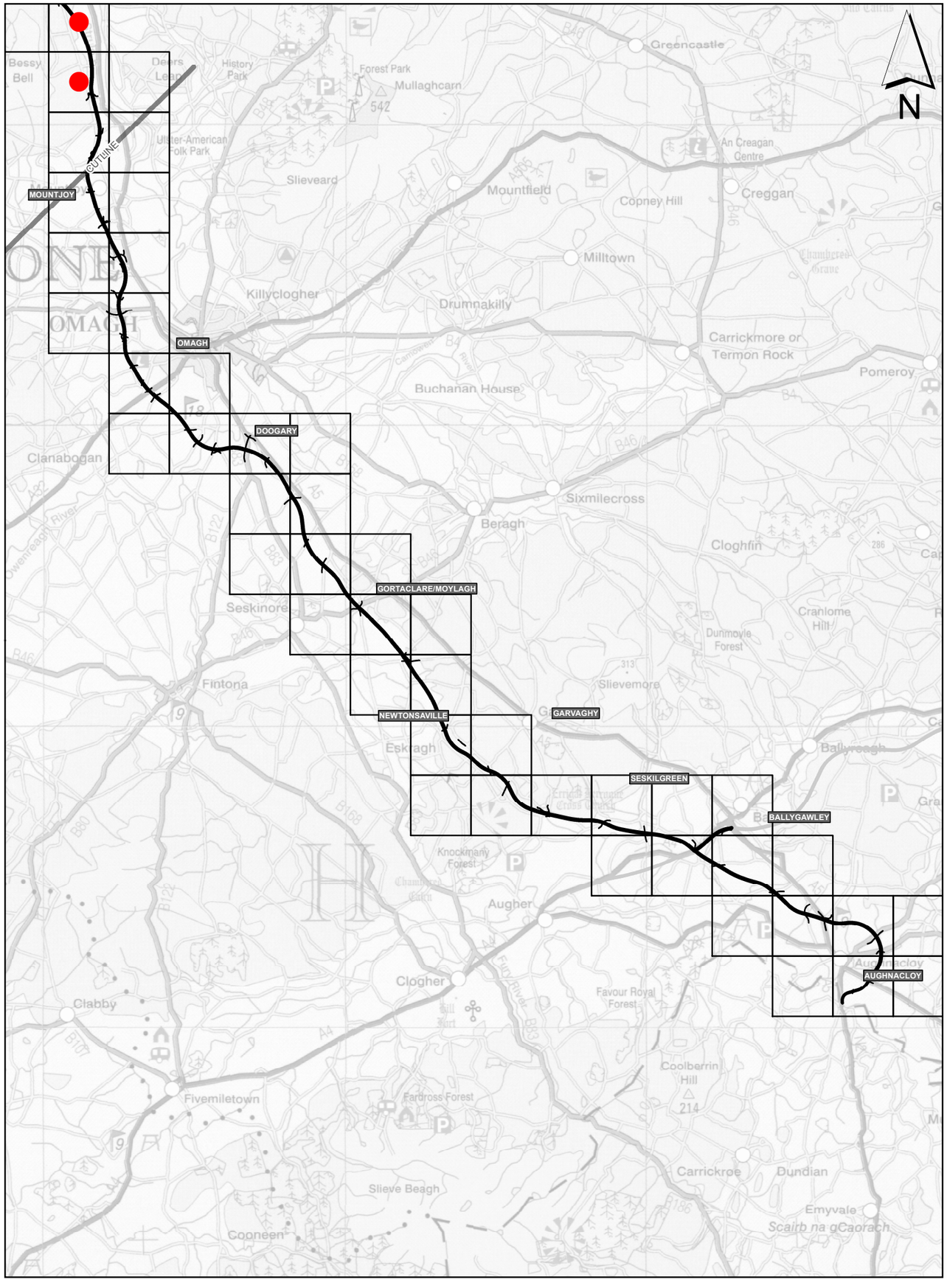
Drawing Title
ENVIRONMENTAL STATEMENT

BAT ATLAS - COMMON PIPISTRELLE

Figure No
Figure 11.38

Version
A





Legend

PROPOSED SCHEME

DAUBENTON'S

TETRADS OCCUPIED BY SPECIES, LOCAL

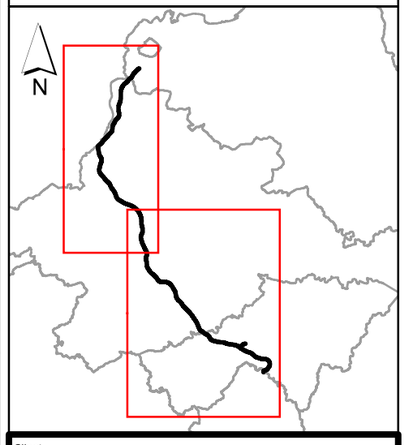
BAT ATLAS GRID

0 1 2 3 4 5 6 7 8

Kilometres

Scale @A3

1:150,000



Client

transportni

Project

A5 WTC Western Transport Corridor

mouchel

building great relationships

Drawing Title

ENVIRONMENTAL STATEMENT

BAT ATLAS - DAUBENTON'S

Figure No

Figure 11.39

Version

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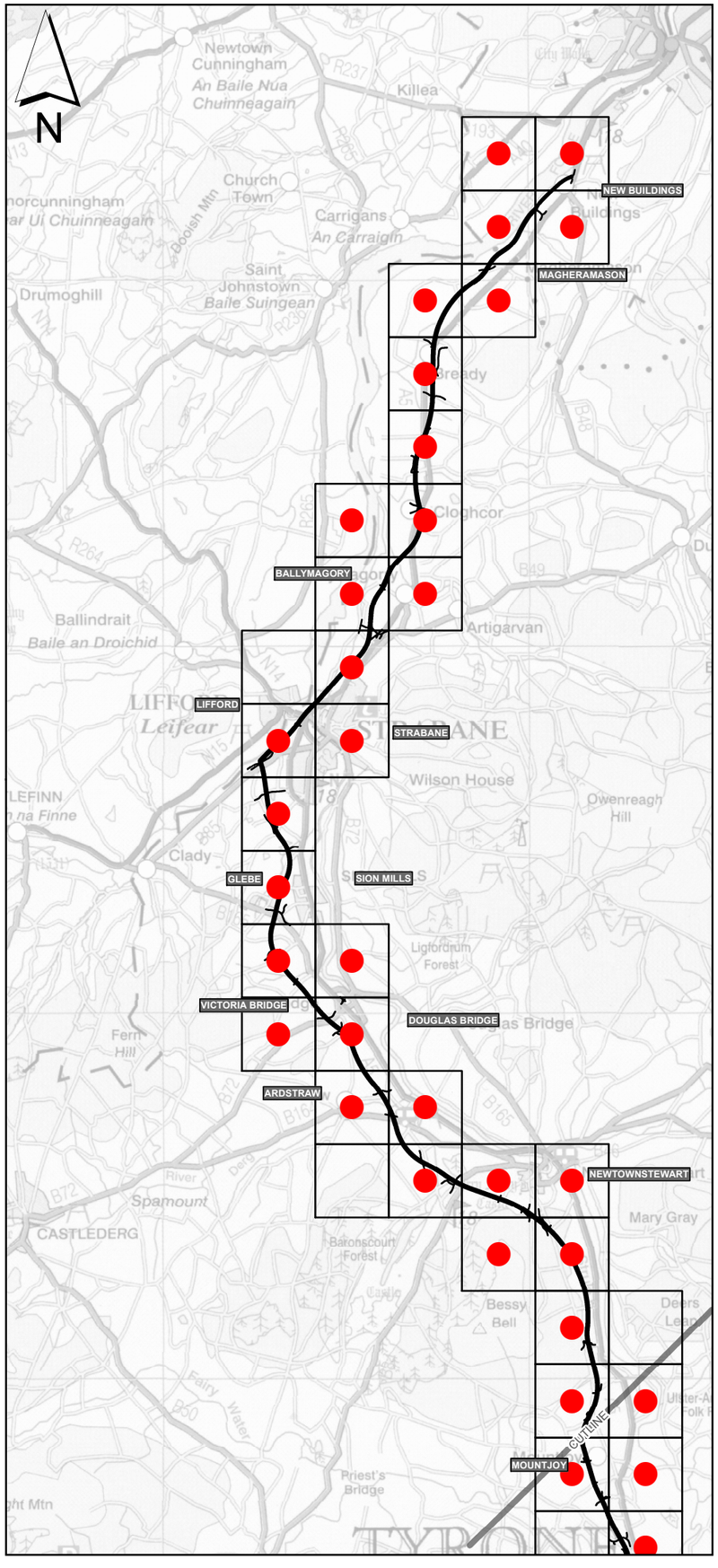
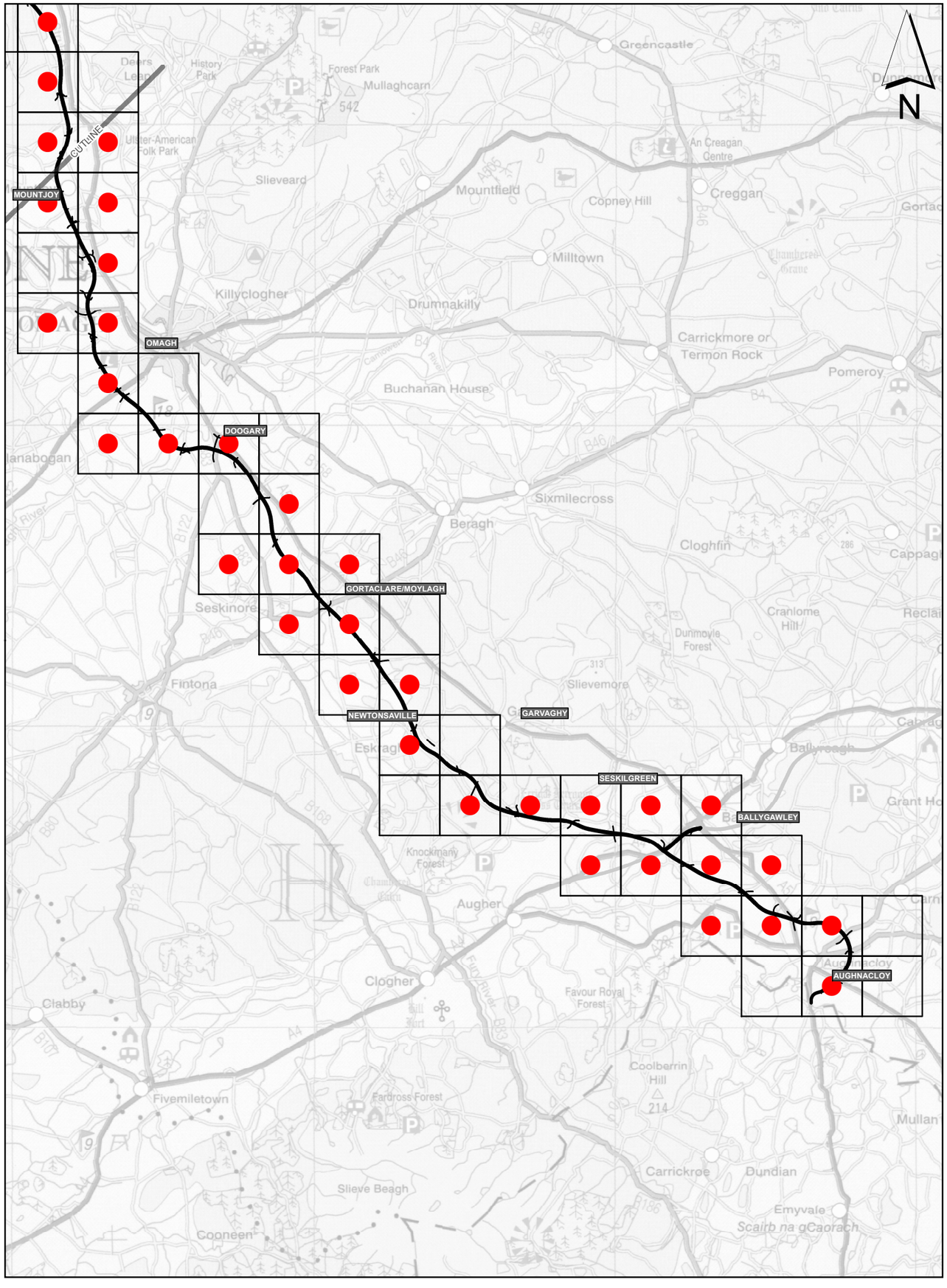




Legend

PROPOSED SCHEME

LEISLERS

TETRADS OCCUPIED BY SPECIES, LOCAL

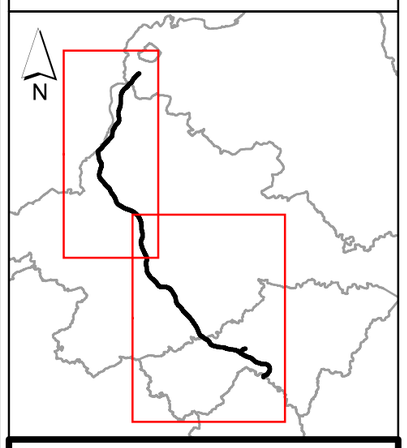
BAT ATLAS GRID

0 1 2 3 4 5 6 7 8

Kilometres

Scale @A3

1:150,000



Client

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Project

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Drawing Title

ENVIRONMENTAL STATEMENT

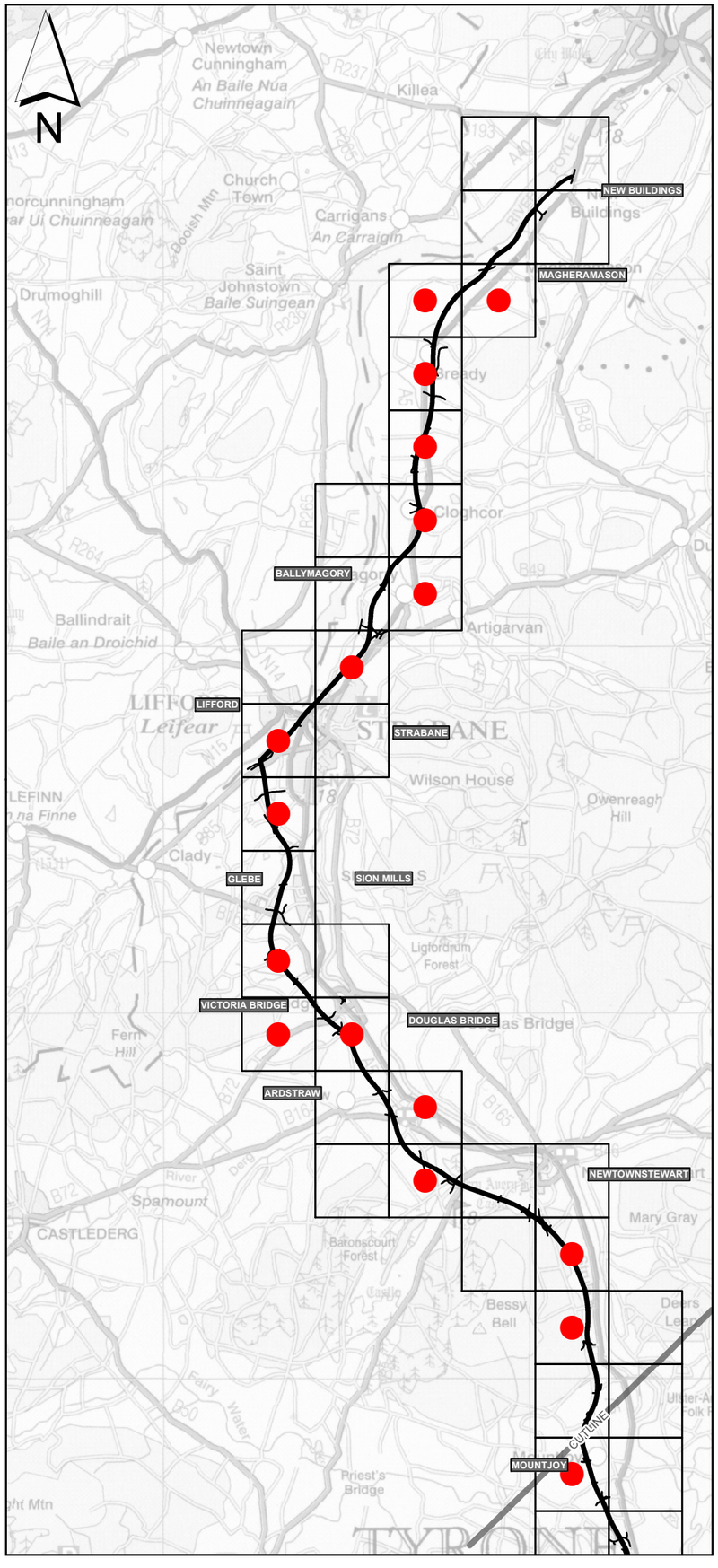
BAT ATLAS - LEISLERS

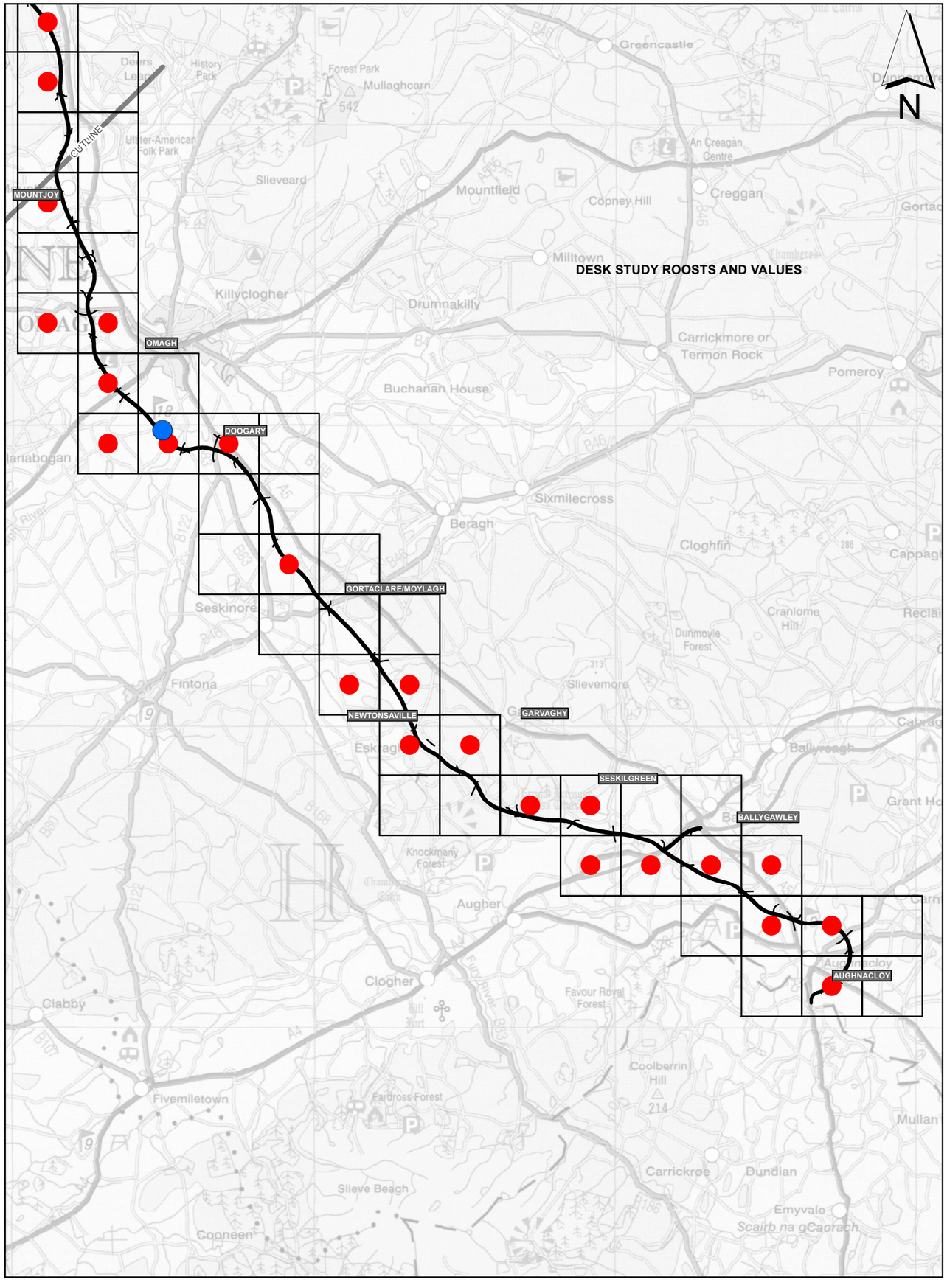
Figure No

Figure 11.40

Version

A





Legend

PROPOSED SCHEME

MYOTIS

MOUCHEL SURVEY ROOSTS AND VALUES

UNKNOWN MYOTIS SPECIES, LOCAL

TETRADS OCCUPIED BY SPECIES, LOCAL

BAT ATLAS GRID

0 1 2 3 4 5 6 7 8

Kilometres

Scale @A3

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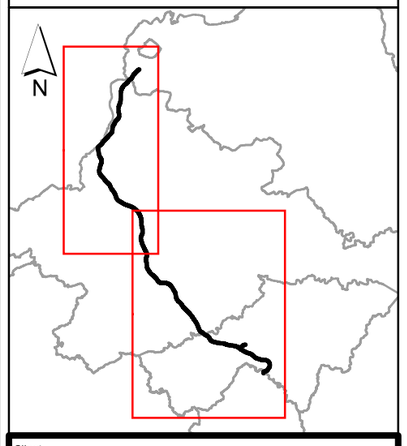

Client

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Drawing Title

ENVIRONMENTAL STATEMENT

BAT ATLAS - MYOTIS

Figure No

Figure 11.41

Version

A

DESK STUDY ROOSTS AND VALUES

NEW BUILDINGS
MAGHERAMASON
BALLYMAGORY
LIFFORD
STRABANE
GLEBE
SION MILLS
VICTORIA BRIDGE
DOUGLAS BRIDGE
ARDSTRAW
NEWTOWNSTEWART
MOUNTJOY
CULTURE
OMAGH
DOOGARY
GORTACLARE/MOYLAGH
NEWTONSAVILLE
GARVAGHY
SESKILGREEN
BALLYGAWLEY
AUGHNACLOY

Legend

PROPOSED SCHEME

NATHUSIUS PIPISTRELLE

DISTRICT VALUE

TETRADS OCCUPIED BY SPECIES, LOCAL

BAT ATLAS GRID

0 1 2 3 4 5 6 7 8
Kilometres

Scale @A3
1:150,000

Client
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Project
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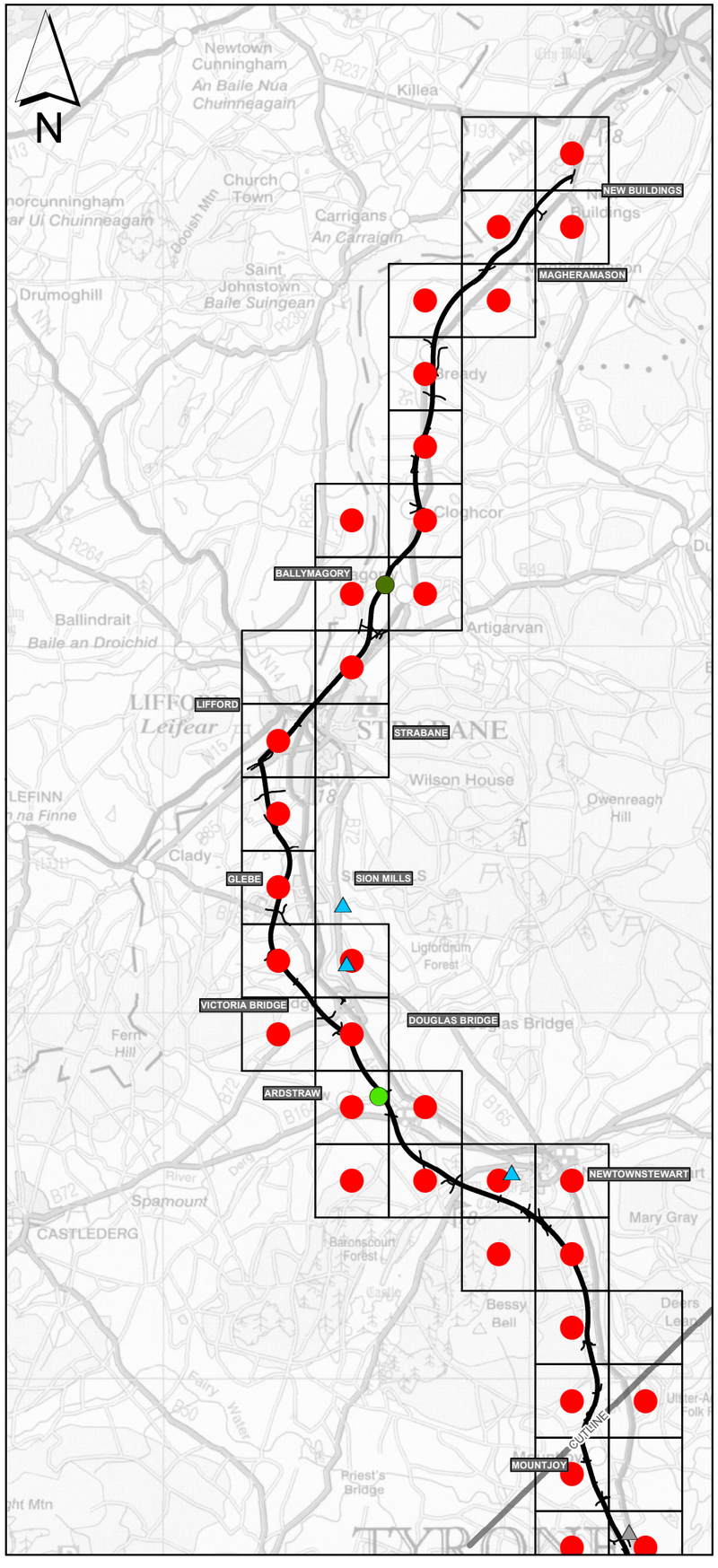
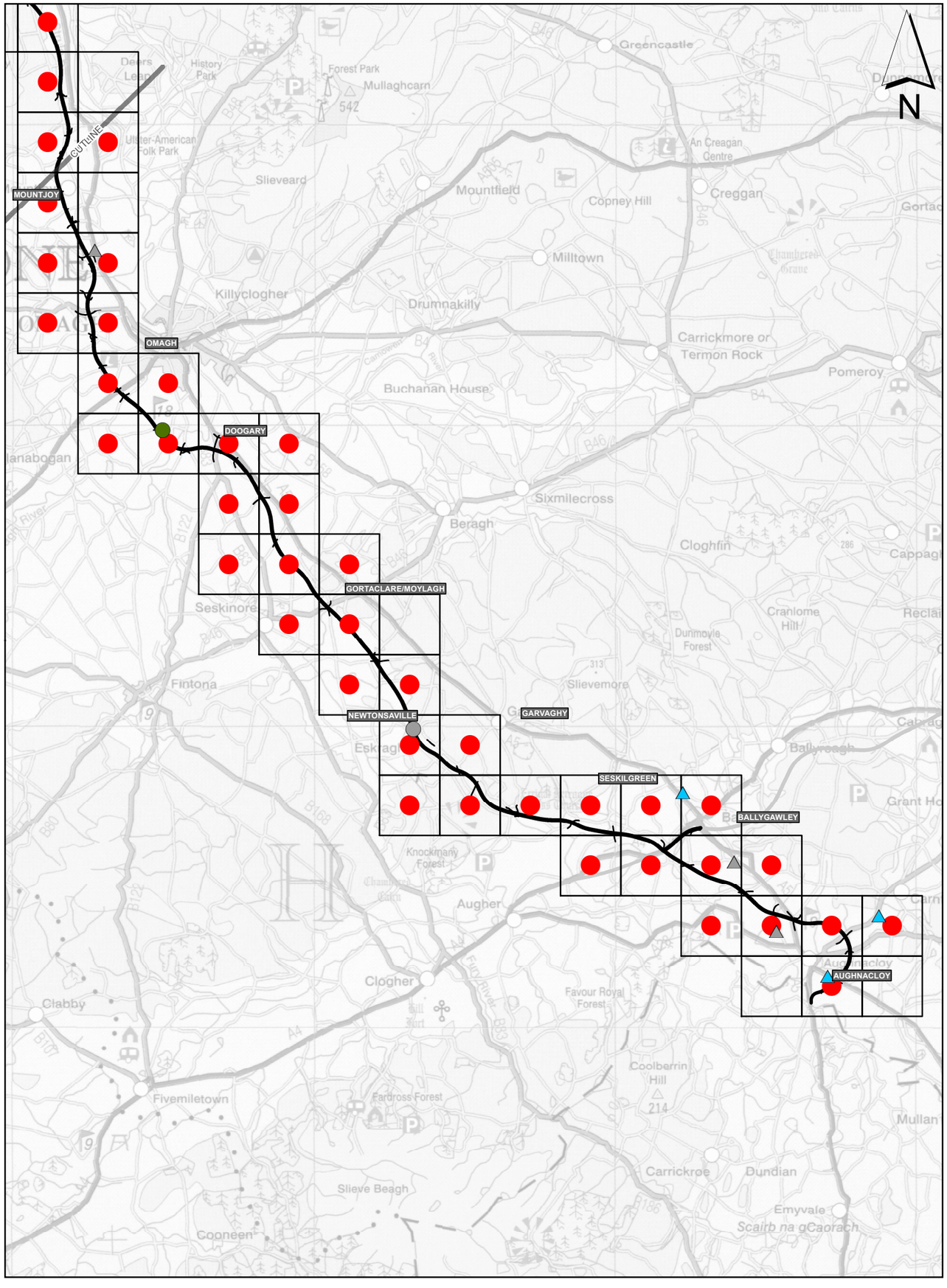
Drawing Title
ENVIRONMENTAL STATEMENT

BAT ATLAS - NATHUSIUS PIPISTRELLE

Figure No
Figure 11.42

Version
A





Legend

PROPOSED SCHEME

SOPRANO PIPISTRELLE

MOUCHEL SURVEY ROOSTS AND VALUES

- COMMON AND SOPRANO PIPISTRELLE, LOCAL VALUE
- SOPRANO PIPISTRELLE, LOCAL VALUE
- UNKNOWN PIPISTRELLE SPECIES, LOCAL VALUE

DESK STUDY ROOSTS AND VALUES

- UNKNOWN PIPISTRELLE SPECIES, COUNTY
- UNKNOWN PIPISTRELLE SPECIES, LOCAL

- TETRADS OCCUPIED BY SPECIES, LOCAL
- BAT ATLAS GRID

0 1 2 3 4 5 6 7 8
Kilometres

Scale @A3
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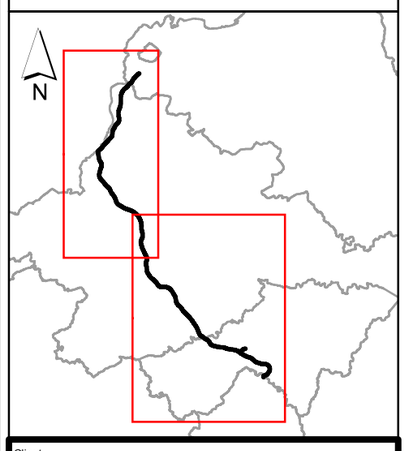

Client
transportni

Project
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Drawing Title
ENVIRONMENTAL STATEMENT

BAT ATLAS - SOPRANO PIPISTRELLE

Figure No
Figure 11.43

Version
A

Appendix 8-8

Bat Activity Survey

APPENDIX 8-8

Bat Activity Survey

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: July 2021

MCL Consulting Ltd
Unit 5, Forty-Eight North
Duncrue Street
Belfast
BT3 9BJ
028 9074 7766

www.mclni.com

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APPENDICIES

1.0 INTRODUCTION

In 2021 MCL Consulting was appointed by McAdam to provide an updated badger survey on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing lands on the outskirts of Strabane and Lifford.

1.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused concrete hardstand, with the rest of the site consisting of wet woodland and soil embankments.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

Figure 1: Site location

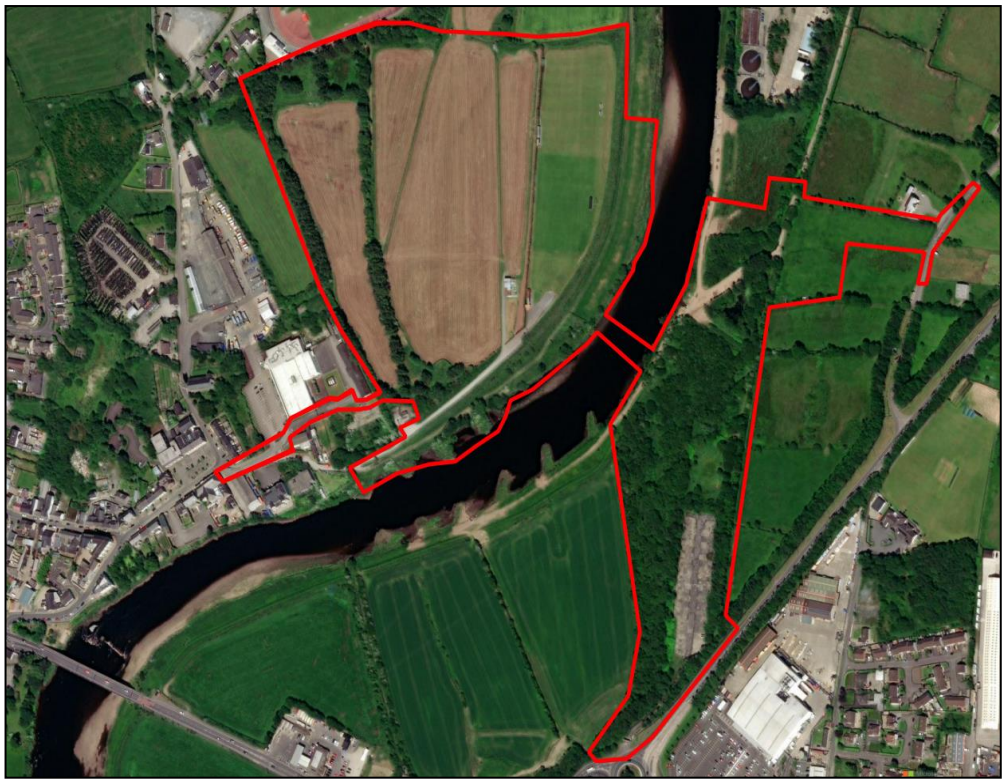

Figure 2: Site boundary

1.2 Development proposals

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways, cycleways and retained wetlands. The development will be supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 11 hectares by utilising agricultural land and wetlands lying along either side of the
border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The bridge will be a single span with the central, (in river), piering removed, with landing points on either side of the riverbanks. The Park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.
The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities on the Lifford side of the proposed development.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events on the Lifford side of the proposed development.

- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane will be made available on the Lifford side of the proposed development.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

1.3 Rationale of Bat activity Surveys

The aim of this survey is to:

- Carryout a bat activity survey in the form of transect surveys of the proposed development site as well as using static bat detectors to establish the presence and activity of roosting, foraging and commuting bats;
- If a roost is present further characterisation of that roost; and
- Identify the need for mitigation, compensation &/or enhancement.

1.4 Legislation

Lifford (ROI) Legislation

All bats and their roosting sites are legally protected under the EU Habitats Directive as transposed by the Habitats Regulations. With the exception of Lesser Horseshoe bat (*Rhinolophus hipposideros*), which is an Annex II species, the remainder are classified as Annex IV species. They are also protected under the Wildlife Act (as amended). Across Europe, bats are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. Article 12 and 13 of the Habitats Directive relates to the establishment of a system of strict protection for certain animal and plant species, while Article 16 provides for derogations from these provisions under limited circumstances. Article 12, 13 and 16 of the Habitats Directive are transposed into Irish law by Regulation 51, 52 and 54 of the Birds and Habitats Regulations of 2011, respectively. All bats are strictly protected in Ireland and a person who deliberately captures, kills or

disturbs a specimen in the wild, or who damages or destroys a breeding site or resting place of such an animal, is guilty of an offence.

As an Annex IV species may be found throughout the country, the protection of these species is not restricted in geographical terms and is not necessarily associated with areas subject to a specific nature designation. Under this it is illegal to:

- deliberately to capture, injure or kill a wild animal of a European protected species;
- deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - Impair its ability to survive, breed or reproduce, or rear or care for its young; or
    - Impair its ability to hibernate or migrate;
- deliberately to obstruct access to a breeding site or resting place of such an animal; or
- to damage or destroy a breeding site or resting place of such an animal.

<u>Strabane (NI) Legislation</u>

All species of bats (*Vespertilionidae*) are strictly protected under The Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 (as amended) (known as the Habitats Regulations). They are known as a European protected species. Under the Habitats Regulations it is an offence:

- deliberately to capture, injure or kill a wild animal of a European protected species;
- deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- deliberately to disturb such an animal in such a way as to be likely to;
    - affect the local distribution or abundance of the species to which it belongs;
    - Impair its ability to survive, breed or reproduce, or rear or care for its young; or
    - Impair its ability to hibernate or migrate;
- deliberately to obstruct access to a breeding site or resting place of such an animal; or
- to damage or destroy a breeding site or resting place of such an animal.

2.0 METHODOLOGY

2.1 Author/ Surveyors

MCL Consulting is a Northern Ireland based multidisciplinary environmental consultancy which provides expert advice for a wide range of ecological services in support of Environmental Impact Assessments (EIA).

Ryan Boyle BSc MSc – Consultant Ecologist

Fieldwork was carried out and assisted by Ryan Boyle a consultant ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queens University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 7 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc – Graduate Ecological Consultant

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, a seasonal volunteer for the Bat Conservation Trust and a member of the Botanical

Society of Britain and Ireland. She regularly takes part in newt, lizard and bat surveys, as well as botanical identification outings.

Conor Finlay BSc MSc – Graduate Ecologist

All surveying and reporting were assisted by Conor Finlay, a graduate ecologist at MCL Consulting. He has a master's degree (MSc) in Ecological Management and Conservation Biology from Queens University, Belfast and a bachelor's degree (BSc) in Environmental Sciences from Ulster University, Coleraine and previous employment experience working as a Park Ranger within Stormont Estate assisting contractor ecologists in biodiversity checklists within veteran woodlands and conservation wetlands. He has professional experience assisting bat activity surveys, bat analysis, ecological biodiversity checklists, breeding bird's surveys, badger surveys and desktop study experience in Amphibian conservation working within Global Amphibian Biodiversity Project (GABiP).

2.2 Previous study

Following the previous study undertaken (*see* MCL P2288 Bat Roost Potential Survey), it was recommended that bat activity surveys were required in order to determine the presence, abundance and activity of bats on site overall the site was considered to have a low roosting potential for bats with several trees identified as having low and negligible roosting potential on the Strabane side and two structures identified as having negligible roosting potential on the Lifford side of the site.

A previous bat activity survey was carried out by the previous project ecologist (Eamonn Delaney of Delichon Ecology), in 2020 consisting of transect activity surveys along key sensitive areas of the site following identified linear features bats may use for foraging and commuting. The previous transect surveys were carried out 06/06/2020 and 15/07/2020 and identified bat species and activity along pre established transect routes throughout the site.

Table 1: Results of Delichon's passive bat surveys

Transect Number	Habitats	Species Recorded
1	Treeline and improved grassland.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging along treeline.
2	Treeline and improved grassland, conifer woodland copse.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging along treeline. Leisler's bat in conifer woodland copse.
3	Treeline and improved grassland, conifer woodland copse.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging along treeline. Leisler's bat in conifer woodland copse.
4	Hedgerow, semi-natural grassland, riparian corridor.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging. Distant recording of Daubenton's bat – most likely associated with river corridor.
5	Riparian corridor	Leisler's bat – not sighted, distant recording
6	Wet woodland fringe, improved grassland, riparian corridor.	Common Pipistrelle & Soprano pipistrelle. Individuals foraging along woodland fringe. Leisler's bat in wet woodland area.
7	Wet woodland fringe, riparian corridor.	Soprano pipistrelle - individuals foraging along woodland fringe. Leisler's bat in wet woodland area.
8	Hedgerow and improved grassland	Soprano pipistrelle - individuals foraging along hedgerow and access track. Leisler's bat in wet woodland area.
9	Wet woodland and car park area	Common pipistrelle and soprano pipistrelle foraging along woodland margins
10	Treeline fringing A5 roadway	Individual common pipistrelle and soprano pipistrelle foraging along treeline habitat.

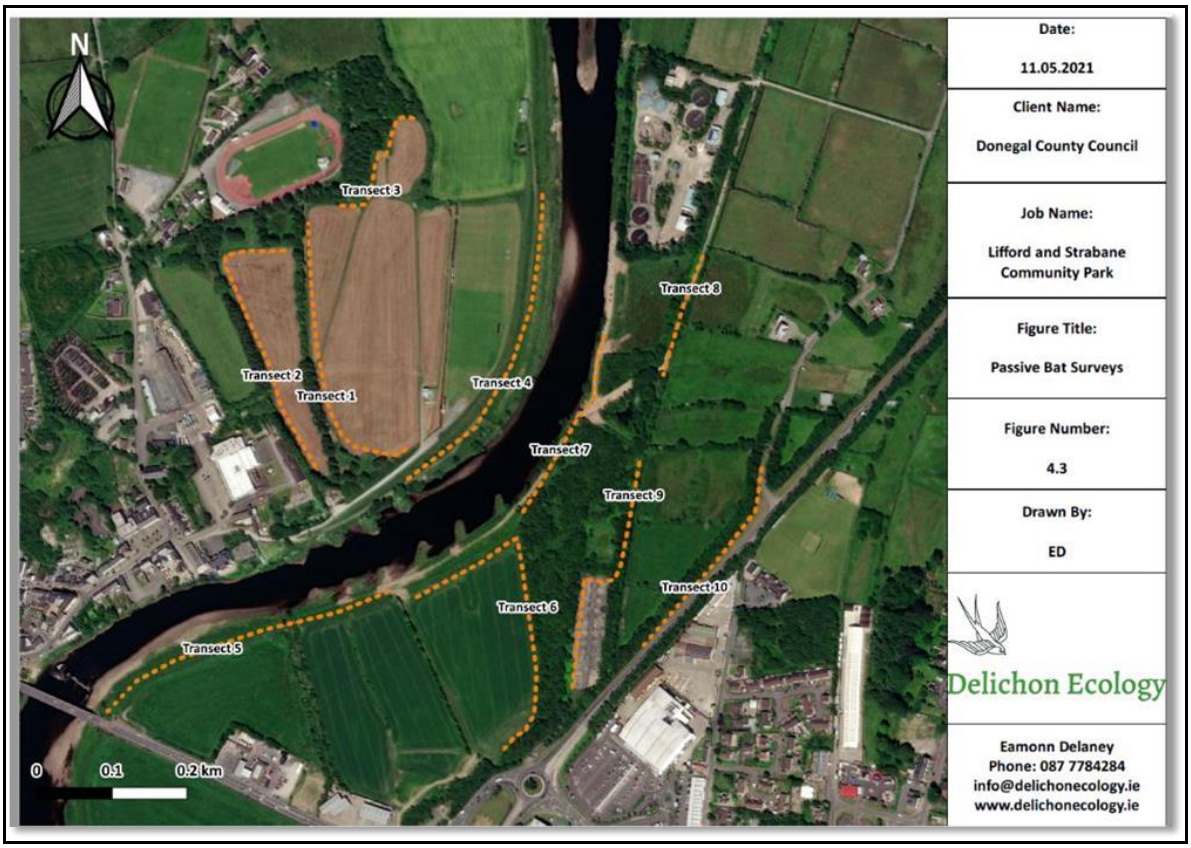

Figure 3. Map showing pre-established transect routes surveyed by Delichon Ecology in 2020

2.3 Static Bat Detector

The Anabat express static bat detector was placed at identified sensitive locations on both the Lifford and Strabane side of the site based on the proposed development plans of the site along with classification of potential usage by the local bat populations, (see Appendix I & II). The static detector was placed out for a week at a time and set in order to record only at night in order to reduce any accidental non-bat call recordings. After a week the static bat detector was then retrieved from it's location and the recordings removed for analysis.

2.4 Transect Survey

Two surveyors were spaced 30m apart and waked pre-determined transects, (see Figure 3), in order to cover all aspects of the site along these transects focusing on identified sensitive areas of the proposed site.

Two dusk transect surveys were undertaken in August in order to determine bat activity and abundance throughout the site and to identify any roosts. In accordance with BCT's Bat Surveys for Professional Ecologists, Surveys commenced at dusk 15 mins before sunset and

finished 1 hour and 30 mins after sunset, but also ecologists remained longer to make any additional observations when required. Maps indicating bat activity are presented in the Appendix section of this report.

2.4.1 Equipment

Below follows a list of equipment used to undertake the survey

- 2x Batlogger M detector;
- 1x Anabat Express bat detector with microphone
- ONBRIGHT 50 handheld torch
- 2x FORCLAZ ONNIGHT 50 headtorch

2.4.2 Analysis

Analysis of the recorded bat calls were carried out using Bat Explorer software, version 2.1.50 and AnalookW for bat call analysis data recorded with the batlogger M detector and Anabat Insight software for bat call analysis data recorded with the Anabat Express static bat detector. This enabled calls to be identified down to species level. Not all calls made by bats are clear when recorded as some bat species produce soft calls (e.g. *myotis sp.*) and are all very similar.

Therefore, along with running an auto ID selection, all viable recorded calls were checked manually for species selection and presence.

2.5 Survey Constraints

As bats are small opportunistic mammals, they have the ability to hide themselves in the smallest of gaps and crevices, as well as using different roost features throughout the active season. While every effort has been undertaken to observe bat roosts or bat activity, it should be kept in mind that temporal changes may occur such as roost suitability, i.e. the condition of the building structures may become such that it is no longer suitable for bat roosts.

3.0 RESULTS

3.1 Static bat detector survey results

3.1.1 Lifford 13/05/21 – 27/05/21

The Anabat express static bat detector was placed out on the Lifford side of the site from the 13/05/21 – 27/05/21, along an identified treeline of spruce trees that was considered to be a sensitive area of the site providing an extensive commuting corridor across the site running south to north through the site's western area. Parts of this treeline are also proposed for clearance due to the proposed site layout and as such bat activity data was needed in order to assess suitable mitigation.

Table 2. Static Bat Detector Results for Lifford

Location	Grid Reference	Number of Records
54.835180 N, 7.475880 W, 0 m	H 33723 98706	1063
54.835230 N, 7.475700 W, 0 m	H 33735 98711	97
54.835280 N, 7.475190 W, 16 m	H 33768 98717	174
54.835320 N, 7.475810 W, 13 m	H 33728 98721	413
54.835330 N, 7.475670 W, 9 m	H 33737 98722	134
54.835350 N, 7.475180 W, 0 m	H 33768 98725	91

A total of 1972 were recorded by the Anabat express over the course of a 2 week period from the position along the spruce treeline. The recorded calls were primarily from common pipistrelle, soprano pipistrelle and Leisler's bats. The high levels of recordings taken over the course of 2 weeks indicates this treeline is of importance for bats in the local area provide safe passage to commute across the site to the riverbanks and back on the Lifford side as well as providing extended access to foraging throughout the site and over the open grasslands of the coursing grounds, (see Appendix III).

3.1.2 Strabane 06/07/21 – 15/07/21

The Anabat express static bat detector was placed out on the Lifford side of the site from the 06/07/21 – 15/07/21, along an identified treeline of mixed tree species that was considered to be a sensitive area of the site providing an extensive commuting corridor across the site running south to north along the site's eastern boundary which is a proposed entrance to the site leading to a carpark, (see Appendix I). Parts of this treeline are also proposed for tree

felling, potentially some lopping and artificial lighting as such bat activity data was needed in order to assess suitable mitigation.

Table 3. Static Bat Detector Results for Strabane

Location	Grid Reference	Number of Records
54.834120 N, 7.468960 W, 27 m	H 34169 98591	92
54.834120 N, 7.469050 W, 22 m	H 34163 98591	142
54.834170 N, 7.468960 W, 20 m	H 34169 98596	111
54.834180 N, 7.468860 W, 10 m	H 34175 98598	301
54.834180 N, 7.468990 W, 10 m	H 34167 98598	330
54.834180 N, 7.468990 W, 2 m	H 34167 98598	136

A total of 1344 were recorded by the Anabat express over the course of a 9 day period from the position along the mixed tree species treeline. The recorded calls were primarily from common pipistrelle, soprano pipistrelle and Leisler's bats The high levels of recordings taken over the course of 9 days indicates this treeline is of importance for bats in the local area with the immediate area of the Strabane side sporting a dense wet woodland habitat with treelines extending north east and south the area offers strong foraging and commuting grounds for the local bat populations as well as offering sheltered flight paths to and from the River Foyle, (see Appendix IV).

3.2 Passive Transect Activity Surveys

3.2.1 Strabane Transect Survey 03/08/21

Due to the proposed site plan for the Strabane side of the site including lighted pathways and car access for the public to a well-lit carpark as well as the high activity levels revealed by the static bat detector it was determined that a detailed passive transect survey was required for the Strabane side of the site to better inform bat activity levels, abundance and site usage. The transects walked were the same as those walked by Delichon Ecology in 2020, (see Figure 3), in order to preserve continuity between the two consulting reports.

Table 4. Passive Transect survey Weather conditions

Surveyor	Date	Start time	Sunset	Finish time	(˚C)	Beaufort scale	Cloud - cover	Precipitation
Ryan Boyle BSc, MSc Conor Finlay BSc MSc	03/08/21	21:30	21:45	23:45	15	3	8/8	25

No bats were observed emerging from any trees along the pre-destined transects, however, high levels of activity were observed throughout the site of bats commuting and foraging throughout the site along linear features and riverbanks. The species detected included Leisler's bat (*Nyctalus leisleri*). Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Common Pipistrelle *(Pipistrelus pipistrellus*). No roosts were detected but high levels of bat activity were confirmed throughout the site with heavy reliance of linear features throughout the site, (see Appendix V).

Table 5. Summary of Bat Activity 03/08/2021

Time	Species	No. of bats	Activity	Observation
21:40	*Pipistrellus pygmaeus*	4	Foraging	4 bats observed foraging around the old concrete entrance area on Strabane side above surveyors
21:51	*Pipistrellus pygmaeus*	1	Commuting	Single bat observed commuting north along the eastern boundary between the treelines
21:52	*Pipistrellus pipistrellus* *Pipistrellus pygmaeus*	2	Commuting	A single bat was observed commuting north

				along the eastern boundary between the treelines while a second bat was audibly heard at 49khz but not visually observed
21:54	*Pipistrellus pygmaeus*	1	Foraging	Travelling south foraging before turning around and going south again
21:54	*Pipistrellus pygmaeus*	2	Foraging	Both bats were observed travelling south foraging before turning around and going south again
21:55	*Pipistrellus pygmaeus*	1	Commuting	Commuting south across the site
21:56	*Pipistrellus pipistrellus*	2	Foraging	Both bats were observed foraging in the Strabane side's north-eat corner of the site
21:59	*Pipistrellus pygmaeus*	1	Commuting/foraging	Single bat observed commuting towards most norther area of site while foraging

22:00	*Pipistrellus pygmaeus*	1	Commuting/foraging	Single bat observed travelling south as it foraged
22:08	*Pipistrellus pygmaeus*	2	Commuting	2 bats were observed commuting across the site originally going north before circling above the surveyors and continuing north along the eastern boundary
22:11	*Pipistrellus pygmaeus*	2	Commuting	2 bats observed travelling south before turning back to go north
22:12	*Pipistrellus pygmaeus*	1	Commuting	Single bat originally observed travelling north before quickly changing course and travelling west
22:13	*Pipistrellus pygmaeus*	1	Commuting	Single bat originally observed travelling north before quickly changing course and travelling west

22:13	*Pipistrellus pygmaeus*	1	Commuting	Single bat observed travelling south
22:17		0	No activity	No activity observed or recorded near the river
22:19	*Pipistrellus pygmaeus*	3	Foraging/commuting	3 bats were audibly heard at 50, 49 and 55khz at the edge or the river but not visually observed
22:20	*Pipistrellus pygmaeus* *Pipistrellus pipistrellus*	2	foraging	2 bats observed foraging at the water surface of the river
22:23	*Pipistrellus pipistrellus*	1	Foraging	1 bat observed foraging at the water surface of the river
22:38	*Pipistrellus pygmaeus*	1	Commuting	Single bat audibly heard but not visually seen
22:39	*Pipistrellus pygmaeus*	1	Commuting	Single bat audibly heard but not visually seen
22:42	*Pipistrellus pipistrellus*	1	Commuting	Single bat audibly heard but not visually seen
22:51	*Pipistrellus pygmaeus*	1	Commuting	Single bat audibly heard but not visually seen

22:57	*Pipistrellus pipistrellus* *Pipistrellus pygmaeus*	2	Commuting	2 bats were audibly heard at 55 and 42khz but not visually seen
22:59	*Pipistrellus pygmaeus*	1	Commuting	Single bat audibly heard but not visually seen
23:04	*Pipistrellus pipistrellus*	1	Foraging	Single bat observed foraging along road and streetlamps near ASDA

3.2.2 Strabane Transect survey 10/08/21

Table 6. Passive Transect survey Weather conditions

Surveyor	Date	Start time	Sunset	Finish time	(˚C)	Beaufort scale	Cloud - cover	Precipitation
Ryan Boyle BSc, MSc **Emily Taylor BSc MSc**	10/08/21	21:30	21:45	23:45	13	2	3	10

Similarly to the previous transect survey carried out on the 03/08/2021 no bats were observed emerging from any trees along the pre-destined transects, however, high levels of activity were observed throughout the site of bats commuting and foraging throughout the site along linear features. The species detected included Leisler's bat (*Nyctalus leisleri*). Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Common Pipistrelle *(Pipistrelus pipistrellus*). However, a single Brown Long-eared bat (*Plecotus* auratus) and 2x Daubentons bat (*Myotis daubentoniid*). No roosts were detected but high levels of bat activity were confirmed throughout the site with heavy reliance of linear features throughout the site, (see Appendix V).

Table 7. Summary of Bat Activity 10/08/2021

Time	Species	No. of bats	Activity	Observation
21:32		1	Commuting	Single bat observed commuting south along the treeline on the Strabane side of the site along the eastern boundary
21:37		2	Foraging	Two bats observed foraging along the treeline going north
21:37		1	Foraging	A single bat observed foraging going south before turning east
21:38		1	Commuting	Single bat observed travelling south along the treelines before turning east
21:41		1	Foraging	A single bat observed foraging along the treeline along the eastern boundary going south before turning back north
21:44		1	commuting	A single bat observed commuting across the site going south
21:44		1	Foraging	A single bat observed foraging going north before turning easa single bat observed foraging alogn the treeline going noth before circling over the surveyorsand going

				east
21:45		1	Foraging	A single bat observed foraging going south along the treelines
21:46		1	Foraging	A single bat observed foraging as it travelled north before turning back south
21:46		1	Foraging	A single bat observed foraging as it circled above the surveyors
21:47		1	Commuting	A single bat observed commuting across the site going north
21:48		1	Foraging	A single bat observed foraging as it circled above the surveyors
21:49		1	Commuting	A single bat observed commuting across the site going north
21:50		1	Commuting	Single Bat audibly heard but not visually seen
21:51		1	Commuting	A single bat observed commuting across the site going north
21:52		1	Foraging	A single bat observed commuting across the site going north
21:53		1	Commuting	A single bat observed commuting across the site going north
21:54		1	Foraging	A single bat was observed foraging as it travelled south before turning back

				north
21:54		1	Foraging	A single bat was observed foraging as it travelled south before turning to go west
21:55		2	Commuting	2x bats were observed commuting across the site going south
21:56		1	Foraging	A single bat was observed foraging as it travelled south
22:00		1	Foraging	A single bat was observed foraging as it travelled north
22:02		1	Commuting	Single Bat audibly heard but not visually seen
22:08		1	Commuting	Single Bat audibly heard but not visually seen
22:11		1	Commuting	Single Bat audibly heard but not visually seen
22:19		1	Commuting	Single Bat audibly heard but not visually seen
22:23		1	Commuting	Single Bat audibly heard but not visually seen
22:24		1	Commuting	Single Bat audibly heard but not visually seen
22:25		1	Commuting	Single Bat audibly heard but not visually seen
22:26		1	Commuting	Single Bat audibly heard but not visually seen
22:30		1	Commuting	Single Bat audibly heard but not visually seen
22:33		1	Commuting	Single Bat audibly heard but not visually seen

22:35		1	Commuting	Single Bat audibly heard but not visually seen
22:36		1	Commuting	Single Bat audibly heard but not visually seen
22:36		2	Commuting	Two Bat audibly heard but not visually seen
22:37		1	Commuting	Single Bat audibly heard but not visually seen
22:38		1	Commuting	Single Bat audibly heard but not visually seen
22:38		1	Commuting	Single Bat audibly heard but not visually seen
22:39		1	Commuting	Single Bat audibly heard but not visually seen
22:40		2	Commuting	Two Bat audibly heard but not visually seen
22:41		1	Commuting	Single Bat audibly heard but not visually seen
22:45		1	Commuting	Single Bat audibly heard but not visually seen

4.0 SUMMARY OF RESULTS

Bat activity comprising of foraging and commuting behaviour was found to be at a high level across the site during the surveys. Moderate species diversity of bats was also detected on site with *Pipistrellus pygmaeus* and *Pipistrellus pipistrellus* being most common followed by *Nyctalus leisleri* recorded during the surveys. Throughout the survey no bats were observed emerging from any trees during the transect walks indicating that the site is primarily used for foraging and commuting as suggested in the previous bat roost potential survey, (P2288), where no evidence of bats residing in the trees was observed i.e.: no staining, droppings, insect wings and the presence of cobwebs.

Overall, the site experienced a substantial level of activity for a semi-rural riverine location. In terms of bats usage of the site; it was noted to facilitate bats to commute to different areas of the wider environment while also periodically foraging within it. It was noted that

bats were commuting towards the banks of the River Foyle to and from the mature trees and hedgerows along the eastern boundary and the hedgerow boundaries within the agricultural fields to the north, south and east of the site during the survey.

5.0 ASSESSMENT AND RECOMMENDATIONS

5.1.1 Mitigation

Throughout the survey period no bats were observed emerging or entering any of the trees on site but high activity levels were observed throughout. Suggesting that the site itself is important to the local bat population supporting unrestricted foraging and commuting opportunities through the site to the wider Strabane and Lifford area. The proposed plans for the scheme involve extensive lighting of public pathways through the Strabane side of the site as well as lighting for a car/bicycle entrance leading to a public carpark in the site's north-eastern corner of the Strabane side as well as some pathways, a play park, car parking and maintenance compound on the Lifford side. A single span foot/bicycle bridge spanning the River Foyle is also proposed with lighting.

A recent consultation with Dr Jon Lees of NIEA highlighted concerns over proposed lighting for the scheme in relation to bats and other wildlife. As this is a greenspace project it is not usually inclusive of a lighting scheme, however, due to health and safety concerns and the plans for incorporation of facial recognition with CCTV cameras lighting has been requested by the client to ensure these topics are addressed. NIEA has suggested no lighting would be preferred but has suggested that if lighting is required it should be designed to provide a low 1 lux level in order to have a minimal impact on the bats present within the area. It was also recommended that low lux level, red wildlife lighting may be used instead as this would allow for lighting to be implemented without potential negative impacts to the local bat population.

Strabane & Lifford

Current proposed lighting for the Strabane and Lifford sides of the scheme are reflective of each other for the designated areas of the site, (see Appendices VII, VIII, VIIII & X). Proposed lighting scheme includes:

Lighting of the carpark

Lighting of the area to "BS5489-1:2020 Design of road lighting. Part 1 Lighting of roads and public amenity areas – code of practice" in order to provide a minimum average horizontal illuminance of 10 lux and minimum uniformity of 0.25. The roads will be illuminated using a 6m galvanised conical steel lighting column. The street lighting lanterns will utilise the latest LED lighting technology. The colour temperature will be 2700K (warm white) with a CRI of 80.

The luminaires will look to comply with the ILP Guidance note 08/18 Bats and artificial lighting in the UK. This is achieved by:

LED Luminaires

Colour temperature – warm white

Upward Light Output Ratio = 0% (except for bridge feature lighting)

Good lens control

Controls prevent unnecessary lighting thereby reducing light pollution, electrical energy consumption and carbon emissions. Seasonal lighting, presence and absence control and adaptive lighting can be used.

Seasonal lighting – lighting only comes on at dusk

Presence & Absence control – Lanterns only come on during use and go off again a short time after.

Adaptive lighting – lighting levels can be increased or reduced down to zero depending on the usage expected.

Lighting of the vehicle entrance road

Lighting of the area to "BS EN 13201-2:2015 Road Lighting - Performance Requirements" compliant lighting class C4 which will a provide a minimum average horizontal illuminance of 10 lux with a minimum uniformity of 0.4. The roads will be illuminated using a 6m galvanised conical steel lighting column. The street lighting lanterns will utilise the latest LED lighting technology. The colour temperature will be 2700K (warm white) with a CRI of 80.

The luminaires will look to comply with the ILP Guidance note 08/18 Bats and artificial lighting in the UK. This is achieved by:

LED Luminaires

Colour temperature – warm white
Upward Light Output Ratio = 0% (except for bridge feature lighting)
Good lens control

Controls prevent unnecessary lighting thereby reducing light pollution, electrical energy consumption and carbon emissions. Seasonal lighting, presence and absence control and adaptive lighting can be used.
Seasonal lighting – lighting only comes on at dusk
Presence & Absence control – Lanterns only come on during use and go off again a short time after.
Adaptive lighting – lighting levels can be increased or reduced down to zero depending on the usage expected.

The columns would be spaced at about 20m intervals

Lighting of the core pedestrian: cycle route

Lighting of the area to "BS EN 13201-2:2015 Road Lighting - Performance Requirements" compliant lighting class P4 which will a provide a minimum average horizontal illuminance of 5 lux with a minimum vertical illumination of 1.5 for facial recognition. The paths will be illuminated using a 6m galvanised conical steel lighting column. The street lighting lanterns will utilise the latest LED lighting technology. The colour temperature will be 2700K (warm white) with a CRI of 80 which aids facial recognition.

The luminaires will look to comply with the ILP Guidance note 08/18 Bats and artificial lighting in the UK. This is achieved by:
LED Luminaires
Colour temperature – warm white
Upward Light Output Ratio = 0% (except for bridge feature lighting)
Good lens control

Controls prevent unnecessary lighting thereby reducing light pollution, electrical energy consumption and carbon emissions. Seasonal lighting, presence and absence control and adaptive lighting can be used.
Seasonal lighting – lighting only comes on at dusk

Presence & Absence control – Lanterns only come on during use and go off again a short time after.
Adaptive lighting – lighting levels can be increased or reduced down to zero depending on the usage expected.

5 lux has been suggested for this as it was considered that 1 lux would not be appropriate or sufficient for mixed traffic, (pedestrians and cyclists).

Lighting of the primary path route from the car park to the bridge location

Lighting of the area to "BS EN 13201-2:2015 Road Lighting - Performance Requirements" compliant lighting class P4 which will a provide a minimum average horizontal illuminance of 5 lux with a minimum vertical illumination of 1.5 for facial recognition. The paths will be illuminated using a 6m galvanised conical steel lighting column. The street lighting lanterns will utilise the latest LED lighting technology. The colour temperature will be 2700K (warm white) with a CRI of 80 which aids facial recognition.

The luminaires will look to comply with the ILP Guidance note 08/18 Bats and artificial lighting in the UK. This is achieved by:
LED Luminaires
Colour temperature – warm white
Upward Light Output Ratio = 0% (except for bridge feature lighting)
Good lens control

Controls prevent unnecessary lighting thereby reducing light pollution, electrical energy consumption and carbon emissions. Seasonal lighting, presence and absence control and adaptive lighting can be used.
Seasonal lighting – lighting only comes on at dusk
Presence & Absence control – Lanterns only come on during use and go off again a short time after.
Adaptive lighting – lighting levels can be increased or reduced down to zero depending on the usage expected.

Again, 5 lux has been suggested for this as it was considered that 1 lux would not be appropriate or sufficient for mixed traffic, (pedestrians and cyclists).

Overall, on both sides of the site, light spill from the proposed development should be minimised as far as possible. No lighting should be directed towards existing mature vegetation i.e. mature trees or boundary hedgerows. All lights should be fitted with directional hoods and/or luminaires to direct the light downwards onto targeted areas and to prevent unnecessary light-spill. Any external lighting around any structures (e.g. safety lights at the front and rear) should be fitted with motion sensors (timer of up to 60 seconds). Finally, the intensity of lighting should be kept to the minimum level required for safety. Low-UV LEDs or low / high pressure sodium lamps will be the preferred bulb type, as they have least adverse effect on bats.

Any planting of hedgerows or trees should follow the NIEA's native species planting guidance.

6.0 CONCLUSIONS

Surveys and ecological assessments at this site have concluded that no roosts were located throughout the proposed Riverine Scheme site on both the Strabane and the Lifford side of the site. The area, as expected, supported high levels of commuting and foraging for at least three species of bats. Due to the observed and recorded activity levels for bats on site it is confirmed that the site, in particular the Strabane side, are of importance to the local bat population and provide extensive corridors for unrestricted foraging and commuting through the wider area and along the riverine habitat of the River Foyle.

Proposed lighting the Riverine Scheme is considered to have the greatest impact on the local bat population and the use of the site by bats. Proposed lighting should take into consideration the local bat population and site usage by the bats. And where possible lighting should be avoided altogether. Where not possible consideration should be given for British standards, health and safety as well as the local bat populations and their use of the site to avoid potential negative impacts on bats usage of the site.

Report Prepared By: -

Ryan Boyle BSc (Hons), MSc
Consultant Ecologist

Reviewed By: -

Conor Finlay BSc (Hons), MSc
Graduate Environmental Consultant

7.0 REFERENCES

Bat Conservation Trust Artificial Lighting Guidance available at https://www.bats.org.uk/our-work/buildings-planning-and-development/lighting

CIEEM (2015) Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester

Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

NIEA Planting guide available at: https://www.daera-ni.gov.uk/sites/default/files/publications/doe/natural-guidance-native-species-planting-guidance-2012.pdf

Northern Ireland Environment Agency Species Planting Guidelines – https://www.daera-ni.gov.uk/publications/native-species-planting-guidance

Trees & Development – A guide to Best Practice available at https://www.planningni.gov.uk/downloads/best-practice-trees-2.pdf

FIGURES

Figure 4. North facing view of River Foyle banks on the Strabane side with Wooded areas

Figure 5. Overview of Strabane's wet woodland habitat

Figure 6. Riverine habitat

Figure 7. Strabane side north east corner

Figure 8. Treeline along Strabane eastern boundary where static bat detector was placed

Figure 9. Old concrete area at site entrance on Strabane side surrounded by trees

Figure 10. Overview of Lifford side of site including spruce treeline

Figure 11. Small shed/storage structure from MCL's BRP

Figure 12. Overview of riverine habitat showing proposed bridge crossing location

Figure 13. Spruce treeline along western area of Lifford side where the static bat detector was placed

Figure 14. Overview of Lifford side of site with the old hare coursing viewing stand from the BRP

Figure 15. Extent of Lifford's spruce treeline

APPENDICES

River Foyle

Marsh

Wetland

SUDs

Existing Water Level
+(2.00)

Overhead Electric Lines

Park Road

Barnhill Road

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road influences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Drawing Insert

Scale 1:500 @ A0

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

N

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of details of the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Ghoirtha Báin
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	ZO	XX	DR	LA	102	P00

Project Number: 1383

Status code & Description: PLANNING

LEGEND

SOFTWORKS

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- Proposed Wildflower — Refer to planting schedule
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- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

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- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
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- 2.4m Security Fencing — Paladin fencing
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- Stock Proof Fencing — Refer to detail ref: De_906
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- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
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- **Vehicular Upstand Kerb** — 125mm upstand. Pre Cast Concrete
- **Vehicular Flush Kerb** — Pre Cast Concrete
- **Pin Kerb** — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	15.02.21	Issued for planning	DM
P02	17.03.21	Issued for planning	DM

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

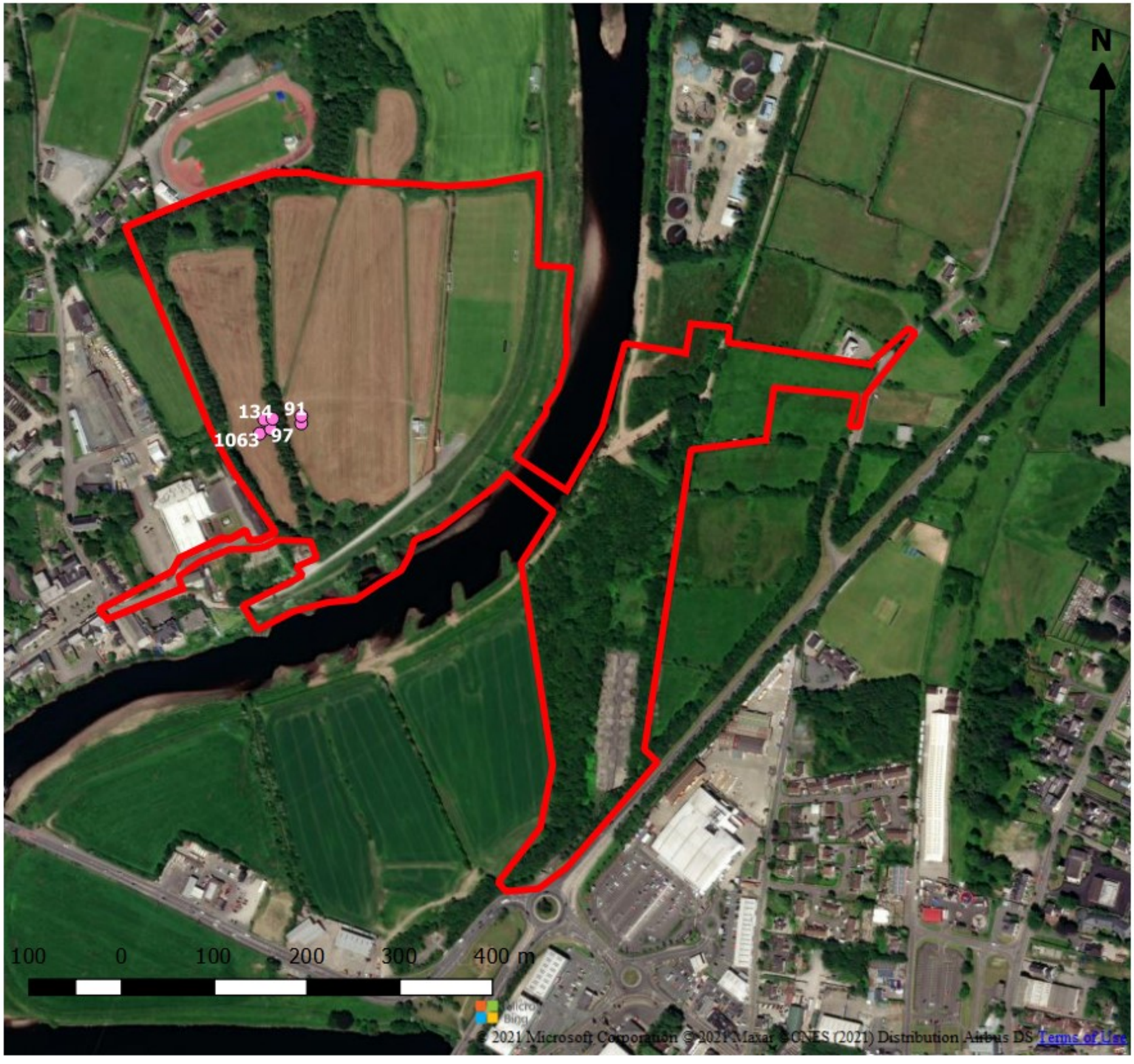
Drawing: LIFFORD LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	ZO	XX	DR	LA	101	DRAFT

Project Number: 1383
Status code & Description: PLANNING



Legend

- Static Bat Detector May 2021
- Red Lined Boundary

Appendix III: Lifford Static Bat Detectors

Created by: Ryan Boyle

Reviewed by: Conor Finlay

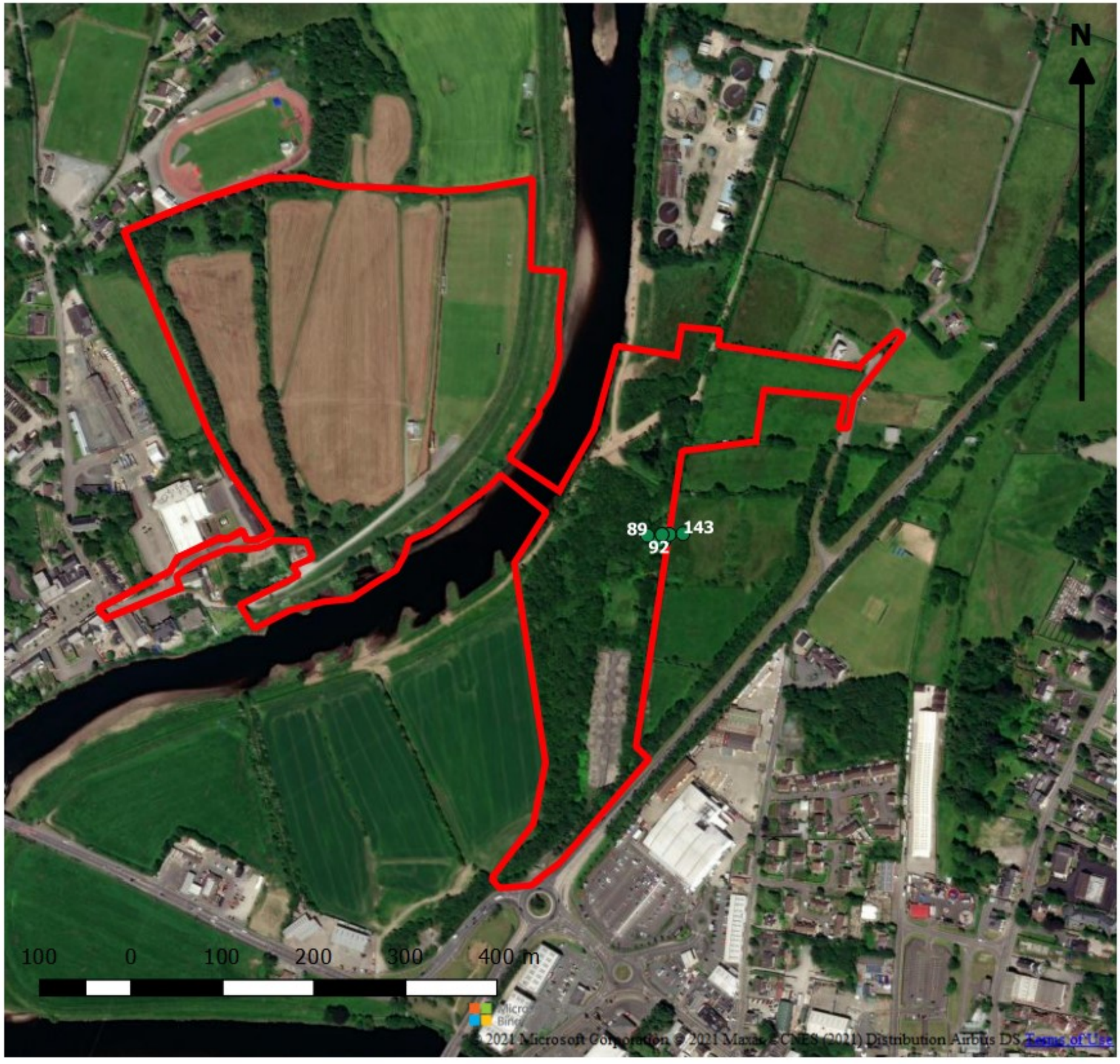
Client: McAdam Design

Scale: 1:5758 @ A3

Date: 04/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

- Static Bat Detector July 2021
- Red Lined Boundary

Appendix IV: Strabane Static Bat Detectors

Created by: Ryan Boyle

Reviewed by: Conor Finlay

Client: McAdam Design

Scale: 1:5840 @ A3

Date: 04/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
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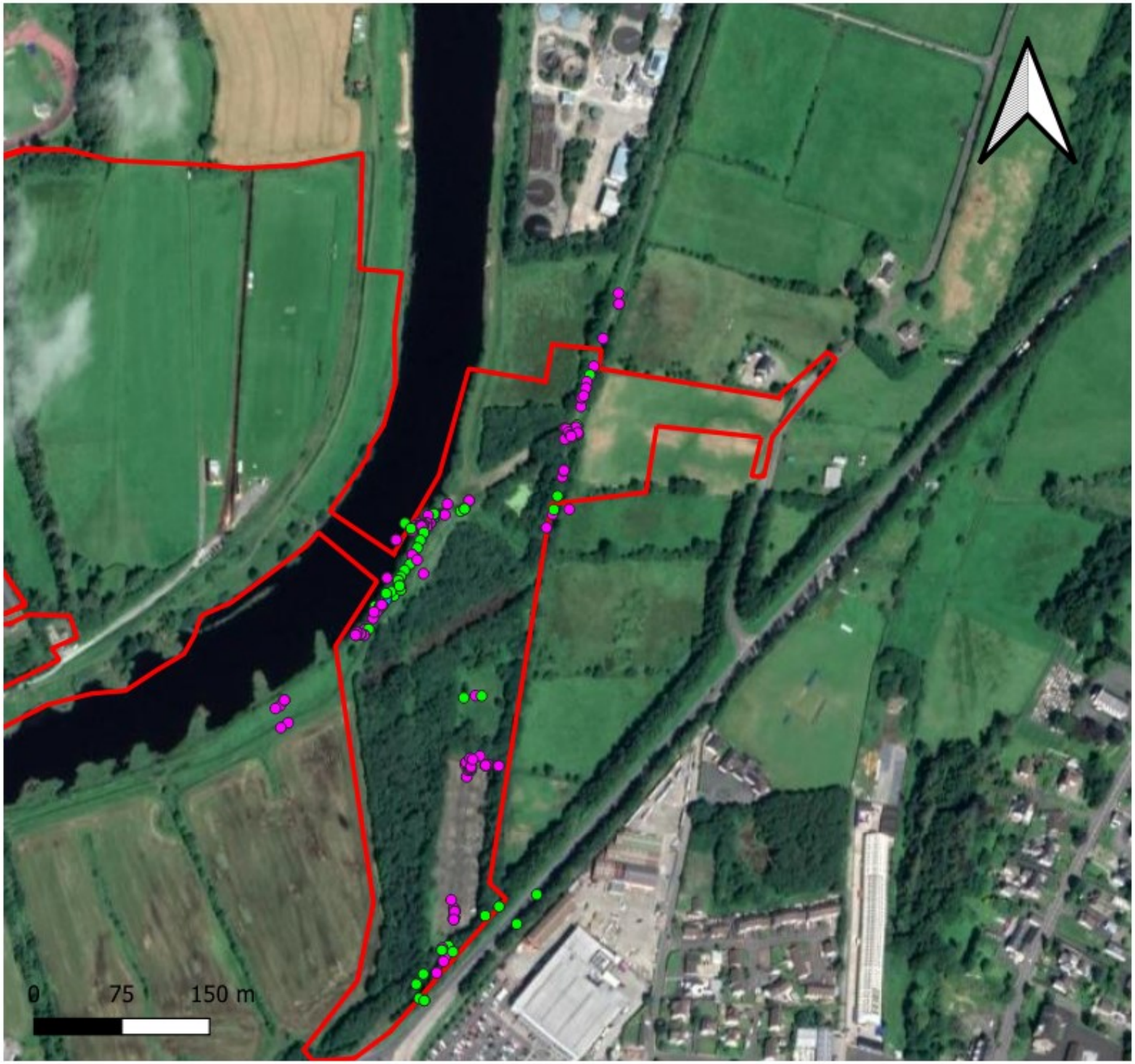
BT3 9BJ
Tel: 02890747766



Bat Activity Transect Survey

Date 03/08/2021

- Nyctalus leisleri
- Pipistrellus pipistrellus
- Pipistrellus pygmaeus
- Red Lined Boundary

Appendix V: Passive Transect Bat Activity Survey 03.08.21

Created by: Ryan Boyle

Reviewed by: Conor Finlay

Client: McAdam Design

Scale: 8000

Date: 11/08/2021

Unit 5, Forty Eight North, Duncrue Street
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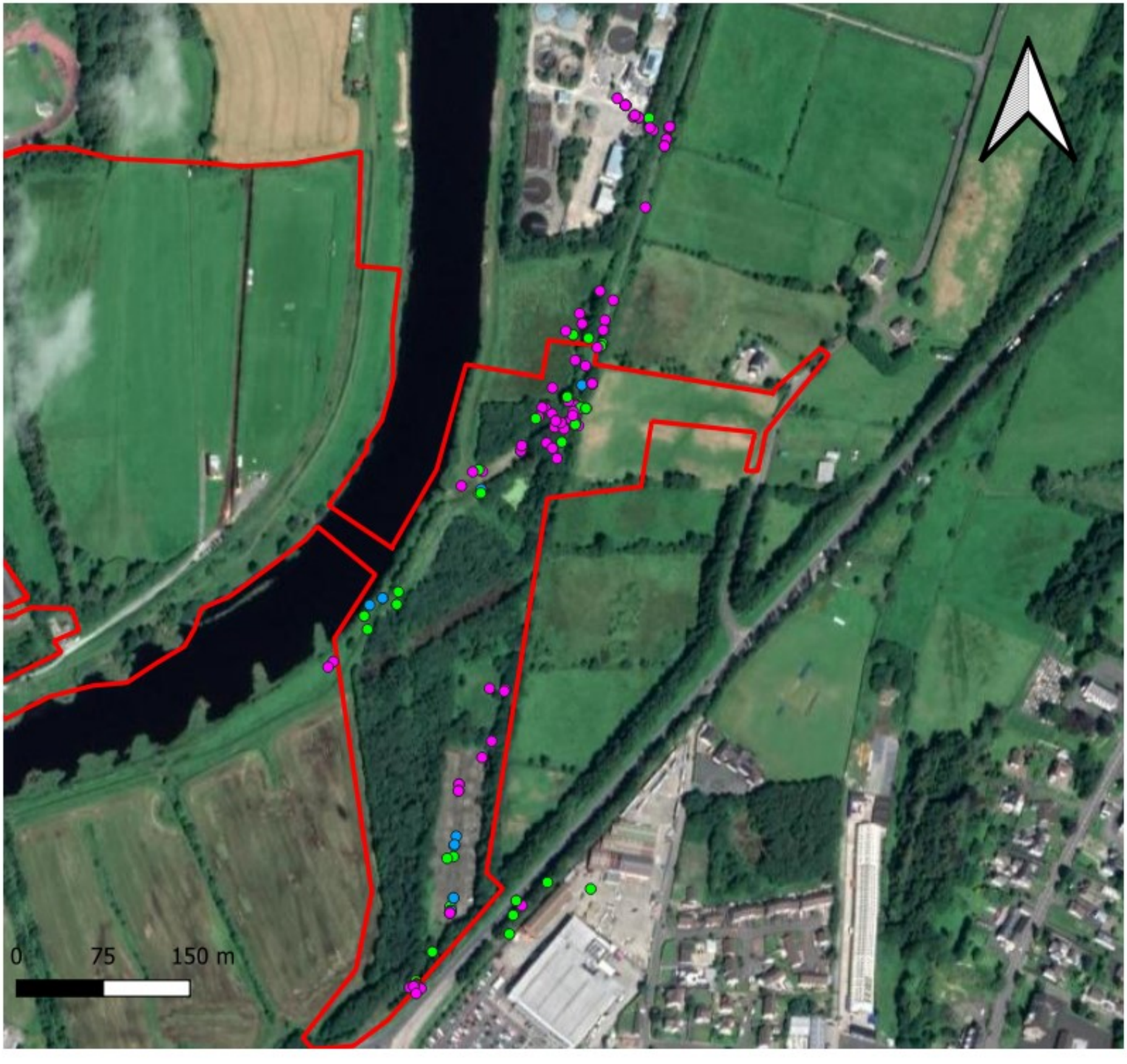
Tel: 02890747766



Bat Activity Transect Survey

Date: 10/08/2021

- Myotis daubentonii
- Nyctalus leisleri
- Pipistrellus pipistrellus
- Pipistrellus pygmaeus
- Plecotus auritus
- Red Lined Boundary

Appendix VI: Passive Transect Bat Activity Survey 10.08.21

Created by: Ryan Boyle

Reviewed by: Conor Finlay

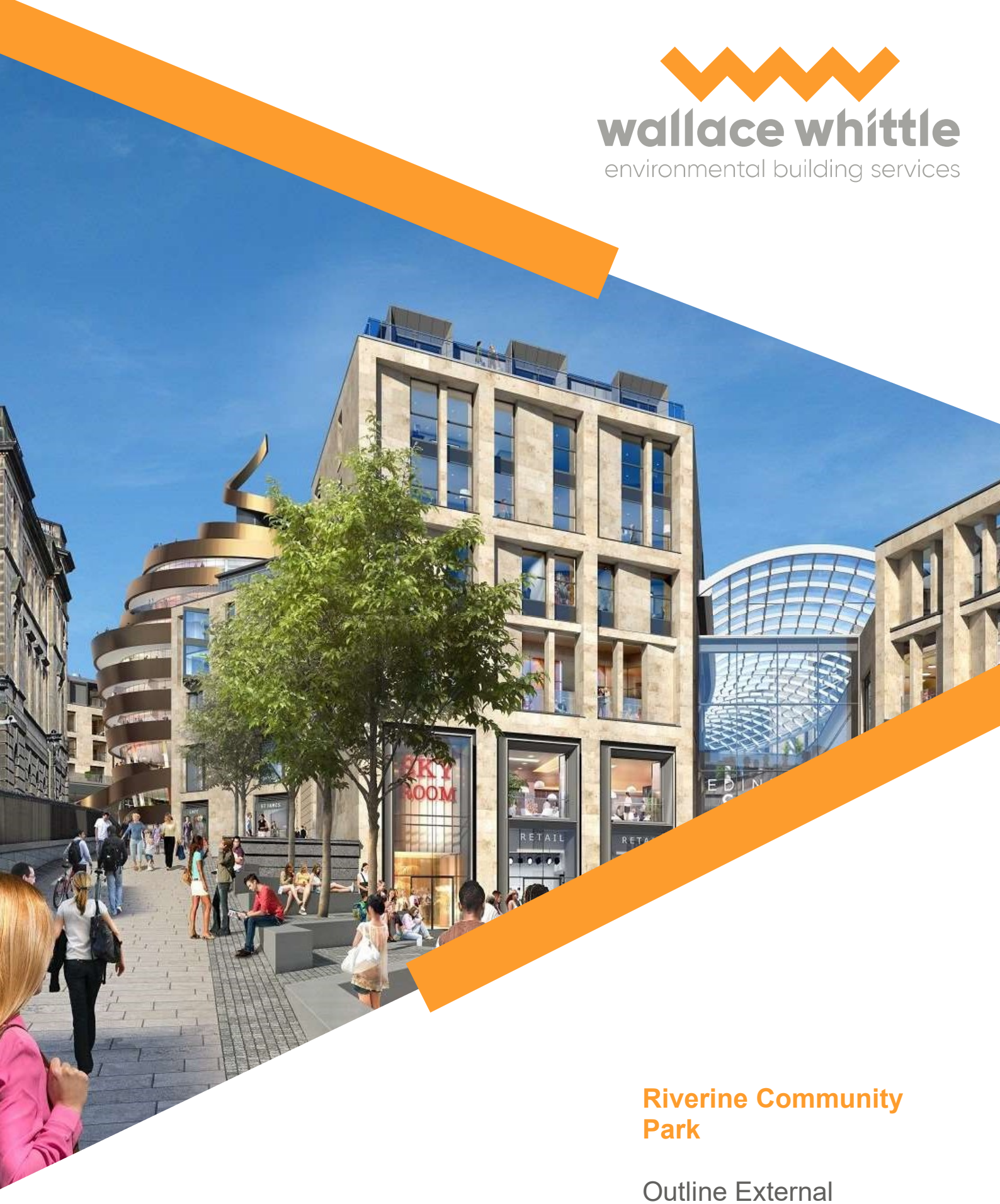
Client: McAdam Design

Scale: 8000

Date: 11/08/2021

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766

wallace whittle
environmental building services



Riverine Community Park

Outline External Lighting Narrative

August 2021

1.0 Issue / Revision Record

Issue	Date	By	Checked	Comment
1	04.08.2021	PQ	GMcC	Final Draft for Discussion

We aim to be the pre-eminent provider of quality sustainability driven building services solutions and the best to work with, in the view of our clients, partners and colleagues. We believe in a sustainability led approach to design for the benefit of our clients and the world we live in.

It is our ultimate goal, to work closely with our fellow professionals and clients to minimise carbon emissions and to deliver a better environment for us all to live in.

Issue / Revision Record

Issue	Date	By	Checked	Comment
1	04.08.2021	PQ	GMcC	Final Draft for Discussion

Contents

Issue / Revision Record

Issue	Date	By	Checked	Comment
1	04.08.2021	PQ	GMcC	Final Draft for Discussion

1.0 Introduction

This design will provide an aesthetically pleasing, low maintenance and uniformly lit external space to enable users to orientate themselves, identify other users, detect potential hazards, discourage crime and engender a feeling of safety and security. All external luminaires will be at least IP66, IK10 where appropriate on glass and coverings, have a minimum warranty of 5 years to cover all LEDs, power packs, drivers, glass covers and other associated parts and procurement will consider future costs and availability of equipment after warranty period expires.

1.1. Environmental mitigation measures

The luminaires will look to comply with the ILP Guidance note 08/18 Bats and artificial lighting in the UK. This is achieved by:

- LED Luminaires
- Colour temperature – warm white – 2700k
- Upward Light Output Ratio = 0% (except for bridge feature lighting)
- Good lens control to avoid light spillage

Lighting columns will be positioned so that they are as far as possible from mapped badger runs thereby reducing the chance PIR devices on the lighting columns will be activated.

1.2. Controls

Controls prevent unnecessary lighting thereby reducing light pollution, electrical energy consumption and carbon emissions. Seasonal lighting, presence and absence control and adaptive lighting can be used.

- Seasonal lighting – lighting only comes on at dusk
- Presence & Absence control – Lanterns only come on during use and go off again a short time after.
- Adaptive lighting – lighting levels can be increased or reduced down to zero depending on the usage expected.

Given the dynamic nature of the lighting controls an individual from the council will need to take on the responsibility to manage the controls to suit once use of the park has been established over time. Pre-setting the lighting controls at the start is unlikely to give optimum performance over the long term.

2.0 Lighting

2.1. Lifford Approach Road

These areas will be illuminated to “BS EN 13201-2:2015 Road Lighting - Performance Requirements” compliant lighting class C4 which will a provide a minimum average horizontal illuminance of 10 lux with a minimum uniformity of 0.4. The roads will be illuminated using a 6m galvanised conical steel lighting column. The street lighting lanterns will utilise the latest LED lighting technology. The colour temperature will be 2700K (warm white) with a Colour Rendering Index (CRI) of 80. Luminaires shall be mounted close to pedestrian crossing points. The columns can be supplied with a banner fitting if required. Seasonal lighting controls would apply in this area.

Sample Images

Precedent	Lantern
	
Brackets	Conical galvanised steel column plus banner
	

2.2. Car Parks

These areas will be illuminated to “BS5489-1:2020 Design of road lighting. Part 1: Lighting of roads and public amenity areas – code of practice” which will a provide a minimum average horizontal illuminance of 10 lux with a minimum uniformity of 0.25. The roads will be illuminated using a 6m galvanised conical steel lighting column. The street lighting lanterns will utilise the latest LED lighting technology. The colour temperature will be 2700K (warm white) with a CRI of 80. Luminaires shall be mounted close to pedestrian crossing points. The columns can be supplied with a banner fitting if required. Seasonal lighting, Presence & Absence control and Adaptive lighting controls would apply in this area.

2.3. Combined Pedestrian and Cycling Paths

These areas will be illuminated to "BS EN 13201-2:2015 Road Lighting - Performance Requirements" compliant lighting class P4 which will a provide a minimum average horizontal illuminance of 5 lux with a minimum vertical illumination of 1.5 lux for facial recognition. The paths will be illuminated using a 6m galvanised conical steel lighting column. The street lighting lanterns will utilise the latest LED lighting technology. The colour temperature will be 2700K (warm white) with a CRI of 80 which aids facial recognition. The columns can be supplied with a banner fitting if required. Seasonal lighting, Presence & Absence control and Adaptive lighting controls would apply in this area.

2.4. Hub Building

This area around the building will be illuminated to BS5489-1:2020 Design of road lighting. Part 1: Lighting of roads and public amenity areas – code of practice Performance Requirements" compliant lighting class P4 which will a provide a minimum average horizontal illuminance of 5 lux with a minimum vertical illumination of 1.5 lux for facial recognition. The external area will be illuminated using ceiling mounted external lights and ground mounted bollards. The colour temperature will be 2700K (warm white) with a CRI of 80. The ceiling mounted fittings and the bollards will utilise the latest LED lighting technology. Seasonal and Adaptive lighting controls would apply in this area.

Ceiling mounted downlight	Ground mounted bollard
	

- Hub Building outdoor backlit signage - This is part of the architectural package.

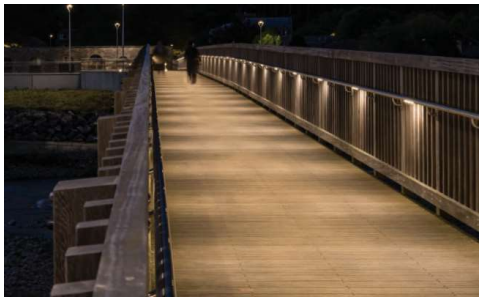
2.5. Events Space

This area will be illuminated to BS5489-1:2020 Design of road lighting. Part 1: Lighting of roads and public amenity areas – code of practice Performance Requirements" compliant lighting class P4 which will a provide a minimum average horizontal illuminance of 5 lux with a minimum vertical illumination of 1.0 lux for facial recognition. The external area will be illuminated using a 6m galvanised conical steel lighting column. The street lighting lanterns will utilise the latest LED lighting technology. This design will provide an aesthetically pleasing, low maintenance and uniformly lit space for the wider public. The colour temperature will be 2700K (warm white) with a CRI of 80 which aids facial recognition. The columns can be supplied with a banner fitting if required. Seasonal and Adaptive lighting controls would apply in this area.

2.6. Bridge

2.6.1. Functional Lighting

This area will be functionally illuminated to BS5489-1:2020 Design of road lighting. Part 1: Lighting of roads and public amenity areas – code of practice Performance Requirements" compliant lighting class P5 which will a provide a minimum average horizontal illuminance of 3 lux with a minimum vertical illumination of 1.0 lux for facial recognition. The colour temperature will be 2700K (warm white) will be used which is most fish friendly colour temperature available. A CRI of 80 will be used which aids facial recognition. The fitting will be incorporated into the bottom of a handrail at 1500mm AFFL. The latest LED lighting technology will be used and an asymmetric distribution will focus light onto the path rather than onto the river. Seasonal lighting, Presence & Absence control and Adaptive lighting controls would apply in this area.

Precedent	Lantern
	

2.6.2. Feature Lighting

Low level/deck mounted feature lighting to point upwards with a narrow spot optic to illuminate the vertical trusses in a controlled way. The feature lights will be LED and the colour temperature will be 2700K (warm white) to minimise the effect on wildlife. Maintenance of the luminaires will be from the bridge path via access hatches. Seasonal and Adaptive lighting controls would apply in this area.

Spotlight


2.7. O&M compound

The O&M compound within the Lifford site will be lit using flood lights directly mounted on the outside of compound building. This area will be illuminated to BS5489-1:2020 Design of road lighting. Part 1: Lighting of roads and public amenity areas – code of practice Performance Requirements" compliant lighting class P4 which will a provide a minimum average horizontal illuminance of 5 lux with a minimum vertical illumination of 1.0 lux for facial recognition. The external area will be illuminated using building mounted floodlights and will utilise the latest LED lighting technology. This design will provide an aesthetically pleasing, low maintenance and uniformly lit space for council workers. The colour temperature will be 2700K (warm white). Seasonal and Adaptive lighting controls would apply in this area.

Building Mounted Floodlight

2.8. Quayside Lifford

The external area will be illuminated in an emergecny using a 6m galvanised conical steel lighting column. The flood light will utilise the latest LED lighting technology. This design will provide an aesthetically pleasing, low maintenance and lit space during emergencies. The colour temperature will be 2700K (warm white). Method of control to be established.

Floodlight

2.9. Coursing Ground Building Lifford

This area will be illuminated to BS5489-1:2020 Design of road lighting. Part 1: Lighting of roads and public amenity areas – code of practice Performance Requirements" compliant lighting class P4 which will a provide a minimum average horizontal illuminance of 5 lux with a minimum vertical illumination of 1.0 lux for facial recognition. The colour temperature will be 2700K (warm white) with a CRI of 80. The external area will be illuminated using wall mounted external lights. The wall mounted fittings will utilise the latest LED lighting technology. Seasonal and Adaptive lighting controls would apply in this area.

Wall Mounted External Light

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Glasgow, G2 4AA

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NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

Rev	Issue Date	Description	App
-	-	-	-

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Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Stràbane Destrick Cooncil

Project Status: Draft for comment

Project: RIVERINE COMMUNITY PARK

Drawing: Strabane External Lighting

Scale: 1:500 @ A0

Drawn	PQ	Checked	AS	Approved	GMcC
Date	AUG 21	Date	AUG 21	Date	JUNE 21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
RVCP	WWL	ZZ	XX	PL	MEP-0002		

Project Number: E2256

Status code & Description

NOTES

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Rev	Issue Date	Description	App
-	-	-	-

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Client

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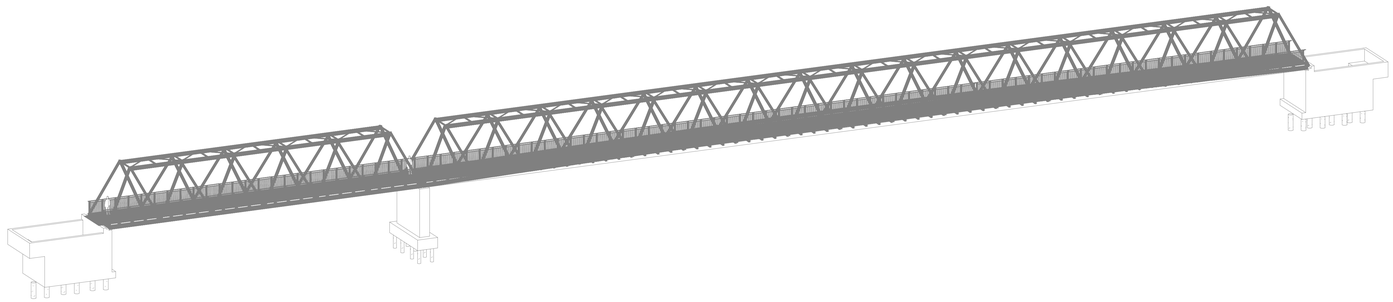
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

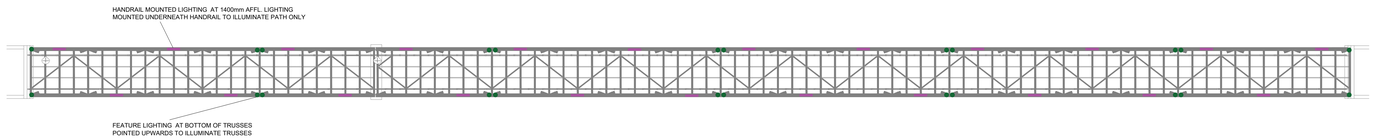
Project Status	Draft for comment
Project	RIVERINE COMMUNITY PARK
Drawing	Lifford External Lighting
Scale	1:500 @ A0

Drawn	PQ	Checked	AS	Approved	GMcC
Date	AUG 21	Date	AUG 21	Date	AUG 21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
RVCP	WWL	ZZ	XX	PL	MEP	-0001	

Project Number	Status code & Description
E2256	





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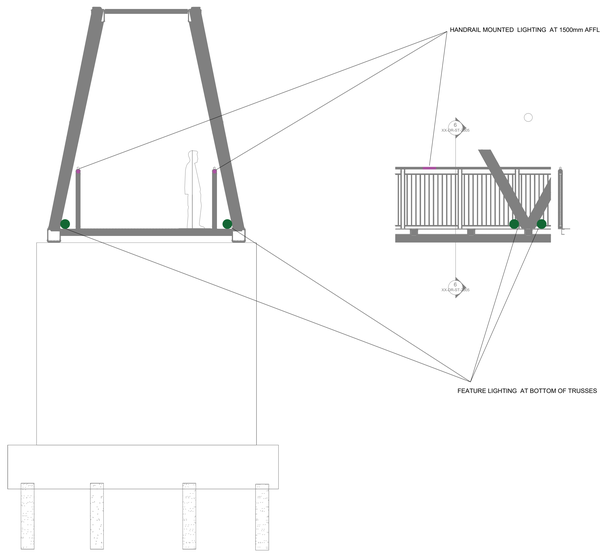

Scale 1:50

BRIDGE LIGHTING LEGEND

6	Handrail Mounted lighting - final number to be confirmed
6	Handrail Mounted Lighting cross section view
7	Feature lighting - final number to be confirmed

NOTES

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2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

Rev	Issue Date	Description	App
-	-	-	-

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Comhairle Chathair Dhoire & Cheantar an tSratha Bán
Derry Cittie & Strideane Destrick Council

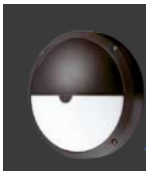
Project Status	Draft for comment
Project	RIVERINE COMMUNITY PARK
Drawing	Riverine Bridge Lighting Indicative Design
Scale	As Shown

Drawn	PQ	Checked	AS	Approved	GMcC
Date	JUNE 21	Date	JUNE 21	Date	JUNE 21

Project	Revision
RVCP - WW - ZZ - XX - PL - MEP-0004	

Project Number	Status code & Description
E2256	

Appendix XI: Lighting & CCTV Schedule for Riverine

Area	No.	Description	Image
O&M Compound Hub	1	Wall mounted external lights	
Hub	2	Bollard	
Paths	3	6m LED Columns Lantern LED IP66 IK10 Bracket Column Type 6m Conical galvanised steel	  
O&M Compound	4	Wall mounted external flood lights	

Hub	5	Ceiling mounted external lights	
Hub	5a	Ceiling mounted external lights – low wattage	
Bridge	6	Handrail Lighting	
Bridge	7	Feature Lighting	
Bridge CCTV		Tubular CCTV columns with tilt over option	

Appendix 8-9

Newt Survey

APPENDIX 8-9

Newt Survey

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: July 2021

MCL Consulting Ltd
Unit 5, Forty Eight North
Duncrue Street
Belfast
BT3 9BJ
02890 747766

CONTENTS

FIGURES

TABLES

APPENDICIES

1.0 INTRODUCTION

In 2021 MCL Consulting was appointed by McAdam to provide a newt survey on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing lands on the outskirts of Strabane and Lifford.

3.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused concrete hardstand, with the rest of the site consisting of wet woodland and soil embankments.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

Figure 1: Site location

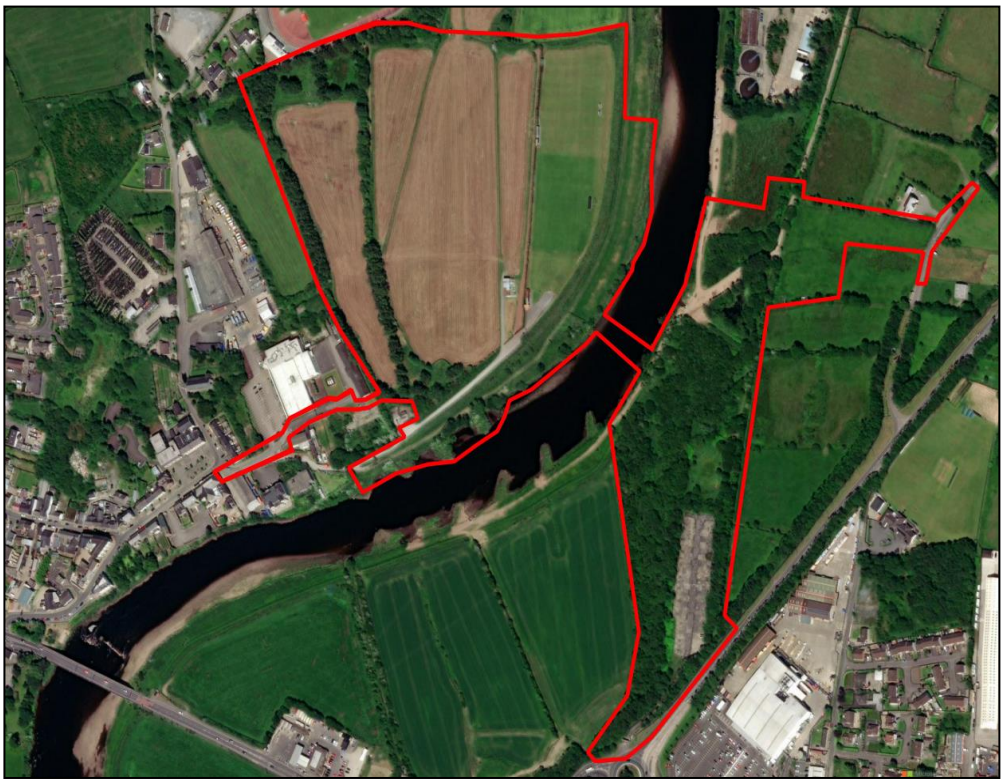


Figure 2: Site boundary

3.1 Development Proposals

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways, cycleways and retained wetlands. The development will be supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 11 hectares by utilising agricultural land and wetlands lying along either side of the
border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The bridge will be a single span with the central, (in river), piering removed, with landing points on either side of the riverbanks. The Park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.
The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities on the Lifford side of the proposed development.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events on the Lifford side of the proposed development.

- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane will be made available on the Lifford side of the proposed development.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

3.1 Rationale of Newt Presence/Abundance Surveys

The aim of this survey is to:

- Carry out newt presence and abundance surveys in the form of refugia survey checks, netting, night-time torch light surveys and egg counts;
- If newts or eggs are present on-site further determination of the potential population density on site;
- Identify the need for mitigation.

3.1 Legislation

Lifford (ROI) Legislation

Smooth newts are protected in Ireland under Schedule 5 of the Wildlife Act, 1976. The species is also

afforded additional protection under Appendix III of the Convention on the Conservation of European Wildlife and Natural Habitats (The Bern Convention).

It is also an offence to intentionally or recklessly:

- damage or destroy, or obstruct access to, any structure or place which newts use for shelter or protection;
- damage or destroy anything which conceals or protects any such structure;
- disturb a newt while it is occupying a structure or place which it uses for shelter or protection.

Therefore, any planned works which might infringe upon any areas where newts are present should be undertaken in accordance with a wildlife licence issued by the National Parks and Wildlife Service (NPWS)

Strabane (NI) Legislation

Smooth newts (*Lissotriton vulgaris* formerly *Triturus vulgaris*), are a protected species under Article 10 of the Wildlife (Northern Ireland) Order 1985 (as amended). Under Schedule 5 of this order, it is therefore considered an offence to intentionally or recklessly kill newts.

It is also an offence to intentionally or recklessly:

- damage or destroy, or obstruct access to, any structure or place which newts use for shelter or protection;
- damage or destroy anything which conceals or protects any such structure;
- disturb a newt while it is occupying a structure or place which it uses for shelter or protection.

Therefore, any planned works which might infringe upon any areas where newts are present should be undertaken in accordance with a wildlife licence issued by Northern Ireland Environment Agency (NIEA).

2.0 METHODOLOGY

3.1 Author / Surveyors

MCL Consulting is a Northern Ireland based multidisciplinary environmental consultancy which provides expert advice for a wide range of ecological services in support of Environmental Impact Assessments (EIA).

Ryan Boyle BSc MSc – Consultant Ecologist

Fieldwork was carried out and assisted by Ryan Boyle a consultant ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queens University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 7 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a

zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc – Graduate Ecological Consultant

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, a seasonal volunteer for the Bat Conservation Trust and a member of the Botanical Society of Britain and Ireland. She regularly takes part in newt, lizard and bat surveys, as well as botanical identification outings.

2.2 Presence / abundance

Survey techniques and methodology were adopted from the guidance document produced by English Nature (2001) "*Great Crested Newt Mitigation Guidelines*" and Langton, T.E.S. et al (2001), "*Great Crested Newt Conservation Handbook*". Methods were adapted from 'Froglife Surveying for amphibians'.

The following were also incorporated into survey timings/conditions:

- Air temperature 5°C or warmer.
- Avoid surveying at night directly after a cold spell.
- Little or no wind.
- Dry (although very light rain is tolerable).

- Water temperature ideally 10°C or more.

Methods employed during the survey included:

Refuge Search

A refugia search method involved surveying within 200m of ponds and potential breeding habitats. This includes terrestrial habitats such as rocks, trees, logs, ground debris etc.

Torch Surveying

Torch surveying after dusk using a Cluson Smartlite 1 million candle power (with 1km beam) handheld torch to identify individuals within the water column and pond, and around the pond area. All torch surveys were completed at night. The margins of the pond were walked around once, and the start time and end time of the survey was recorded to ensure consistency in survey effort and duration. Areas of the pond that were not accessible were identified during the first visit and were excluded from all further survey visits. This survey method was always undertaken when there was little or no wind or rain.

Egg Search

The method involved searching both live and dead submerged pond vegetation for newt embryos during daylight hours. The searches were conducted with care not to damage the eggs or the marginal vegetation. It is important to note that numbers of eggs present are not indicative of population sizes.

Pond Net Search

This method involved using a standard dip net to sample areas around pond margins. In an effort to standardise the surveys, the survey protocol consisted of a perimeter walk around the pond with a survey effort of 2 minutes of netting for every 10 meters of shoreline. All netting bouts were completed during the daylight hours. Due to the intrusive nature of net searches, they were used solely to help determine presence/likely absence and ceased if the presence of smooth newt was confirmed in a pond.

2.2.1 Equipment

- 2x Cluson Smartlite 1 million candle power
- 'D' net or traditional amphibian dip net
- Ambient air thermometer

2.3 Survey Constraints

Access to an area of suitable habitat located within the central region of the Strabane side of the proposed development is restricted due to overgrown vegetation which had been allowed to heavily colonise the area. The suspected suitable habitat is also located at a lower elevation at the bottom of several embankments with difficult to traverse terrain along with being extensively flooded. There were also several health and safety concerns regarding the flooded woodland area. The area is misleading, as it appears to be of solid ground or very shallow water. However, the area is heavily flooded with deep water and a deep layer of silt, leaf litter and mud giving a false impression to the waterbody's true depth. This made safety during the survey paramount especially on night surveys, therefore, a combination of survey techniques was used on each visit and surveyors only ventured approximately 30m out into this area. This was deemed to be the extent of safe footing as beyond that the area became densely overgrown and restricted surveyors' ability to safely manoeuvre through the area.

3.0 SURVEY RESULTS

3.1 Desk Study

Centre for Environmental Data and Recording (CEDaR)

A request was submitted to CEDaR to identify if any previous historical records of newts were present within 2km of the site. No records were returned for newts at the proposed Riverine Scheme.

National Biodiversity Network Atlas (NBN) 2020

A record search was carried out on the NBN Atlas to identify if any previous historical records of newts were present within 2km of the site. No records were returned for Newts at the proposed Riverine Scheme.

National Parks & Wildlife Service (NPWS)

Table 1: Summary of NPWS Newt Database Results

Grid	Scientific name	Common name	Date	Event Location
H 30000 90000	Lissotriton vulgaris	Smooth Newt	1972	Not given

A request was submitted to NPWS to identify if any previous historical records of newts were present within 2km of the site. the records provide 1x record of a single newt located approximately 9.3km southeast of the proposed development site from 1972. No other records were provided.

A5 Approval of Planning Permission 2016

Previous studies carried out as part of the planning process for the proposed A5 development project included an in-depth investigation into smooth newt presence and abundance along the projects proposed site route. Part of this route runs within close proximity to the proposed Riverine Scheme site layout and included an investigation for newts within the area. The previous studies identified 8 potential locations for suitable smooth newt habitat with only 3 of these being granted access for surveying. Site P21 was surveys and found no newts present. However, Site P77 produced a peak count of 7 newts estimating the site has a low population of newts. Site P77 is also approximately1.5km southwest from the proposed Riverine Scheme site. Site P17 appears to fall within the proposed Riverine Scheme site boundary corresponding to the location of the wet woodland located on site. a peak count of 86 newts were found to be present from surveying efforts estimating a good population within the area, (see Appendix V & VI).

3.2 Field Survey

3.2.1 Water Body Assessment

The site contained a low-lying area on its western boundary with dense bullrush growth and three visible clear topped water bodies. The entire area was flooded, with deep layers of silt and heavily overgrown, dense vegetation. Table 1 provides a detailed assessment of the waterbody subject to smooth newt surveys.

Table 3: Assessment of water bodies

(TN)	Length (m)	Width (m)	Depth (cm)	Aquatic vegetation	Image
1	Total length of flooded area searched for newts was 270m	72m at its widest and approximately 20m at its narrowest	100cm +	Marestail (*Hippuris vulgaris*) was observed growing densely in certain areas of the site's water body and no other aquatic plant species. Marginal grasses such as Yorkshire fog, willow, bracken, and bramble were observed on the waterbody's banks.	 **Figure 3. Extent of Flooded wet woodland in the central area of the site**

Standing water was only observed on site in the form of a low-lying flooded area within a flooded woodland within the central area of the Strabane side of the proposed development. Therefore, survey efforts were adjusted accordingly to ensure maximum coverage.

3.2.2 Field survey Results

A total of x4 surveys were undertaken, all of which lasted a duration of 2 hours. Two night-time visits and two day- time searches were undertaken a week apart during the active newt breeding season. The results of the surveys are presented below in Table 2.

It should be stated, that due to health and safety concerns of the area that sampling techniques were combined to produce maximum results. Each method was still the focus of its allocated survey but was supplemented with other techniques.

Table 4: Summary of results for newt surveys carried out

Date	Time Start	Time End	Sunset	Temp	W/s	Oktas	ppt	Method	Newt abundance	Other species
19/05/2021	11:00	13:00	N/A	12	6mph	4/8	15%	Visual observa-tion, egg count and netting	0	Common frog (*Rana temporaria*) and tadpoles, Pond Skaters (*Gerridae spp*) Water beetles (*Dytiscus spp*) & backswimmers (*Notonecta spp*)
26/05/2021	12:00	14:30	N/A	15	3mph	2/8	5%	Visual Observa-tions, egg count and netting	0	Common frog (*Rana temporaria*) and tadpoles, Pond Skaters (*Gerridae Spp*) Water beetles (*Dytiscus spp*) Three-spined stickleback (*Gasterosteus aculeatus*) & backswimmer

										s (*Notonecta spp*)
02/06/2021	22:00	00:00	22:45	9	4mph	4/8	15%	Visual torch light survey at night, egg count and netting	0	Common frog (*Rana temporaria*) and tadpoles, Pond Skaters (*Gerridae Spp*) Water beetles (*Dytiscus spp*) Flatworms (*Platyhelmin-thes spp*) & backswimmers (*Notonecta spp*)
09/06/2021	22:00	00:00	22:45	14	2mph	2/8	20%	Visual torch light survey at night, egg count and netting	0	Common frogs (*Rana temporaria*) and tadpoles, water beetles (*Dytiscus spp*) Pond skaters (*Gerridae Spp*), horse leeches (*Haemopis sanguisuga*) & Water boatman

										(*Corixa punctata*)

No evidence of smooth newts was detected during x4 of the surveys within the area consisting of an extensive area of flooded woodland with separating features of embankments which form sections of the old railway. A 200m wide search of the site and surrounding environment identified a second waterbody within the site's boundary just north of the flooded woodland which consisted of presumed suitable habitat, however, this area was not surveyed as further investigation found the water body to be highly eutrophic with little life found in it and dense pond weed and algae blooms. This eutrophic environment is not deemed suitable for newts and other aquatic life due to the vastly decreased dissolved oxygen levels that are present with such environmental processes. A deep field drain was also located along the site's eastern boundary, this was also deemed non-suitable as it was often completely dried out with no water in it.

4.0 ASSESSMENT & RECOMMENDATIONS

It is confirmed from the results that newts are not present in the area, however, it is believed that the site and wider surrounding area may provide suitable habitat for newts and populations may be present within the wider area beyond the site boundary. Net, observation, torch and egg count checks were made throughout the flooded woodland and the flooded grassland boundaries of this area and yielded no evidence of newt presence or activity. Indeed, along the area's southwest boundary amongst a dense area of grass and mares tail a small oil slick was observed on the surface of the water which, while not apparently impacting the other identified species during the surveys, would not prove suitable for newts. Initially the habitat appeared to be suitable to support a population of newts, after the surveys it is concluded that the area does indeed have a lack of suitable aquatic habitat possibly due to a lack of maintenance and adverse influence from human activities within the area. No newts were found during the refugia checks along the banks of the flooded woodland and through the greater area of the site. Health and safety constraints did limit the ability for surveyors to access certain areas of the flooded region and the terrestrial habitats, however, the rest of the site was thoroughly investigated and no evidence of newts present within the area were located.

Water quality is also believed to be quite poor, while surveying the site on each visit a strong putrid smell was noted coming from the water, with certain areas near the southern boundary being much stronger than in others.

5.0 CONCLUSIONS

All surveys were undertaken using NIEA approved standardised methodologies and techniques, and all surveys were completed during ideal weather conditions at an appropriate time of year. The results demonstrate that no newts were found to be present on site and as such it is concluded that currently the site is not populated by smooth newts. None of the survey techniques yielded any evidence for the presence of newts at any stage in their metamorphic lifecycle.

No further surveys or investigations are recommended at this time however, a surface water management plan (SWMP) should be developed to detail the proposed mitigation to prevent the potential impact on the neighbouring waterbodies to ensure these areas are protected due to the high population of tadpoles found suggesting a strong population of frogs are located in the area, (see the Riverine CEMP for more information on this). While frogs are not listed as a priority or protected species, they often share the same habitats as smooth newts. Currently the water bodies are to be retained and improved as part of the proposed project so maintaining and protecting these water bodies may provide for any potential future populations of newts to colonise the area.

Report Prepared By: -

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Consultant Ecologist

Reviewed By: -

Emily Taylor BSc (Hons)
Graduate Ecologist

References

Department of Agriculture, Environment and Rural Affairs (DAERA) Smooth Newt Survey Specifications available from https://www.daera-ni.gov.uk/publications/newt-surveys-specifications

Department of Agriculture, Environment and Rural Affairs (DAERA) Standing Advice NED Smooth Newt available from https://www.daera-ni.gov.uk/publications/standing-advice-development-land-may-affect-natural-heritage-interests

Froglife (2000) Great Crested Newt Conservation Handbook. Froglife Ltd., Halesworth.

National Parks & Wildlife Service Legislation at:
https://www.npws.ie/legislation

Office of the Attorney General (1976) Wildlife Act, 1976. [On-line]:
http://www.irishstatutebook.ie/eli/1976/act/39/enacted/en/html#zza39y1976

The Herpetological Society of Ireland
Smooth Newt – The Herpetological Society of Ireland (thehsi.org)

FIGURES

Figure 4. Flooded region of wet woodland in centre of site

Figure 5. Banks of flooded wet woodland overgrown with aquatic mare's tail

Figure 6. Night-time Torch surveys

Figure 7. Night-time Torch Survey along flooded wet woodland banks

Figure 8. Day time egg search along flooded grass banks of wet woodland area

Figure 9. Entrance to centre of the site where flooded wet woodland is located

Figure 10. Dense vegetative growth bordering centre of site and water body

APPENDICIES

River Foyle

Marsh

Wetland

SUDs

Overhead Electric Lines

Park Road

Barnhill Road

Existing Water Level +(2.00)

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road influences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

N

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of the items in the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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European Regional Development Fund

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Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Ghoirtha Báin
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · ZO · XX · DR · LA · 102 · P00

Project Number: 1383

Status code & Description: PLANNING

LEGEND

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- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

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- **Vehicular Flush Kerb** — Pre Cast Concrete
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MISCELLANEOUS

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- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

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4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	15.02.21	Issued for planning	DM
P02	17.03.21	Issued for planning	DM

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Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

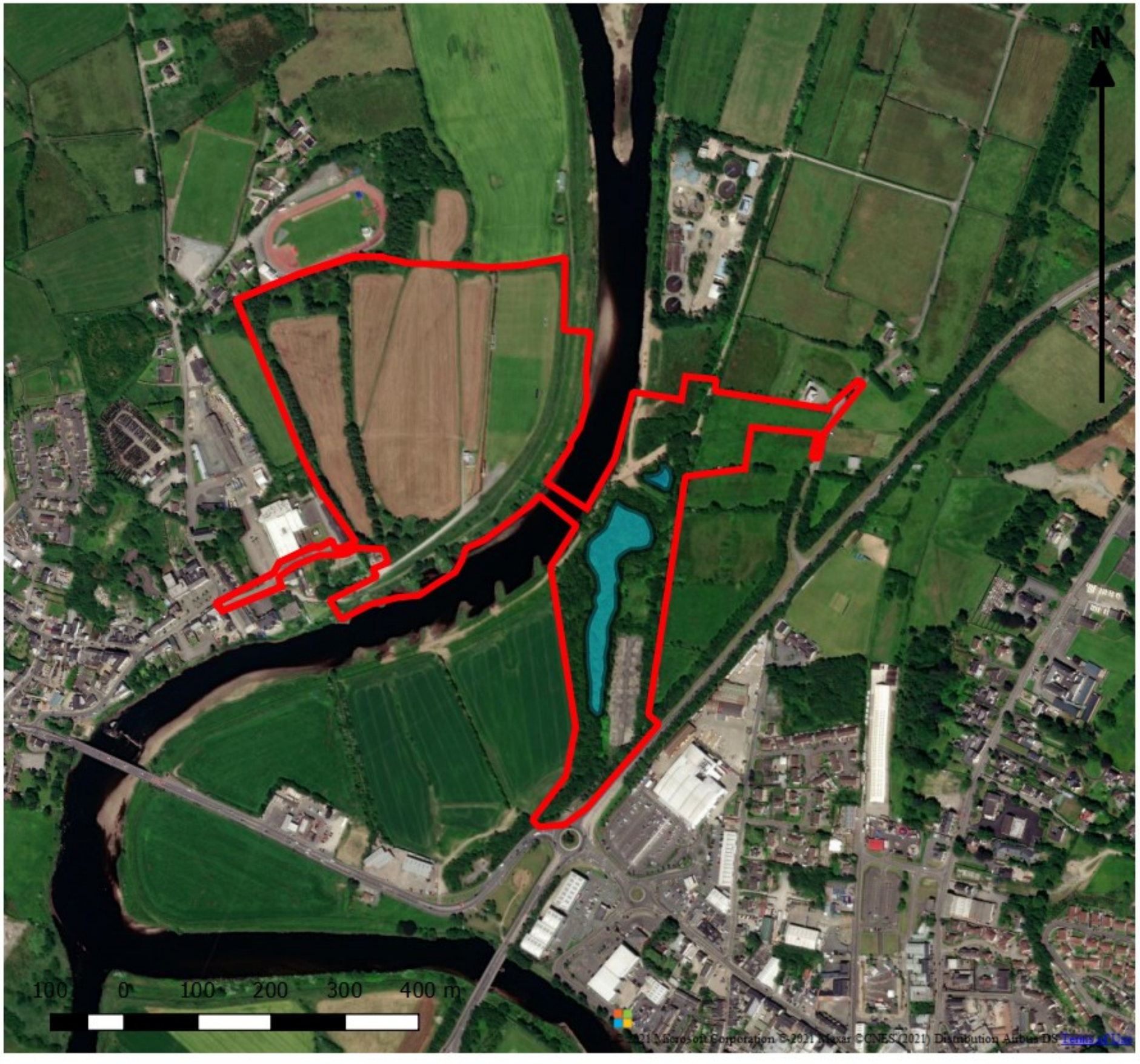
Drawing: LIFFORD LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	ZO	XX	DR	LA	101	DRAFT

Project Number: 1383
Status code & Description: PLANNING



Legend

Suitable Newt Habitat

Red Lined Boundary

Appendix III: Newt Habitat Locations for Surveying

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:7239 @ A3

Date: 13/07/2021

Multidisciplinary Environmental Consultants

MCL CONSULTING

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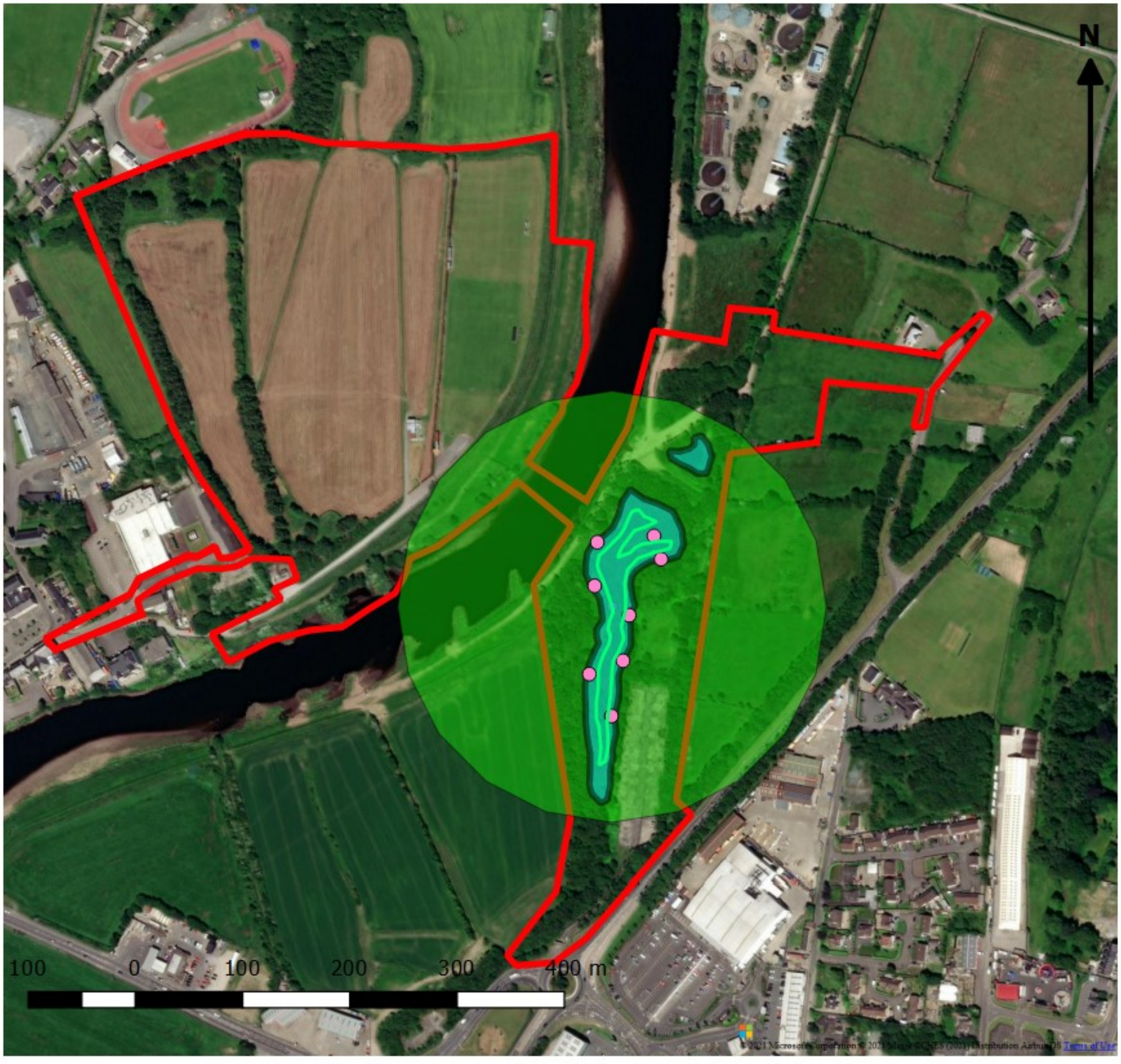
BT3 9BJ
Tel: 02890747766



Legend

- NNPWS Records
- Visual Observation Survey Transects
- Newt Netting Locations
- Water Bodies
- 200m Newt Buffer Search Zone
- Red Lined Boundary

Appendix IV: Newt Survey Locations

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:5000 @ A3

Date: 13/07/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

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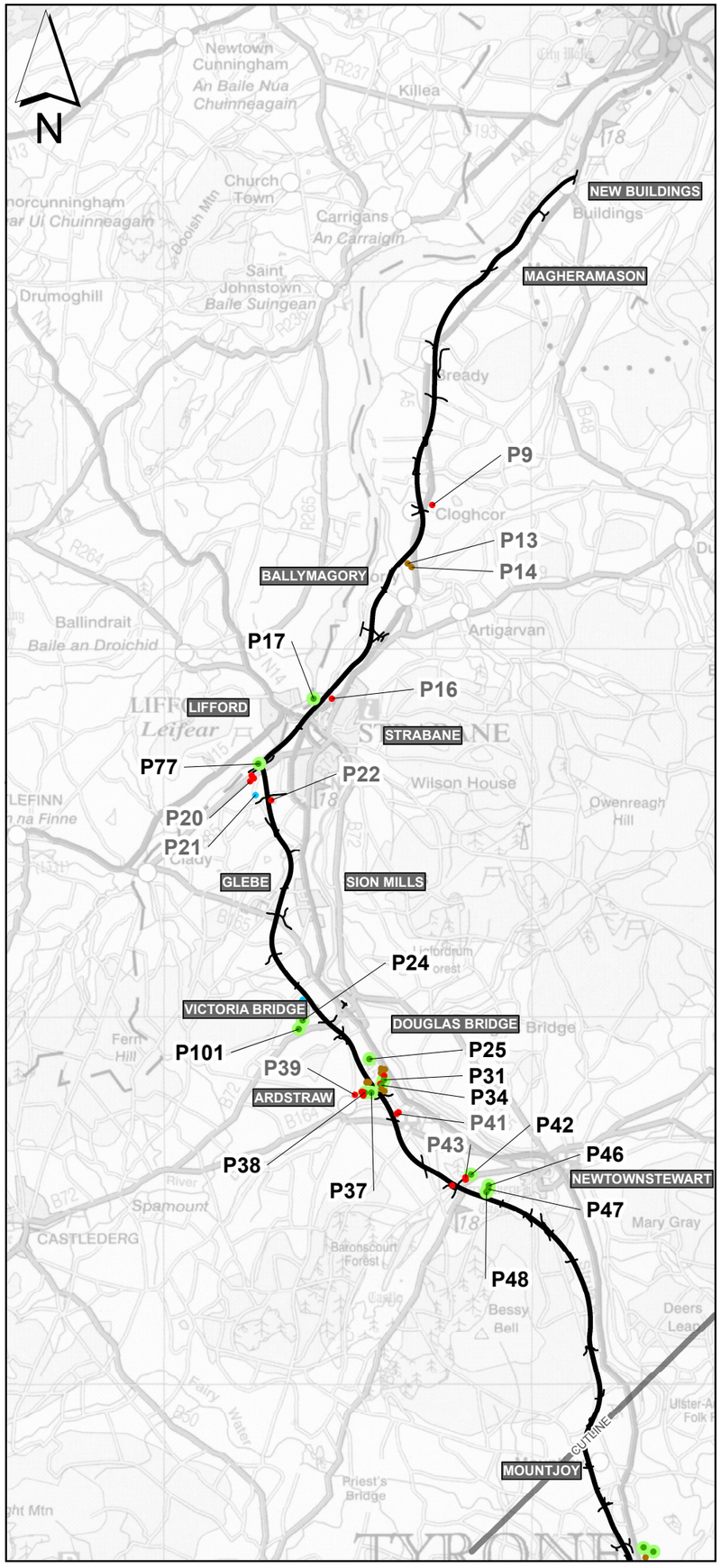
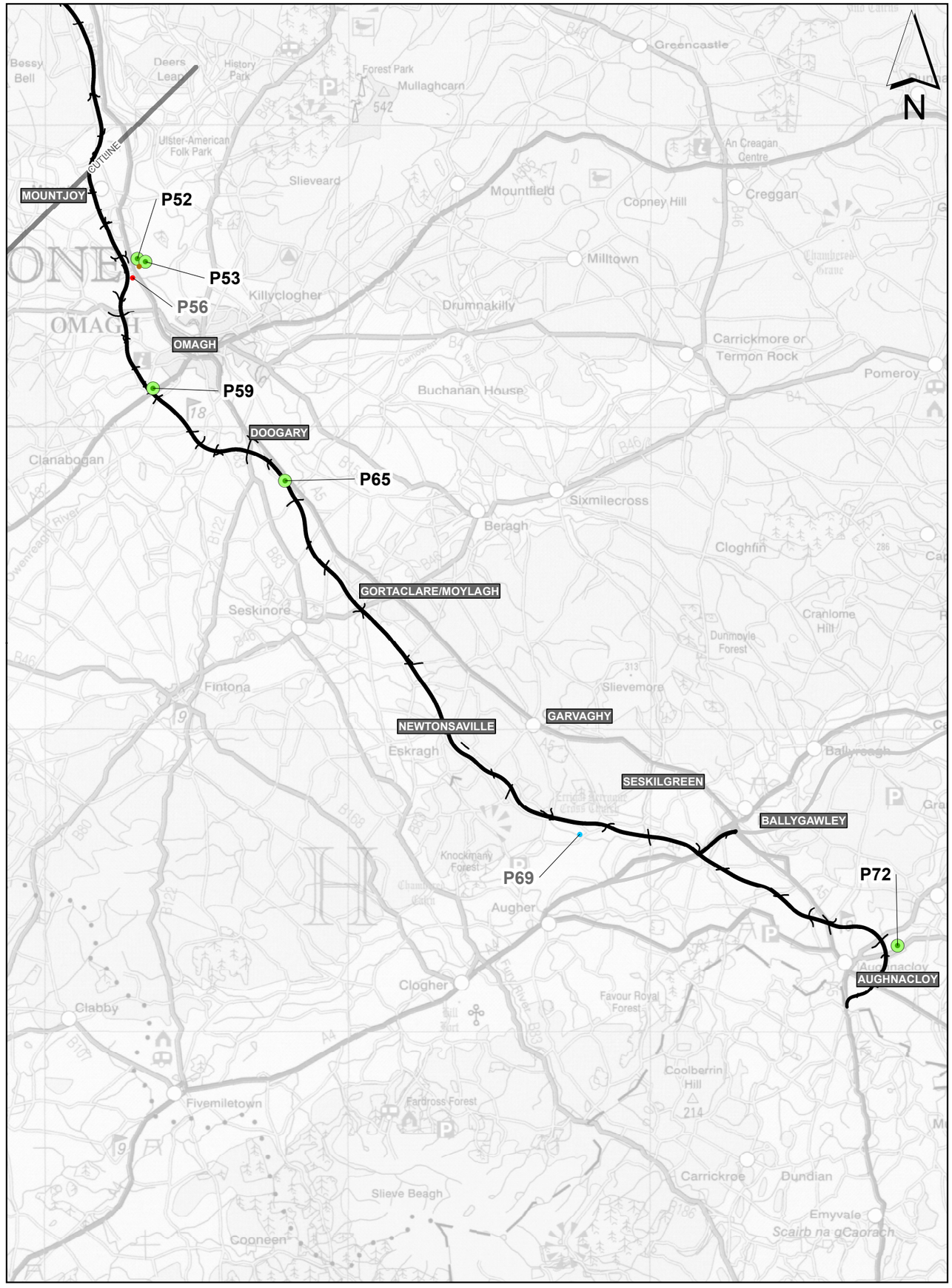
Appendix V: 2016 A5 Newt Survey Results

Pond Reference	Present[1] / absent	Peak counts during torching	Population class size estimate classification
17	Present	86	Good
21	Absent	0	-
23	Absent	0	-
24	Present	3	Low
25	Present	25	Good
31	Present	9	Low
34	Present	2	Low
37	Present	14	Good
38	Present	2	Low
42	Present	7	Low
46	Present	1	Low[2]
47	Present	14	Good[2]
48	Present	1	Low
52	Present	0	Low[1,2]
53	Present	3	Low[2]

Pond Reference	Present[1] / absent	Peak counts during torching	Population class size estimate classification
59	Present	1	Low
65	Present	22	Good
69	Absent	0	-
72	Present	63	Good
77	Present	7	Low
101	Present	0	Low[1]





Legend

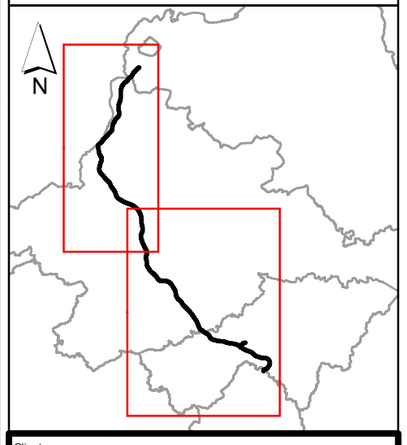
- PROPOSED SCHEME
- PONDS OCCUPIED BY SMOOTH NEWTS

SURVEY RESULTS

- SURVEYED - NEWTS PRESENT
- SURVEYED - NO NEWTS
- DRIED
- NO ACCESS

0 1 2 3 4 5 6 7 8
Kilometres

Scale @A3
1:150,000



Client: transportni

Project: A5 WTC Western Transport Corridor

mouchel — building great relationships

Drawing Title
ENVIRONMENTAL STATEMENT VOLUME 3

SMOOTH NEWT SURVEY 2014 RESULTS

Figure No: **Figure 11.69**

Version: A

Appendix 8-10

Breeding Bird Survey

APPENDIX 8-10

Breeding Bird Survey

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: July 2021

MCL Consulting Ltd
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APPENDICES

1.0 INTRODUCTION

In 2021 MCL Consulting was appointed by McAdam to write up a breeding bird survey on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing lands on the outskirts of Strabane and Lifford. Breeding bird surveys were carried out by the previous project ecologist Eamonn Delaney of Delichon Ecology.

1.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns. The site measures approximately 11.69 hectares in total, with approximately 5.73 hectares on the Lifford side and 5.96 hectares on the Strabane side.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused concrete hardstand, with the rest of the site consisting of wet woodland and soil embankments.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

Figure 1: Site location

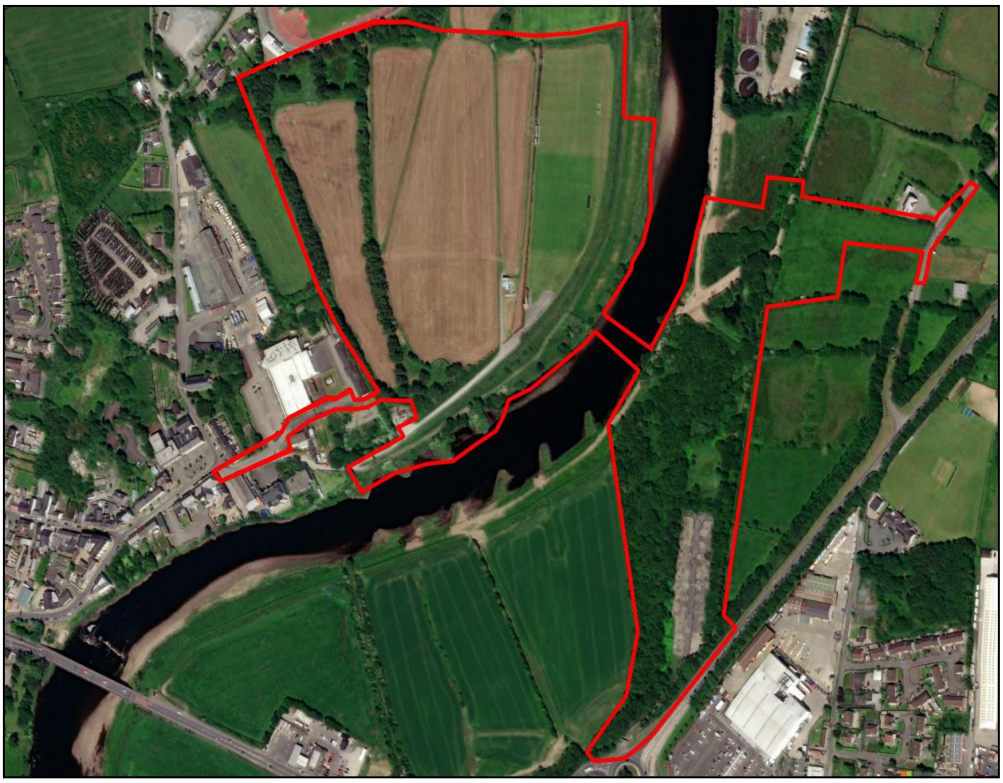

Figure 2: Site boundary

1.2 Development Proposal

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long-lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways, cycleways and retained wetlands. The development will be supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 11 hectares by utilising agricultural land and wetlands lying along either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The bridge will be a single span with the central, (in river), piering removed, with landing points on either side of the riverbanks. The Park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities on the Lifford side of the proposed development.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events on the Lifford side of the proposed development.

- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane will be made available on the Lifford side of the proposed development.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

.

1.3 Rationale of Breeding Bird Survey

The purpose of the breeding bird survey is to document the breeding bird community and estimate the abundance of the breeding bird species. This is required to assess the likelihood of any impacts upon the breeding bird community in association with the proposed development. The aim of this report is to: -

- Identify what birds are using the site for breeding and foraging purposes;
- Establish the habitat value for breeding and foraging birds;
- Identify the likely impacts on birds the development is likely to impose upon any local bird populations; and
- Recommend either further survey, mitigation or compensation measures either to protect local bird populations and to enhance the habitat in which they reside.

2.0 LEGISLATION

Lifford (ROI) Legislation

All wild birds are protected, particularly during the bird breeding season while nesting under the Irish Wildlife Act 1976 (as amended), the EU Habitats Directive of the Bern convention via the European Communities (Birds and Natural Habitats Regulations 2011 (S. I. No. 477 of 2011). It is an offence to intentionally or recklessly:

- kill, injure or take any wild bird; or
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- at any other time take, damage or destroy the nest of any wild bird included in Schedule A1; or

- take or destroy an egg of any wild bird; or
- disturb any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturb dependent young of such a bird.

Additionally, any person who knowingly causes, or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence.

Wild Birds

Most species of birds return to the same general nesting location each year and build a new nest. However, some species return to the same nest sites year after year, re-using old nests. Some of these species which have been deemed as particularly vulnerable to decline are given additional protection and are listed on the most recent BoCCI assessment checklist as amber or red *(see* Appendix: IX).

All wild birds are also subject to conservation measures under the Birds Directive (2009/147/EC). This requires European Member States to take conservation measures to maintain populations of all naturally occurring wild birds. Additionally, some bird species, which are particularly rare or vulnerable, are listed on Annex I of the Directive. These species are subject to special conservation measures and have additional legal protection as features of designated sites, such as Special Protection Areas (SPAs).

Local and national biodiversity action plans consider priority species within the local area of conservation concern.

Strabane (NI) Legislation

Under the Wildlife (Northern Ireland) Order 1985 (as amended) all wild birds are protected, particularly during the bird breeding season while nesting. It is an offence to intentionally or recklessly:

- kill, injure or take any wild bird; or
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- at any other time take, damage or destroy the nest of any wild bird included in Schedule A1; or

- take or destroy an egg of any wild bird; or
- disturb any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturb dependent young of such a bird.

Additionally, any person who knowingly causes, or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence.

Wild Birds

Most species of birds return to the same general nesting location each year and build a new nest. However, some species return to the same nest sites year after year, re-using old nests. Some of these species which have been deemed as particularly vulnerable to decline are given additional protection and are listed on Schedule A1 of the Wildlife Order *(see* Table 1). For these species it is an offence to damage or destroy their nests at any time of the year, even when they are not in use.

Table 1: Schedule A1 species

Common Name	Latin Name
Golden Eagle	*Aquila chrysaetus*
White-tailed Eagle	*Haliaetus albicilla*
Osprey	*Pandion haliaetus*
Barn Owl	*Tyto alba*
Peregrine	*Falco peregrines*
Red Kite	*Milvus milvis*

The Wildlife and Natural Environment Act (Northern Ireland) 2011 (known as the WANE Act) introduced a biodiversity duty on public bodies in Northern Ireland. It states that '*it is the duty of every public body, in exercising any functions, to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions'*.

The WANE Act also requires that the Department of the Environment maintains a list of species requiring special attention when delivering this duty. These are Northern Ireland priority species and specific actions for these have been addressed in a range of Government policies and activities.

All wild birds are also subject to conservation measures under the Birds Directive (2009/147/EC). This requires European Member States to take conservation measures to maintain populations of all naturally occurring wild birds. Additionally, some bird species, which are particularly rare or vulnerable, are listed on Annex I of the Directive. These species are subject to special conservation measures and have additional legal protection as features of designated sites, such as Special Protection Areas (SPAs).

Local and national biodiversity action plans consider priority species within the local area of conservation concern.

Planning Policy

The Planning Policy Statement 2 (PPS 2), Natural Heritage, NH2 indicates that development proposals are required to be sensitive to all protected species and sited and designed to protect them, their habitats and prevent from deterioration and destruction of their breeding sites or resting places.

3.0 METHODOLOGY

3.1 Surveyor/qualifications

Ryan Boyle BSc MSc – Consultant Ecologist

Fieldwork was carried out and assisted by Ryan Boyle a consultant ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queens University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 7 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc – Graduate Ecological Consultant

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, as well as a seasonal volunteer for the Bat Conservation Trust and regularly takes part in newt, lizard and bat surveys.

Conor Finlay BSc MSc – Graduate Ecologist

All surveying and reporting were assisted by Conor Finlay, a graduate ecologist at MCL Consulting. He has a master's degree (MSc) in Ecological Management and Conservation Biology from Queens University, Belfast, a bachelor's degree (BSc) in Environmental Sciences from Ulster University, Coleraine and previous employment experience working as a Park Ranger within Stormont Estate assisting contractor ecologists in biodiversity checklists within veteran woodlands and conservation wetlands. He has professional experience assisting bat activity surveys, bat analysis, ecological biodiversity checklists, breeding bird's surveys, badger surveys and desktop study experience in Amphibian conservation working within Global Amphibian Biodiversity Project (GABiP).

3.2 Desk Study

A desk study was undertaken with a view of gathering existing information in regard to species and habitat within and near the site. Sources used to gather information include:

- Department of agriculture, environment and Rural Affairs (DAERA) GIS datasets;
- Request to CEDaR, to provide information in regard to priority bird species within a 2km radius of the site; and
- Aerial photographs on Bing and Google and NIEA Environment Map Viewer.

3.3 Field study

The survey methodology broadly followed the 'Common Bird Census' (CBC) devised by the British Trust for Ornithology (BTO) and those described by Bibby *et al* (1992, 2000), where

the site was slowly walked with each area of the site being covered within 100m of the transect. This technique records the location and movements of individual birds present within a defined survey area. The site was visited on 4 occasions with the surveys undertaken during the breeding season (April-June) by a suitably qualified ecologist using high powered binoculars (42 x 8). All bird species were recorded (using the standard BTO codes) onto a scaled map. Birds that exhibited nesting or territorial behaviours such as singing, gathering nesting material, territorial displays or feeding of young were recorded.

The dates of previous breeding bird surveys carried out by Delichon Ecology are recorded in Table 2.

Table 1: Summary of the previous surveys carried out by Delichon Ecology

Survey Date	Survey Type
June 06th 2020	Multi-disciplinary survey including habitat survey, botanical survey, invasive species survey, breeding bird survey (late season), non-volant mammal survey and passive bat surveys.
July 15th 2020	Multi-disciplinary survey including habitat survey, botanical survey, invasive species survey, breeding bird survey (late season), non-volant mammal survey and passive bat surveys.
November 30th 2020	Wintering bird surveys and non-volant mammal survey
December 28th 2020	Wintering bird survey
January 12th 2021	Wintering bird survey
February 11th 2021	Wintering bird survey
March 30th 2021	Wintering bird surveys and non-volant mammal survey
May 11th 2021	Breeding Bird survey (early season)

3.4 Criteria for evaluation

All wild birds are protected, particularly during the bird breeding season while nesting under the Irish Wildlife Act 1976 (as amended), the EU Habitats Directive of the Bern convention via the European Communities (Birds and Natural Habitats Regulations 2011 (S. I. No. 477 of 2011).

In 2015 Birds of Conservation Concern Ireland 4 (BoCCI) the Red List for Birds updated, the fourth review of the status of wild birds in the UK, Channel Islands and the Isle of Man. Using standardised criteria 244 species with breeding, passage or wintering birds were assigned to either Red, Amber or Green lists of conservation concern.

3.5 Evaluation assessment

Using evaluation techniques set out by Fuller (1980) the data collected can be assessed in order to define the importance of ornithological interest by the number of breeding Species found on site.

Table 2: Evaluation criteria for bird assemblage assessment

Level of Importance	Number of Breeding Species	
	Fuller (1980) Criteria	Adapted Criteria
Local	25-49	>25
District		25-49
County	50-69	50-69
Regional	70-84	70-84
National	<85	<85

Level of importance is defined using geographical levels; Local, District, County, Regional and National. To comply with IEEM 2006 'Local has been adapted to >25 species and 'District' to 25-49 species.

3.6 Limitations

The entire site was accessible to the surveyor with all surveys undertaken under suitable weather conditions. No limitations while encountered during the survey period.

Some birds may be unnoticed and/or missed, this report only provides a portion of the bird activity occurring on site and that it is considered that ecological reports have are valid for 1 year after they are produced, after which they may need to be updated.

4.0 RESULTS

4.1 Desk Study

A written request was submitted to obtain data from the CEDaR recorded species dataset, and the results obtained from the CEDaR search provided a list of recorded species within a 2km radius of the site.

Table 3: CEDaR database request

Common Name	Scientific Name	Event Date	Sample Spatial Reference	All Designations - Short Names
Mistle Thrush	*Turdus viscivorus*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Chiffchaff	*Phylloscopus collybita*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Willow Warbler	*Phylloscopus trochilus*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Raven	*Corvus corax*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Rook	*Corvus frugilegus*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Woodpigeon	*Columba palumbus*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Chaffinch	*Fringilla coelebs*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Blackbird	*Turdus merula*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Yellowhammer	*Emberiza citrinella*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Goldcrest	*Regulus regulus*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Wren	*Troglodytes troglodytes*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Magpie	*Pica pica*	12/05/1988	H358990	Anon @ Habitat Sur Team (EHS)
Whooper Swan	*Cygnus cygnus*	28/10/1995	H39	Chris Murphy
Tree Sparrow	*Passer montanus*	22/11/1997	H39	David Clarke
Black Redstart	*Phoenicurus ochruros*	07/04/1999	H39	Clive Mellon
Long-Eared Owl	*Asio otus*	10/10/2014	H39	Hazlett Harkness
Long-Eared Owl	*Asio otus*	05/03/2014	C30	Hazlett Harkness
Rose-Coloured Starling	*Sturnus roseus*	14/10/2013	H39	Peter Phillips
Swift	*Apus apus*	09/05/2013	H39	Brian Hegarty
Kestrel	*Falco tinnunculus*	18/10/2013	H39	Brian Hegarty
Buzzard	*Buteo buteo*	18/10/2013	H39	Brian Hegarty
Swift	*Apus apus*	08/05/2014	H39	Brian Hegarty
Jay	*Garrulus glandarius*	06/03/2011	H39	Brian Hegarty
Sparrowhawk	*Accipiter nisus*	06/03/2011	H39	Brian Hegarty
Buzzard	*Buteo buteo*	06/03/2011	H39	Brian Hegarty
Cattle Egret	*Bubulcus ibis*	02/11/2012 - 11/11/2012	H39	Anon @ NIBA Blog
Gannet	*Sula bassana*	30/05/2011	H39	Brian Hegarty
Swift	*Apus apus*	08/05/2011	H39	Brian Hegarty
Spotted Flycatcher	*Muscicapa striata*	01/06/2011	H39	Hazlett Harkness
Barn Owl	*Tyto alba*	05/11/2016	H39	Colin Bell
Swift	*Apus apus*	17/07/2014	H3396	Richard Donaghey
Swift	Apus apus	09/08/2014	H3396	Richard Donaghey

Swift	*Apus apus*	18/07/2014	C3500	Richard Donaghey
Swift	*Apus apus*	08/05/2014	H3396	Richard Donaghey
Peregrine	*Falco peregrinus*	1987	H358992	Jim Wells
Peregrine	*Falco peregrinus*	1988	H358992	Jim Wells
Collared Dove	*Streptopelia decaocto*	12/04/2016	H346984	Billy Belshaw
Pied Wagtail	*Motacilla alba subsp. yarrellii*	02/06/2016	H340977	Billy Belshaw
Pied Wagtail	*Motacilla alba subsp. yarrellii*	15/12/2015	H338978	P. Webb
Blackbird	*Turdus merula*	27/04/2016	H34409863	P. Webb
Blackbird	*Turdus merula*	27/04/2016	H34569881	P. Webb
Blackbird	*Turdus merula*	15/12/2015	H348990	P. Webb
Pied Wagtail	*Motacilla alba subsp. yarrellii*	23/03/2017	H334982	Billy Belshaw
Rook	*Corvus frugilegus*	23/03/2017	H339977	Billy Belshaw
Jackdaw	*Corvus monedula*	23/03/2017	H335982	Billy Belshaw

National Parks & Wildlife Service (NPWS)

A written request was submitted to obtain data from the NPWS recorded species dataset within a 2km radius of the site. No records for bird species were returned.

National Biodiversity Network Atlas (NBN) 2020

No records of badger were identified within the site; however, these may be hidden/sensitive material.

A5 Approval of Planning Permission 2016

Previous studies carried out as part of the planning process for the proposed A5 development project included an in-depth investigation into badger presence and abundance along the projects proposed site route. Part of this route runs within close proximity to the proposed Riverine Scheme site layout and included an investigation for breeding birds within the area. Records for the A5 project were obtained from the British Trust for Ornithology (BTO), ulster Wildlfie Trust (UWT), Northern Ireland Raptor Study Group (NIRSG) and the Royal Society for the Protection of Birds (RSPB). The locations of historic heronries, breeding raptor sites and barn owl sightings were tabulated and can be viewed in Appendix: IV. Results from the breeding bird survey field study can be viewed in Appendix: V with species marked with an * identified as being Species of Conservation Concern (SoCC) or Biodiversity Action Plan (BAP) species, while those marked with a + are schedule 1 species. The survey found that a total or

55 birds were exhibiting territorial and /or other breeding behaviours suggesting the proposed route hosts a large population breeding birds of varying species due to the variations of habitat available. Of these 55 species 25 were identified as 'notable' species. No records were located within the proposed Riverine Scheme site with no breeding bird activity or pairs recorded as no survey site locations fell within the site boundary, (see Appendix: VI).

4.2 Field study

A pre-determined transect route was walked throughout the survey area which included all field boundaries within the site. Records were made of birds singing or calling, repeated territorial calls, territorial aggression, displaying, adults carrying food or nesting material, juvenile birds and family groups.

Instances where a nest was directly observed, an individual was carrying nesting material, or where an obvious male-female pair was present were all recorded as a breeding pair (BP).

Table 4: Summary of likely breeding behaviour

Transect Number	Species	BTO Code	Early Season	Late Season	Conservation Status[1]
Transect 1	Blackcap	BC		✓	Green
	Grey Heron	H.		✓	Green
	Goldcrest	GC	✓	✓	Amber
	Wren	WR	✓	✓	Green
	Woodpigeon	WP		✓	Green
	Rook	RO		✓	Green
	Blackbird	B.	✓	✓	Green
	Hooded Crow	HC		✓	Green
	Pheasant	PH		✓	Green
	Song Thrush	ST	✓	✓	Green
	Chiffchaff	CC		✓	Green
	Chaffinch	CH	✓	✓	Green
	Robin	R.	✓	✓	Green
	Magpie	MG	✓		Green
	House Sparrow	HS	✓		Amber
	Willow Warbler	WW	✓		Amber
Transect 2	Wren	WR		✓	Green
	Grey Heron	H.	✓	✓	Green
	Rook	RO	✓	✓	Green
	Sedge Warbler	SW		✓	Green
	Magpie	MG	✓	✓	Green
	Willow Warbler	WW		✓	Amber
	Woodpigeon	WP	✓	✓	Green

Transect Number	Species	BTO Code	Early Season	Late Season	Conservation Status[1]
	Song Thrush	ST		✓	Green
	Dunnock	D.		✓	Green
	Swift	SI		✓	Red
	Blackbird	B.	✓		Green
	Starling	SG	✓		Amber
	Swallow	SL	✓		Amber
	Feral Pigeon	FP	✓		n/a
	Jackdaw	JD	✓		Green
	Robin	R.	✓		Green
	Chaffinch	CH	✓		Green
	Common Sandpiper	CS	✓		Amber
	Hooded Crow	HC	✓		Green
	Shelduck	SU	✓		Amber
Transect 3	Blue Tit	BT		✓	Green
	Blackbird	B.	✓	✓	Green
	Goldcrest	GC	✓	✓	Amber
	Chaffinch	CH	✓		
	Blackcap	BC		✓	Green
	Woodpigeon	WP	✓	✓	Green
	Grey Heron	H.		✓	Green
	Wren	WR		✓	Green
	Dunnock	D.		✓	Green
	Rook	RO	✓	✓	Green
	Song Thrush	ST		✓	Green
	Starling	SG	✓	✓	Amber
	Mallard	MA		✓	Amber
	Common Gull	CM		✓	Amber
	Wren	WR	✓		Wren
	Starling	SG	✓		Amber
Transect 4	Blue Tit	BT		✓	Green
	Wren	WR		✓	Green
	Song Thrush	ST		✓	Green
	Blackcap	BC		✓	Green
	Chaffinch	CH		✓	Green
	Blackbird	B.		✓	Green
	Goldcrest	GC		✓	Amber
	Woodpigeon	WP		✓	Green
	Magpie	MG		✓	Green
	Chiffchaff	CH		✓	Green
Transect 5	Bullfinch	BF		✓	Green
	Wren	WR		✓	Green
	Song Thrush	ST		✓	Green
	Woodpigeon	WP	✓	✓	Green
	Dunnock	D.		✓	Green
	Willow Warbler	WW	✓	✓	Amber
	Magpie	MG		✓	Green

Transect Number	Species	BTO Code	Early Season	Late Season	Conservation Status[1]
	Blue Tit	BT		✓	Green
	Robin	R.	✓	✓	Green
	Blackcap	BC		✓	Green
	Rook	RO	✓	✓	Green
	Goldcrest	GC		✓	Amber
	Chaffinch	CH		✓	Green
	Buzzard	BZ		✓	Green
	Starling	SG	✓	✓	Amber
	Blackbird	B.	✓		Green
	Hooded Crow	HC	✓		Green
Transect 6	Chiffchaff	CH		✓	Green
	Goldcrest	GC		✓	Amber
	Song Thrush	ST		✓	Green
	Chaffinch	CH	✓	✓	Green
	Wren	WR		✓	Green
	Blue Tit	BT	✓	✓	Green
	Woodpigeon	WP	✓	✓	Green
	Blackbird	B.	✓	✓	Green
	Blackcap	BC		✓	Green
	Robin	R.	✓	✓	Green
	Starling	SG	✓	✓	Amber
	Dunnock	D.		✓	Green
	Willow Warbler	WW	✓		Amber
	Hooded Crow	HC	✓		Green
	House Sparrow	HS	✓		Amber
	Meadow Pipit	MP	✓		Red
	Rook	RO	✓		Green
	Jackdaw	JD	✓		Green
	Feral Pigeon	FP	✓		n/a
	Cormorant	CA	✓		Amber

Most registrations recorded during the surveys were of species that were listed as green on the BoCCI scale. Nine species are listed as amber: goldcrest, house sparrow, willow warbler, starling, swallow, common sandpiper, shelduck, mallard and common gull. While two species are listed as red: swift and meadow pipit.

In total, 30 bird species were observed on site during the breeding bird surveys.it was identified that a common assemblage of passerine birds which are often associated with treelines, hedgerows, woodland and pastoral habitats were located throughout the proposed site area. The majority of bird activity was observed along these linear features and habitats and it was observed that these features and habitats were primarily used for foraging and commuting.

Other bird species observed on site but not during designated breeding bird transect surveys are displayed in table 5.

Table 5. Bird species observed outside of breeding bird surveys

Species	BTO Code	Conservation Status
Linnet	LI	Amber
Sand Martin	SM	Amber
Jackdaw	JD	Green
Reed Bunting	RB	Green
Swallow	SL	Amber
Long-tailed Tit	LT	Green
House Sparrow	HS	Amber
Great Tit	GT	Green
Cormorant	CA	Amber
Spotted Flycatcher	SF	Amber
House Martin	HM	Amber
Feral Pigeon	FP	N/A
Pied Wagtail	PW	Green
Grey Wagtail	GL	Red
Common Sandpiper	CS	Amber
Long-eared Owl	LE	Green

It was noted by Delichon that the River Foyle and its riparian area supports its own collective of riverine breeding bird species such as grey heron, sand martin, cormorant, mallard and common gull. The close proximity of Lifford town and Strabane to the study area also has influence on the site's bird species composition observed by the presence of swifts, sand martins and house sparrows.

Buzzards and a long-eared owl were identified on the site by Delichon Ecology across the site. the long-eared owl has been identified as breeding on site on the Lifford side of the site having a nest within the conifer treeline in the western area of the site, (see Appendix: VI). Confirmation of the long-eared owl breeding was acquired during the June 2020 site walkover when young chicks were audibly heard calling.

4.2.1 Winter Bird surveys

Over winter non-breeding bird surveys were carried out by Delichon Ecology between November 2020 and March 2021. These employed the same transects that were later used for the breeding bird surveys, (see Appendix: VI). Vantage Point surveys were also implemented by the ecologist during the over winter non-breeding bird surveys to further survey results and determine site usage during the winter months, (see Appendix: VII).

It was observed that during the winter period bird abundance and activity levels across the site dropped exhibiting lower numbers including the common resident species of passerine birds associated with the treelines, hedgerows and woodland habitats located on site. it was noted by Delichon Ecology that whooper swan utilise the riparian corridor that runs through the site for commuting to and from their breeding grounds and wintering sites. Delichon Ecology identified whooper swan flocks migrating between the Islandmore area and to the lands south of the N15/A38 crossing. Vantage point survey results confirmed small flocks of whooper swan on two occasions, (December 2020 and January 2021), and during the transect surveys 8x whooper swan consisting of 2x flocks of 4x animals were observed flying from the north to the south-east over the river corridor during the November 2020 walkover survey. A further 38 whooper swans were seen flying over the study area in a south-east to north-west direction during the March 2021 walkover surveys.

5.0 CONCLUSIONS & RECOMMENDATIONS

In conclusion, there is a single confirmation of long-eared owl breeding within the proposed site area within a coniferous treeline along the western area of the site's Lifford side. While no other species was observed exhibiting breeding/nesting behaviour in the form of nest building, collecting nesting material, nest building or location of nests, the abundance of activity and diversity of species located on site during the breeding bird season suggests that there is a diverse population of breeding birds within the proposed site area. Several species (including wren, robin blackbird, chaffinch, blackcap, goldfinch, blue tit, great tit and house sparrow, etc) were probable breeding pairs due to males displaying breeding behaviours i.e. singing in suitable habitat or due to the presence of a pair in suitable breeding habitat. However, with the exception of the long-eared owl no active nests were observed during the four surveys carried out across the season.

The reduction in bird species diversity, abundance and activity during the winter non-breeding season indicates that during the winter months the site is primarily used as a commuting corridor due to its location on the banks of the River Foyle and the riverine habitat that splits the site. Confirmation of the site being used as a commuting corridor was observed though the presence of whooper swans migrating.

It is recommended that the long-eared owl nest be left undisturbed and intact within the coniferous treeline. Proposed plans currently include the relocation of the current hare coursing grounds and proposed drainage pipework systems along the coniferous treeline where the long-eared owl nest is located. Long-eared owls are considered a species which has a moderate ability to co-exist with human populations, confirmed by the nest's close location to Lifford town.

The hare coursing grounds include an area of land raise at the end of the run, where the hare chase terminates. This land raise is within close proximity to the long-eared owl's location. Development will involve the importation of fill (clay and similar materials) to the area during the construction phase. A proposed new open drainage ditch is being constructed along the inner edge of the retained coniferous treeline along the western boundary of the site. Whilst this treeline is to remain unaltered, some scrub clearance and excavation works to construct the drain will be required during the construction phase. The works will, therefore, include an area close to the foot of the treeline.

Proposed works and clearance are within 150m of the nest site, therefore, it is recommended that these works will require appropriate wildlife licensing and will need to be conducted outside of the breeding season. It is also recommended that replacement raptor boxes be installed within 200m of the area as a compensatory/mitigation measure to ensure the long-eared owl has appropriate replacement nesting. All works near the long-eared owl nesting site and installation of replacement raptor boxes must be carried out under supervision and installed by a suitably qualified ecologist via the presence of an ecological clerk of works.

It is also proposed by the ecologist that due to the presence of the long-eared owl nesting on site as well as the buzzards observed on site that the use of rodenticides for any pest control are prohibited on site.

Trees, hedgerows and scrub are of importance to breeding and nesting birds. While no nests have been identified, the removal of hedgerows, trees and scrub during the breeding season will negatively impact upon nesting birds due to the abundant presence and activity of birds during the breeding season. This is in direct violation of Article 4 of the Wildlife (Northern Ireland) Order 1985 (as amended) under which it is an offence.

Any scrub or tree clearance should be kept to a minimum and undertaken outside of the breeding season 1st March – 31st August).

It should be noted that **should** clearance of scrub/hedgerow's **during** the breeding season be required, this **must** be undertaken under the supervision of a qualified ecologist and appropriate surveys undertaken prior to any scrub clearance i.e. pre-working nest inspection/breeding bird survey to ensure no active nests are present. Any vegetation which is removed prior to the bird breeding season should be removed from the site completely, in order to prevent birds along with other species using stored debris as nesting/resting sites.

Report Prepared By: -	**Reviewed By: -**
Ryan Boyle BSc (Hons), MSc	**Emily Taylor BSc (Hons)**
Consultant Ecologist	**Graduate Ecologist**

6.0 REFERENCES

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https://www.npws.ie/legislation

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file:///C:/Users/Ryan%20Boyle/Downloads/Birds%20of%20Conservation%20Concern%20in%20Ireland%202020%20%E2%80%93%202026_pdf%20(2).pdf

FIGURES

Figure 3. Riverine habitat running through centre of the proposed site

Figure 4. Woodland area of Strabane side of site

Figure 5. Overview of Lifford side of site with hare coursing ground

Figure 6. Treeline of northern area on Lifford side

Figure 7. Hare coursing ground at centre of Lifford side of the site

Figure 8. Treelines located along eastern boundary of the Strabane side of the site

APPENDICES

River Foyle

Marsh

Wetland

SUDs

Overhead Electric Lines

Park Road

Barnhill Road

Existing Water Level +(2.00)

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road influences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

N

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of the items in the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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Peace Northern Ireland - Ireland
European Regional Development Fund

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Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Ghoirtha Báin
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · ZO · XX · DR · LA · 102 · P00

Project Number: 1383

Status code & Description: PLANNING

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
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- Proposed Native Wetland Trees — Refer to planting schedule
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- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

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- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
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- Proposed Metal Gates — Refer to detail ref: De_914
- **Vehicular Upstand Kerb** — 125mm upstand. Pre Cast Concrete
- **Vehicular Flush Kerb** — Pre Cast Concrete
- **Pin Kerb** — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	15.02.21	Issued for planning	DM
P02	17.03.21	Issued for planning	DM

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

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Peace Northern Ireland - Ireland
European Regional Development Fund

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Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

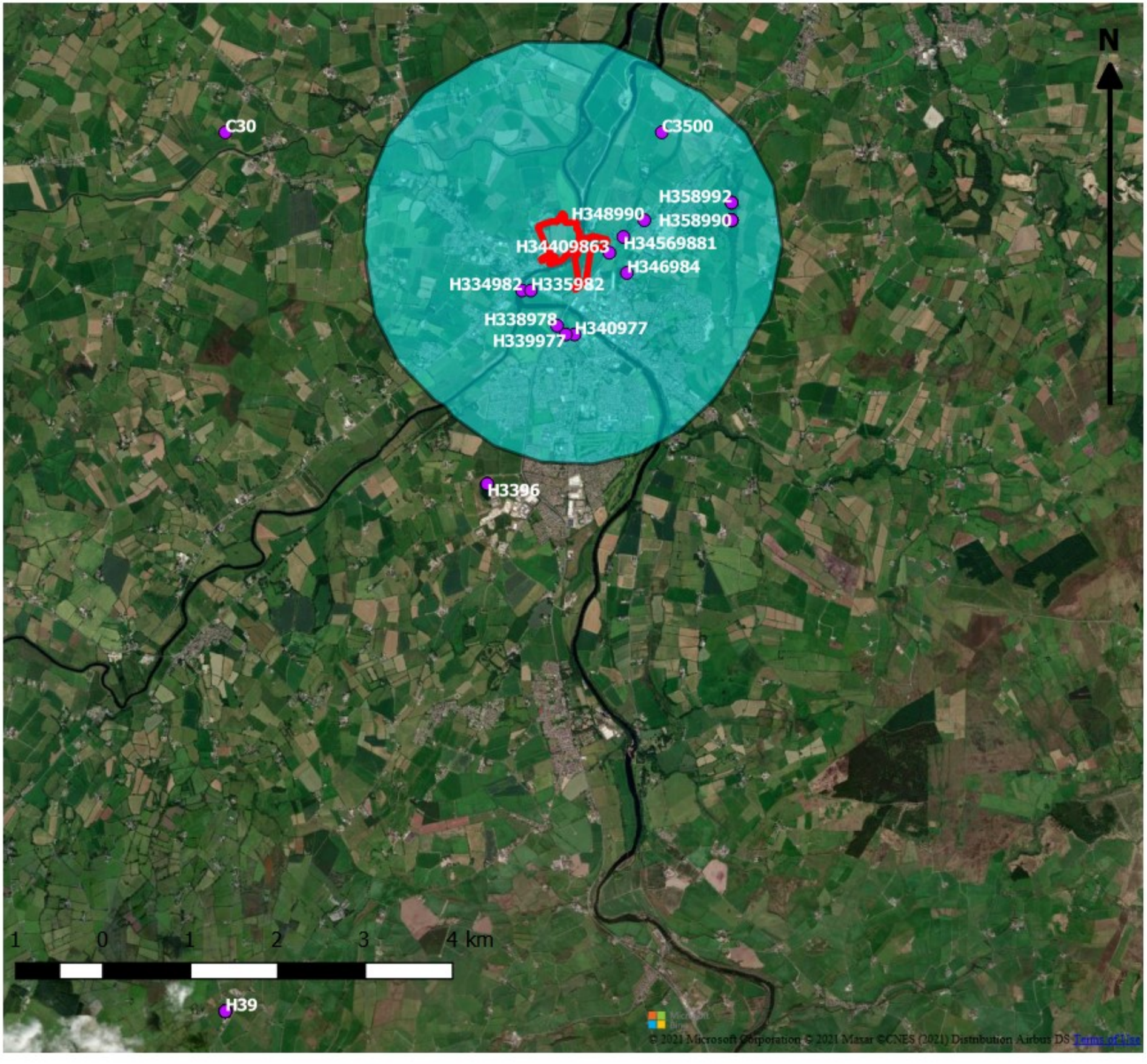
Drawing: LIFFORD LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	ZO	XX	DR	LA	101	DRAFT

Project Number: 1383
Status code & Description: PLANNING



Legend

- CEDaR Bird Records
- Red Lined Boundary
- 2km Buffer

Appendix III: CEDaR Bird Records with 2km Buffer

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:60961 @ A3

Date: 03/08/2021

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766

Appendix IV: Tabulated 2016 A5 Historic Bird Records

Table 11P. 1 Summary of raptor breeding sites data

Species	Scientific name	Grid reference
Hen harrier	*Circus cyaneus*	H4982
Common buzzard	*Buteo buteo*	C3827
		H3482
		H4484
		H5455
Peregrine	*Falco peregrinus*	C4816
		H4899
		H4484
		H3171
		H6067
		H6454
		C4213
		H4995
		H3781
		H6967
		C4317
Merlin	*Falco columbarius*	H3570
Kestrel	*Falco tinnunculus*	H5549
		H5849
Barn owl	*Tyto alba*	C4308

Table11P.2 Summary of UWT barn owl data

Grid reference	Date
H 302 615	2003
H 394 795	July 2004

Grid reference	Date
H 308 949	July 2004
H 437 090	Aug 2008
H 76 56	May 2008
H 670 523	April 2008

Table 11P.3 Summary of BTO heronry records

Grid reference	Location	Year of most recent record
H 615 528	Favour Royal Forest	2003
C 376 038	Cloghcor	1977
H 524 543	Killyfaddy, Clogher	2003
H 559 538	Augher Castle	2004
H 64 58	Martray House, Ballygawley	1969
H 34 99	Strabane Old Canal	1988
H 43 80	Cottage Farm, Tattynure	1991
C 368 033	Farm Hill, Ballymagorry	2008
H 435 760	Rash House, Omagh	1985
H 305 948	Urney Park, near Clady	1977
C 390 124	Mullennan House	1985
C 463 155	River Faughan, just north of Drumahoe	2000

Appendix V: 2016 A5 Breeding Bird survey Results

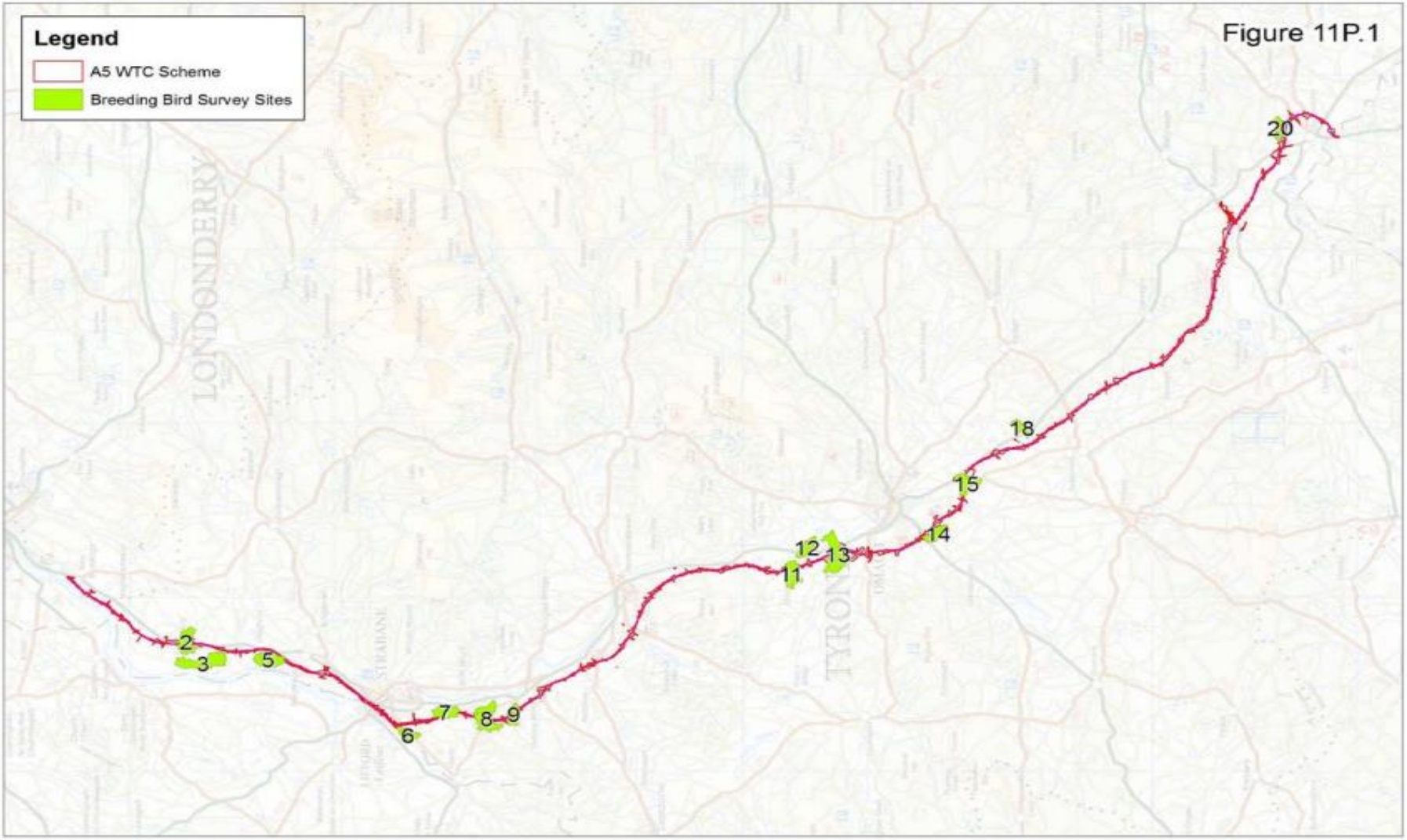
Table 11P.4 2014 BBS field data summary[2,3]

	Sites and habitat description														
	2 237558, 407178	3 236410, 406371	5 236514, 403166	6 232239, 396367	7 233499, 394508	8 233182, 392527	9 233302, 391192	11 241426, 377588	12 242931, 376899	13 242557, 375527	14 243747, 370555	15 246669, 369111	18 249802, 366396	20 267036, 353823	
Species	Arable, improved & semi-improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy grassland, scrub, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy broadleaved woodland, species-poor hedge	Arable, improved grassland, species-poor hedge	Improved grassland, broadleaved woodland, running water, species-poor hedge,	Wet bog, modified woodland, broadleaved arable, improved grassland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Raised bog, arable, broadleaved woodland, improved grassland, species-poor hedge	Improved grassland, plantation, hedge, coniferous species-poor broadleaved woodland	Arable, improved grassland, species-poor hedgerow, wet modified bog, open water, coniferous plantation	Improved grassland, broadleaved woodland, marshy grassland	Improved grassland, broadleaved woodland, marshy grassland, species-poor hedge	Cumulative abundance
Grey heron+	1	1	0	1	0	0	0	0	0	2	0	0	0	0	5
Canada goose	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Mallard*	0	5	5	0	0	0	0	0	0	4	0	0	0	0	14
Sparrowhawk+	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Buzzard+	2	4	1	2	0	1	0	1	2	2	4	0	1	3	23
Pheasant	2	2	4	2	3	0	0	0	0	9	0	1	0	1	24
Moorhen	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Lapwing*	100	0	0	100	0	0	0	0	0	0	0	100	0	1	301
Snipe*	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Lesser black-backed gull*	2	0	0	2	0	0	0	0	0	1	2	4	0	0	11
Great black-backed gull	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Feral pigeon	0	1	0	0	0	0	0	0	0	2	10	0	0	0	13
Wood pigeon	27	14	10	27	22	70	24	7	17	71	82	35	52	58	516
Collared dove	2	0	0	2	0	1	3	0	1	0	0	2	0	0	11
Swift*	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Skylark*	12	14	8	12	4	4	0	0	0	17	0	0	0	1	72
Swallow*	16	10	12	16	11	16	17	13	6	2	57	12	66	26	280
House martin*	16	3	0	16	0	2	0	9	9	0	0	15	22	4	96
Meadow pipit*	3	10	6	3	2	6	0	17	0	74	0	2	0	55	178
Pied wagtail	0	3	2	0	6	2	2	4	2	3	8	3	7	2	44

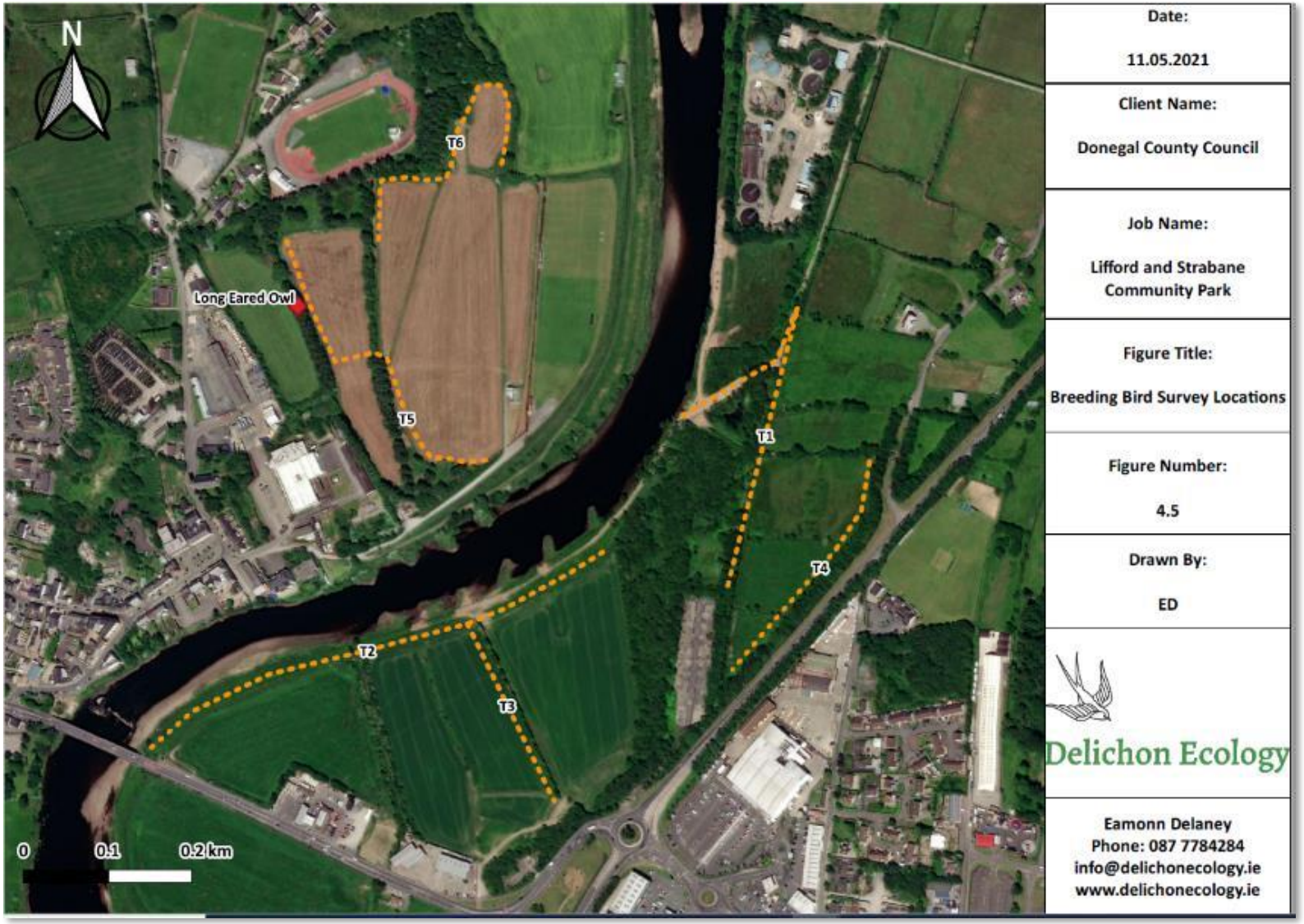
	Sites and habitat description														
	2 237558, 407178	3 236410, 406371	5 236514, 403166	6 232239, 396367	7 233499, 394508	8 233182, 392527	9 233302, 391192	11 241426, 377588	12 242931, 376899	13 242557, 375527	14 243747, 370555	15 246669, 369111	18 249802, 366396	20 267036, 353823	
Species	Arable, improved & semi-improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy grassland, scrub, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, species-poor hedge	Improved grassland, broadleaved woodland, running water, species-poor hedge,	Wet bog, modified woodland, broadleaved woodland, arable, improved grassland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Raised bog, arable, broadleaved woodland, improved grassland, species-poor hedge	Improved grassland, plantation, hedge, coniferous species-poor broadleaved woodland	Arable, improved grassland, species-poor hedgerow, wet modified bog, open water, coniferous plantation	Improved grassland, broadleaved woodland, marshy grassland	Improved grassland, broadleaved woodland, marshy grassland, species-poor hedge	Cumulative abundance
Wren	65	29	60	65	46	21	42	28	24	72	72	83	69	66	742
Dunnock*	11	6	9	11	13	15	11	3	4	11	20	18	14	14	160
Robin	22	24	23	22	15	6	18	25	23	29	43	41	50	33	374
Blackbird	14	14	18	14	22	17	11	8	12	20	31	31	14	21	247
Song thrush*	5	7	4	5	2	4	3	3	5	6	8	13	11	13	89
Mistle thrush*	0	1	0	0	1	1	1	5	4	3	3	3	0	0	22
Grasshopper warbler*	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Sedge warbler	17	10	1	17	4	7	0	0	5	0	0	7	0	0	68
Whitethroat*	0	0	0	0	0	4	0	0	1	2	3	2	5	1	18
Blackcap	0	3	2	0	2	0	0	0	3	3	2	2	1	3	21
Chiffchaff	0	0	0	0	0	0	3	1	1	1	2	5	1	11	25
Willow warbler*	18	16	21	18	17	1	6	12	7	37	19	27	18	30	247
Goldcrest*	0	0	1	0	0	0	1	7	1	4	6	6	5	10	41
Long-tailed tit	0	0	0	0	0	0	0	0	0	2	11	8	5	5	31
Coal tit	0	4	2	0	2	0	1	2	1	5	5	5	11	1	39
Blue tit	3	9	3	3	2	7	16	15	3	14	26	19	30	23	173
Great tit	4	3	4	4	3	7	19	9	6	12	32	23	13	17	156
Treecreeper	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Magpie	18	7	5	18	13	18	10	9	8	41	43	29	22	32	273
Jackdaw	101	32	26	101	14	23	80	68	48	40	100	83	221	43	980
Rook	102	46	5	102	97	30	79	120	165	93	77	282	173	93	1464
Carrion crow	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
Hooded crow	17	23	5	17	0	0	2	4	1	10	39	8	29	35	190
Raven	0	2	0	0	0	1	0	0	0	0	0	0	1	2	6

	Sites and habitat description														
	2 237558, 407178	3 236410, 406371	5 236514, 403166	6 232239, 396367	7 233499, 394508	8 233182, 392527	9 233302, 391192	11 241426, 377588	12 242931, 376899	13 242557, 375527	14 243747, 370555	15 246669, 369111	18 249802, 366396	20 267036, 353823	
Species	Arable, improved & semi-improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy grassland, scrub, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy broadleaved woodland, species-poor hedge	Arable, improved grassland, species-poor hedge	Improved grassland, broadleaved woodland, running water, species-poor hedge,	Wet modified bog, broadleaved woodland, arable, improved grassland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Raised bog, arable, broadleaved woodland, improved grassland, species-poor hedge	Improved grassland, plantation, hedge, coniferous species-poor broadleaved woodland	Arable, improved grassland, species-poor hedgerow, wet modified bog, open water, coniferous plantation	Improved grassland, broadleaved woodland, marshy grassland	Improved grassland, broadleaved woodland, marshy grassland, species-poor hedge	Cumulative abundance
Starling*	38	9	16	38	6	185	25	27	93	6	410	43	124	57	1077
House sparrow*	56	22	15	56	14	21	40	8	31	4	36	25	20	3	351
Tree sparrow*	11	4	2	11	2	25	0	0	0	0	0	6	0	0	61
Chaffinch	15	28	33	15	25	19	37	24	25	63	68	58	60	71	541
Greenfinch	0	0	0	0	2	0	1	0	0	1	1	0	3	0	8
Goldfinch	3	0	0	3	0	0	3	4	8	0	0	0	12	2	35
Linnet*	3	1	2	3	0	0	0	0	0	0	0	3	0	0	12
Lesser redpoll*	1	1	6	1	0	0	0	0	0	0	0	0	0	0	9
Bullfinch*	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Yellowhammer*	0	0	0	0	16	53	2	0	0	0	2	0	0	2	75
Reed bunting*	0	5	3	0	0	1	0	0	0	0	0	5	1	1	16
Total number of species recorded	**31**	**35**	**32**	**31**	**29**	**29**	**27**	**26**	**31**	**35**	**31**	**35**	**32**	**34**	**55**

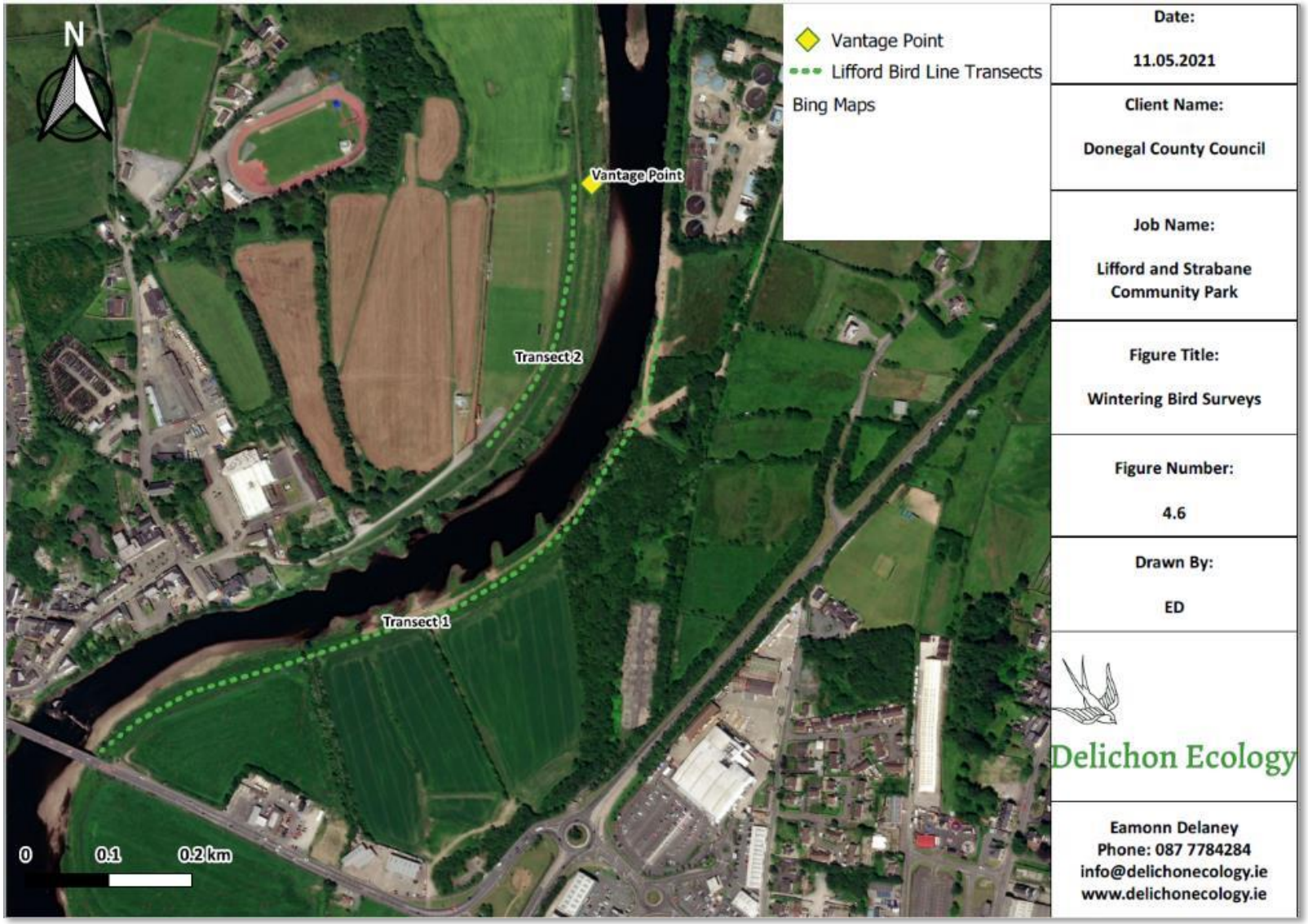
Appendix VI: 2016 A5 Breeding Bird survey Sites



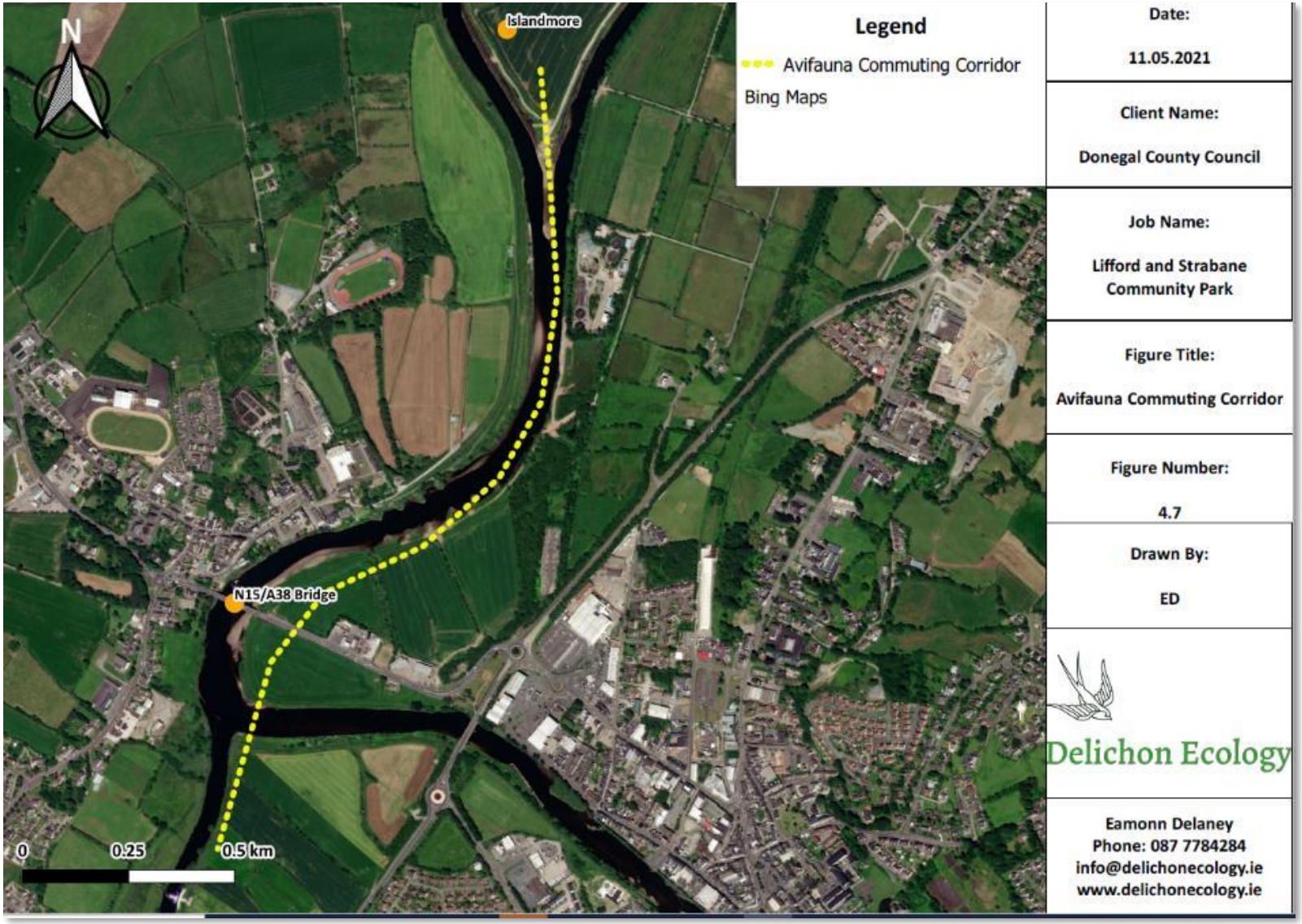
Appendix VI: 2020 Delichon Breeding Bird Survey Transects



Appendix VII: 2020 Delichon Wintering Bird Survey Locations



Appendix VIII: 2020 Delichon Avifauna Commuting Corridor



Appendix IX: BoCCI Assessment Red & Amber Species 2020-2026

	Season	BoCCI3	IUCN	SPEC 1, 2 or 3	HD	BDp1 or BDMp1	BDp2 or BDMp2	WDp1 or WDMp1	WDp2 or WDMp2	BDr1 or BDMr1	BDr2 or BDMr2	BR	BL	WL	BI	WI
Quail *Coturnix coturnix*	B	R		3	Y						-54%	Y				
Grey Partridge *Perdix perdix*	B	R		2	Y		>-50%			-66%	-95%					
Red Grouse *Lagopus lagopus*	B	R		3		>-25%	>-50%				-66%					
Bewick's Swan *Cygnus columbianus*	W	R		3				-99%	-99%					Y		
Long-tailed Duck *Clangula hyemalis*	W	R	VU	1				-82%								
Eider *Somateria mollissima*	B/W	A		1										Y		
Velvet Scoter *Melanitta fusca*	W	R	VU	1												
Common Scoter *Melanitta nigra*	B/W	R				>-25%	>-61%	-43%				Y		Y		
Goldeneye *Bucephala clangula*	W	R						-68%						Y		
Pochard *Aythya farina*	B/W	R	VU	1				-77%		-40%	-53%	Y		Y		
Scaup *Aythya marila*	W	A		3				-58%						Y		
Shoveler *Spatula clypeata*	B/W	R						-33%	-52%			Y		Y		
Slavonian Grebe *Podiceps auritus*	W	A	VU	1												
Black-necked Grebe *Podiceps nigricollis*	B	R			Y							Y				
Stock Dove *Columba oenas*	B	A				-54%				-40%	-47%					
Turtle Dove *Streptopelia turtur*	P	A	VU	1						-90%	-94%					
Nightjar *Caprimulgus europaeus*	B	R		3	Y						-95%	Y				
Swift *Apus apus*	B	A		3		-56%				-38%	-47%					
Corncrake *Crex crex*	B	R		2			-83%			-69%	-91%					
Leach's Storm-petrel *Hydrobates leucorhous*	B	R	VU	1									Y			
Balearic Shearwater *Puffinus mauretanicus*	P	R	CR	1												
Oystercatcher *Haematopus ostralegus*	B/W	A		1										Y		

Grey Plover *Pluvialis squatarola*	W	A						-54%	-27%					Y		
Golden Plover *Pluvialis apricaria*	B/W	R				-38%	-84%	-44%		-42%	-50%	Y		Y		
Lapwing *Vanellus vanellus*	B/W	R		1		-74%	-95%	-67%	-58%		-53%					
Curlew *Numenius arquata*	B/W	R		1		-86%	-98%	-42%	-65%	-73%	-78%					
Bar-tailed Godwit *Limosa lapponica*	W	A		1					-28%					Y		
Black-tailed Godwit *Limosa limosa*	W	A		1										Y		20%
Knot *Calidris canutus*	W	A		1				-43%	-35%					Y		
Curlew Sandpiper *Calidris ferruginea*	P	G		1												
Dunlin *Calidris alpina*	B/W	R		3		-87%	-93%	-62%	-54%	-71%	-69%	Y		Y		
Purple Sandpiper *Calidris maritima*	W	G						-61%	-56%							
Woodcock *Scolopax rusticola*	B	R									-73%					
Snipe *Gallinago gallinago*	B/W	A		3		-50%	-78%									
Red-necked Phalarope *Phalaropus lobatus*	B	R			Y							Y				
Redshank *Tringa totanus*	B/W	R		2		-50%	-94%			-47%	-55%			Y		
Kittiwake *Rissa tridactyla*	B	A	VU	3		-32%	-35%						Y			
Puffin *Fratercula arctica*	B	A	VU	1												
Razorbill *Alca torda*	B	A		1									Y			
Barn Owl *Tyto alba*	B	R		3		-33%	-50%				-47%					
Snowy Owl *Bubo scandiacus*	W	na	VU	3												
Golden Eagle *Aquila chrysaetos*	B	R			Y							Y				
White-tailed Eagle *Haliaeetus albicilla*	B	R			Y							Y				
Red Kite *Milvus milvus*	B	A		1												
Kestrel *Falco tinnunculus*	B	A		3		-53%										
Wood Warbler *Phylloscopus sibilatrix*	B	A					-71%					Y				
Redwing *Turdus iliacus*	W	G		1												
Ring Ouzel *Turdus torquatus*	B	R				-40%	-80%			-48%	-57%	Y				
Common Redstart *Phoenicurus phoenicurus*	B	A									-72%	Y				
Whinchat *Saxicola rubetra*	B	R		2		-62%	-89%			-64%	-76%	Y				
Meadow Pipit *Anthus pratensis*	B	R		1												
Grey Wagtail *Motacilla cinerea*	B	R				-50%				-38%	-43%					
Twite *Linaria flavirostris*	B	R					-98%			-57%	-80%	Y				
Yellowhammer *Emberiza citrinella*	B	R		2			> -50%				-61%					

	Season	BoCCI3	SPEC	BDMp1	BDMp2	WDMp1	WDMp2	BDMr1	BDMr2	BR	BL	WL	BI	WI
Mute Swan *Cygnus olor*	B/W	A												100%
Whooper Swan *Cygnus cygnus*	B/W	A								Y		Y		45%
Brent Goose *Branta bernicla*	W	A										Y		96%*
Barnacle Goose *Branta leucopsis*	W	A												23%*
Greylag Goose *Anser anser*	W	A										Y		
Greater White-fronted Goose *Anser albifrons*	W	A										Y		47%*
Smew *Mergellus albellus*	W	A	3											
Goosander *Mergus merganser*	B	A								Y				
Red-breasted Merganser *Mergus serrator*	B/W	G	3			-34%			-50%			Y		
Shelduck *Tadorna tadorna*	B/W	A				-30%						Y		
Tufted Duck *Aythya fuligula*	B/W	R	3			-34%						Y		
Garganey *Spatula querquedula*	B	A	3							Y				
Gadwall *Mareca Strepera*	B/W	A								Y		Y		
Wigeon *Mareca Penelope*	B/W	R				-38%	-44%			Y		Y		
Mallard *Anas platyrhynchos*	B/W	G				-41%								
Pintail *Anas acuta*	W	R	3									Y		
Teal *Anas crecca*	B/W	A							-46%					
Great Crested Grebe *Podiceps cristatus*	B/W	A				-43%						Y		
Spotted Crake *Porzana porzana*	B	A								Y				
Coot *Fulica atra*	B/W	A	3			-35%			-36%			Y		
Red-throated Diver *Gavia stellata*	B/W	A	3			-39%				Y				
Black-throated Diver *Gavia arctica*	W	A	3											
Great Northern Diver *Gavia immer*	W	A	3											44%

European Storm-petrel *Hydrobates pelagicus*	B	A									Y			
Fulmar *Fulmarus glacialis*	B	G	3											
Cory's Shearwater *Calonectris borialis*	P	A	2											
Manx Shearwater *Puffinus puffinus*	B	A							-38%		Y			
Bittern *Botaurus stellaris*	W	na	3											
Gannet *Morus bassanus*	B	A									Y			
Shag *Gulosus aristotelis*	B	A	2								Y			
Cormorant *Phalacrocorax carbo*	B/W	A									Y			
Ringed Plover *Charadrius hiaticula*	B/W	G												25%
Little Ringed Plover *Charadrius dubius*	B	A								Y				
Turnstone *Arenaria interpres*	W	G				-28%								
Ruff *Calidris pugnax*	P	A	2											
Common Sandpiper *Actitis hypoleucos*	B	A	3		-40%									
Spotted Redshank *Tringa erythropus*	P	A	3											
Wood Sandpiper *Tringa glareola*	P	A	3											
Little Gull *Hydrocoloeus minutus*	P	A	3											
Black-headed Gull *Larus ridibundus*	B/W	R						-58%	-55%		Y			
Mediterranean Gull *Larus melanocephalus*	B	A								Y				
Common Gull *Larus canus*	B/W	A			-25%									
Lesser Black-backed Gull *Larus fuscus*	B/W	A									Y			
European Herring Gull *Larus argentatus*	B/W	R	2	-29%	-50%									
Little Tern *Sternula albifrons*	B	A	3								Y			
Black Tern *Chlidonias niger*	P	na	3											
Roseate Tern *Sterna dougallii*	B	A	3						-46%		Y		40%	
Common Tern *Sterna hirundo*	B	A									Y			
Arctic Tern *Sterna paradisaea*	B	A						-44%	-57%		Y			
Sandwich Tern *Thalasseus sandvicensis*	B	A									Y			
Great Skua *Catharacta skua*	B	A								Y				
Black Guillemot *Cepphus grylle*	B	A	2											
Common Guillemot *Uria aalge*	B	A	3								Y			
Short-eared Owl *Asio flammeus*	B	A	3							Y				
Marsh Harrier *Circus aeruginosus*	B	A								Y				
Hen Harrier *Circus cyaneus*	B	A	3		-29%									

	Season	BoCCI3	SPEC	BDMp1	BDMp2	WDMp1	WDMp2	BDMr1	BDMr2	BR	BL	WL	BI	WI
Goshawk *Accipiter gentilis*	B	A								Y				
Kingfisher *Alcedo atthis*	B	A	3	-45%	-44%									
Wryneck *Jynx torquilla*	P	na	3											
Merlin *Falco columbarius*	B	A							-40%					
Chough *Pyrrhocorax pyrrhocorax*	B	A	3	-33%	-29%									
Skylark *Alauda arvensis*	B	A	3											
Bearded Reedling *Panurus biarmicus*	B	na								Y				
House Martin *Delichon urbicum*	B	A	2											
Swallow *Hirundo rustica*	B	A	3											
Sand Martin *Riparia riparia*	B	A	3											
Willow Warbler *Phylloscopus trochilus*	B	G	3											
Starling *Sturnus vulgaris*	B	A	3											
Spotted Flycatcher *Muscicapa striata*	B	A	2											
Pied Flycatcher *Ficedula hypoleuca*	B/P	A								Y				
Northern Wheatear *Oenanthe oenanthe*	B	A	3											
Goldcrest *Regulus regulus*	B	A	2											
House Sparrow *Passer domesticus*	B	A	3											
Tree Sparrow *Passer montanus*	B	A	3											
Tree Pipit *Anthus trivialis*	P	na	3											
Western Yellow Wagtail *Motacilla flava*	B/P	A	3							Y				
Brambling *Fringilla montifringilla*	W	G	3											
Greenfinch *Chloris chloris*	B	A		-48%										
Linnet *Linaria cannabina*	B	A	2											

Species	Season	BoCCI3
Bean Goose *Anser fabalis*	W	na
Pink-footed Goose *Anser brachyrhynchus*	W	G
Little Grebe *Tachybaptus ruficollis*	B/W	A
Rock Dove *Columba livia*	B	G
Woodpigeon *Columba palumbus*	B	G
Collared Dove *Streptopelia decaocto*	B	G
Cuckoo *Cuculus canorus*	B	G
Water Rail *Rallus aquaticus*	B	G
Moorhen *Gallinula chloropus*	B	G
Sooty Shearwater *Ardenna grisea*	P	R
Great Shearwater *Ardenna gravis*	P	G
Spoonbill *Platalea leucorodia*	W	na
Grey Heron *Ardea cinerea*	B/W	G
Little Egret *Egretta garzetta*	B/W	G
Whimbrel *Numenius phaeopus*	P	G
Sanderling *Calidris alba*	W	G
Little Stint *Calidris minuta*	P	G
Jack Snipe *Lymnocryptes minimus*	W	A
Grey Phalarope *Phalaropus fulicarius*	P	G
Green Sandpiper *Tringa ochropus*	P	G
Greenshank *Tringa nebularia*	W	G
Sabine's Gull *Xema sabini*	P	G
Ring-billed Gull *Larus delawarensis*	W	G
Yellow-legged Gull *Larus michahellis*	W	G
Iceland Gull *Larus glaucoides*	W	G
Glaucous Gull *Larus hyperboreus*	W	G
Great Black-backed Gull *Larus marinus*	B/W	A
Arctic Skua *Stercorarius parasiticus*	P	G
Pomarine Skua *Stercorarius pomarinus*	P	G
Little Auk *Alle alle*	P	G
Long-eared Owl *Asio otus*	B	G
Sparrowhawk *Accipiter nisus*	B	A
Buzzard *Buteo buteo*	B	G
Great Spotted Woodpecker *Dendrocopos major*	B	A
Hobby *Falco subbuteo*	P	na
Peregrine Falcon *Falco peregrinus*	B	G
Jay *Garrulus glandarius*	B	G
Magpie *Pica pica*	B	G
Jackdaw *Corvus monedula*	B	G

Species	Season	BoCCI3
Rook *Corvus frugilegus*	B	G
Raven *Corvus corax*	B	G
Hooded Crow *Corvus corone*	B	G
Coal Tit *Periparus ater*	B	G
Blue Tit *Cyanistes caeruleus*	B	G
Great Tit *Parus major*	B	G
Sedge Warbler *Acrocephalus schoenobaenus*	B	G
Reed Warbler *Acrocephalus scirpaceus*	B	A
Grasshopper Warbler *Locustella naevia*	B	G
Chiffchaff *Phylloscopus collybita*	B	G
Long-tailed Tit *Aegithalos caudatus*	B	G
Blackcap *Sylvia atricapilla*	B	G
Garden Warbler *Sylvia borin*	B	G
Whitethroat *Sylvia communis*	B	G
Treecreeper *Certhia familiaris*	B	G
Wren *Troglodytes troglodytes*	B	G
Dipper *Cinclus cinclus*	B	G
Mistle Thrush *Turdus viscivorus*	B	A
Song Thrush *Turdus philomelos*	B	G
Blackbird *Turdus merula*	B	G
Fieldfare Turdus pilaris	W	G
Robin *Erithacus rubecula*	B	A
Black Redstart *Phoenicurus ochruros*	P/W	G
Stonechat *Saxicola torquatus*	B	A
Firecrest *Regulus ignicapilla*	P	G
Waxwing *Bombycilla garrulus*	W	G
Dunnock *Prunella modularis*	B	G
Water Pipit *Anthus spinoletta*	W	na
Rock Pipit *Anthus petrosus*	B	G
Pied Wagtail *Motacilla alba yarrelli*	B	G
Chaffinch *Fringilla coelebs*	B	G
Bullfinch *Pyrrhula pyrrhula*	B	G
Redpoll *Acanthis flammea*	B	G
Common Crossbill *Loxia curvirostra*	B	G
Goldfinch *Carduelis carduelis*	B	G
Siskin *Spinus spinus*	B	G
Lapland Bunting *Calcarius lapponicus*	P	G
Snow Bunting *Plectrophenax nivalis*	W	G
Reed Bunting *Emberiza schoeniclus*	B	G

Appendix 8-11

Collision Risk Survey

APPENDIX 8-11

Collision Risk Survey

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: July 2021

MCL Consulting Ltd
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1.0 INTRODUCTION

In 2021 MCL Consulting was appointed by McAdam to write up a collision risk desk study on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing lands on the outskirts of Strabane and Lifford.

1.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns. The site measures approximately 11.69 hectares in total, with approximately 5.73 hectares on the Lifford side and 5.96 hectares on the Strabane side.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused concrete hardstand, with the rest of the site consisting of wet woodland and soil embankments.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

Figure 1: Site location

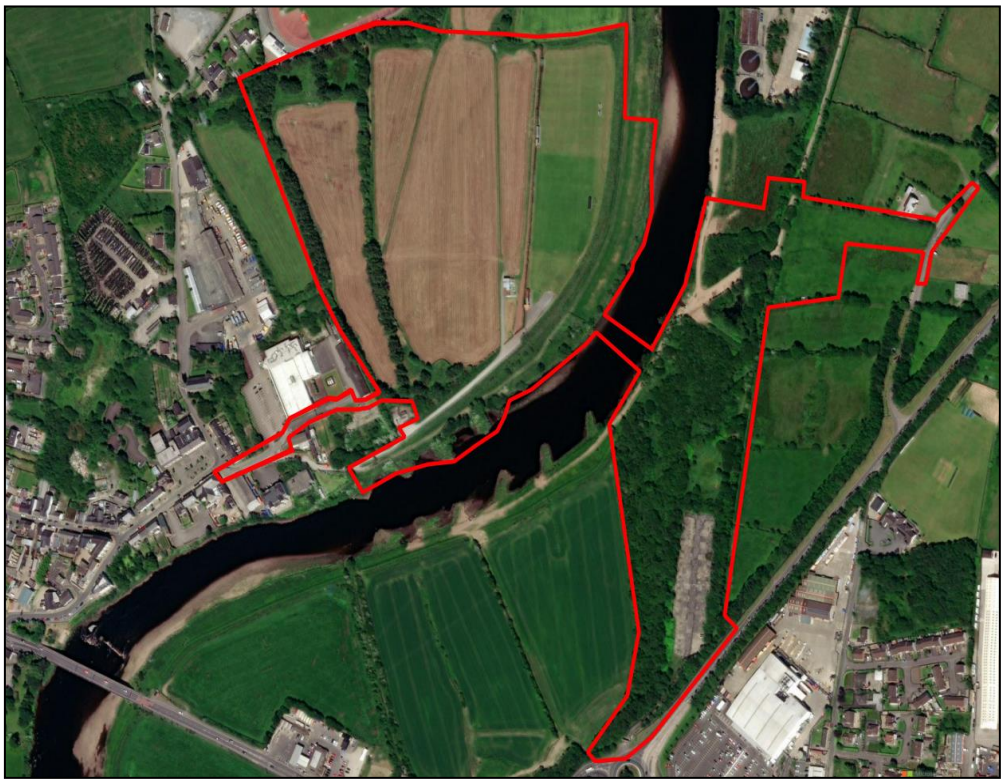

Figure 2: Site boundary

1.2 Development Proposal

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long-lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped greenspaces interlaced with a network of pathways, cycleways and retained wetlands. The development will be supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 11 hectares by utilising agricultural land and wetlands lying along either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The bridge will be a single span with the central (in river) piering removed, with landing points on either side of the riverbanks. The park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities on the Lifford side of the proposed development.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events on the Lifford side of the proposed development.

- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane will be made available on the Lifford side of the proposed development.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

1.3 Rationale of Collision Risk Desk Study

The purpose of the collision risk desk study is to utilise historic bird records along with results from previous bird surveys to determine the risk of inflight collisions between local and commuting bird species and the proposed bridge structure. This is required to assess the likelihood of any impacts upon the local bird community in association with the proposed development. The aim of this report is to: -

- Identify what birds are using the site for breeding and foraging purposes;
- Establish the current site usage and flight paths for breeding, commuting and foraging birds;
- Identify the likely impacts on birds the development is likely to impose upon any local bird populations; and
- Recommend either further survey, mitigation or compensation measures either to protect local bird populations and to enhance the habitat in which they reside.

2.0 LEGISLATION

Lifford (ROI) Legislation

All wild birds are protected, particularly during the bird breeding season while nesting under the Irish Wildlife Act 1976 (as amended), the EU Habitats Directive of the Bern convention via the European Communities (Birds and Natural Habitats Regulations 2011 (S. I. No. 477 of 2011). It is an offence to intentionally or recklessly:

- kill, injure or take any wild bird; or
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or

- at any other time take, damage or destroy the nest of any wild bird included in Schedule A1; or
- take or destroy an egg of any wild bird; or
- disturb any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturb dependent young of such a bird.

Additionally, any person who knowingly causes, or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence.

Wild Birds

Most species of birds return to the same general nesting location each year and build a new nest. However, some species return to the same nest sites year after year, re-using old nests. Some of these species which have been deemed as particularly vulnerable to decline are given additional protection and are listed on the most recent BoCCI assessment checklist as amber or red *(see* Appendix: IX).

All wild birds are also subject to conservation measures under the Birds Directive (2009/147/EC). This requires European Member States to take conservation measures to maintain populations of all naturally occurring wild birds. These species are subject to special conservation measures and have additional legal protection as features of designated sites, such as Special Protection Areas (SPAs).

Local and national biodiversity action plans consider priority species within the local area of conservation concern.

Strabane (NI) Legislation

Under the Wildlife (Northern Ireland) Order 1985 (as amended) all wild birds are protected, particularly during the bird breeding season while nesting. It is an offence to intentionally or recklessly:

- kill, injure or take any wild bird; or
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or

- at any other time take, damage or destroy the nest of any wild bird included in Schedule A1; or
- take or destroy an egg of any wild bird; or
- disturb any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturb dependent young of such a bird.

Additionally, any person who knowingly causes, or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence.

Wild Birds

Most species of birds return to the same general nesting location each year and build a new nest. However, some species return to the same nest sites year after year, re-using old nests. Some of these species which have been deemed as particularly vulnerable to decline are given additional protection and are listed on Schedule A1 of the Wildlife Order *(see* Table 1). For these species it is an offence to damage or destroy their nests at any time of the year, even when they are not in use.

Table 1: Schedule A1 species

Common Name	Latin Name
Golden Eagle	*Aquila chrysaetus*
White-tailed Eagle	*Haliaetus albicilla*
Osprey	*Pandion haliaetus*
Barn Owl	*Tyto alba*
Peregrine	*Falco peregrines*
Red Kite	*Milvus milvis*

The Wildlife and Natural Environment Act (Northern Ireland) 2011 (known as the WANE Act) introduced a biodiversity duty on public bodies in Northern Ireland. It states that '*it is the duty of every public body, in exercising any functions, to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions*'.

The WANE Act also requires that the Department of the Environment maintains a list of species requiring special attention when delivering this duty. These are Northern Ireland priority species and specific actions for these have been addressed in a range of Government policies and activities.

All wild birds are also subject to conservation measures under the Birds Directive (2009/147/EC). This requires European Member States to take conservation measures to maintain populations of all naturally occurring wild birds. Additionally, some bird species, which are particularly rare or vulnerable, are listed on Annex I of the Directive. These species are subject to special conservation measures and have additional legal protection as features of designated sites, such as Special Protection Areas (SPAs).

Local and national biodiversity action plans consider priority species within the local area of conservation concern.

Planning Policy

The Planning Policy Statement 2 (PPS 2), Natural Heritage, NH2 indicates that development proposals are required to be sensitive to all protected species and sited and designed to protect them, their habitats and prevent from deterioration and destruction of their breeding sites or resting places.

3.0 METHODOLOGY

3.1 Surveyor/qualifications

Ryan Boyle BSc MSc – Consultant Ecologist

Fieldwork was carried out and assisted by Ryan Boyle a consultant ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queen's University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 7 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is

experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc – Graduate Ecological Consultant

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, as well as a seasonal volunteer for the Bat Conservation Trust and regularly takes part in newt, lizard and bat surveys.

Conor Finlay BSc MSc – Graduate Ecologist

All surveying and reporting were assisted by Conor Finlay, a graduate ecologist at MCL Consulting. He has a master's degree (MSc) in Ecological Management and Conservation Biology from Queen's University, Belfast, a bachelor's degree (BSc) in Environmental Sciences from Ulster University, Coleraine and previous employment experience working as a Park Ranger within Stormont Estate assisting contractor ecologists in biodiversity checklists within veteran woodlands and conservation wetlands. He has professional experience assisting bat activity surveys, bat analysis, ecological biodiversity checklists, breeding bird's surveys, badger surveys and desktop study experience in Amphibian conservation working within Global Amphibian Biodiversity Project (GABiP).

3.2 Desk Study

A desk study was undertaken with a view of gathering existing information in regard to species and habitat within and near the site. Sources used to gather information include:

- Department of Agriculture, Environment and Rural Affairs (DAERA) GIS datasets;

- Request to CEDaR, to provide information in regard to priority bird species within a 2km radius of the site; and
- Aerial photographs on Bing and Google and NIEA Environment Map Viewer.

3.3 Field study

While this desk study primarily relies on historical records and results from previous studies to help produce an assessment for collision risk/rates between the local bird populations and the proposed bridge structure. Several vantage point surveys were also carried out during July 2021 to help provide some current real time data to help inform the calculated collision risks of current activity levels during the breeding bird season when activity on site had previous been recorded as high, (see Appendix 8-10 Breeding Bird Survey report).

The method used to carry out the vantage point survey follows the Scottish Natural Heritage guidelines of Recommended bird survey methods to inform impact assessment of onshore wind farms, the guidelines recommended by NIEA:

- 6 hours of survey time required per month
- Split into 2 survey sessions each 3 hours in duration
- An agreed list of target and secondary bird species was provided for recording during
- vantage point observations as these species are deemed of highest importance/at greatest risk, (see Appendix I)
- Target bird species were observed as priority over secondary bird species
- Should a target species be spotted it is followed until it ceases to fly or is lost from view
- The time the target bird was detected and the flight duration are recorded
- The target species flight height at time of detection is recorded and then bat 15 second intervals thereafter
- Secondary bird species are recorded into sub divided 5 minute periods at the end of which the number and activity of all secondary species observed is recorded.
- Flight paths are to be recorded for production onto maps

The dates of each survey, along with survey start time and duration was recorded in Table 2. Weather conditions at the time of survey was also recorded included, temperature (˚C), wind speed (Beaufort scale), cloud cover (Oktas) and precipitation.

For the vantage point surveys certain species of birds were deemed as target species most likely to be affected by the proposed bridge structure. Due to the diversity of bird species on site and the proposed bridge spanning a riverine habitat the target species for these VP surveys were:

- Diurnal raptors
- Waders
- Waterfowl
- Rails
- Gulls

Table 1: Summary of the survey dates and weather from each visit

Survey ID	Date	Start Time	Survey Duration	Weather
1	06/07/2021	12:30	3hrs	12°C, Beaufort 2, 8/8, 25% precipitation
2	15/07/2021	12:30	3hrs	19°C, Beaufort 3, 5/8, 25% precipitation
3	20/07/2021	12:00	3hrs	21°C, Beaufort 4, 0/8, 0% precipitation

3.4 Criteria for evaluation

Protection is afforded to all wild birds in the UK under the Wildlife Order (NI) Act 1985 (as amended) and gives greater protection to certain priority species that are considered at risk nationally under Schedule 1.

In 2015 Birds of Conservation Concern Ireland 4 (BoCCI) the Red List for Birds updated, the fourth review of the status of wild birds in the UK, Channel Islands and the Isle of Man. Using standardised criteria 244 species with breeding, passage or wintering birds were assigned to either Red, Amber or Green lists of conservation concern.

3.5 Evaluation assessment

Using evaluation techniques set out by Fuller (1980) the data collected can be assessed in order to define the importance of ornithological interest by the number of breeding Species found on site.

Table 2: Evaluation criteria for bird assemblage assessment

Level of Importance	Number of Breeding Species	
	Fuller (1980) Criteria	Adapted Criteria
Local	25-49	>25
District		25-49
County	50-69	50-69
Regional	70-84	70-84
National	<85	<85

Level of importance is defined using geographical levels; Local, District, County, Regional and National. To comply with IEEM 2006 'Local has been adapted to >25 species and 'District' to 25-49 species.

3.6 Limitations

The entire site was accessible to the surveyor with all surveys undertaken under suitable weather conditions. No limitations while encountered during the survey period.

Some birds may be unnoticed and/or missed, this report only provides a portion of the bird activity occurring on site and that it is considered that ecological reports have are valid for 1 year after they are produced, after which they may need to be updated.

4.0 RESULTS

4.1 Desk Study

A written request was submitted to obtain data from the CEDaR recorded species dataset, and the results obtained from the CEDaR search provided a list of recorded species within a 2km radius of the site.

Table 3: CEDaR database request

Common Name	Scientific Name	Event Date	Sample Spatial Reference	All Designations - Short Names
Mistle Thrush	*Turdus viscivorus*	12/05/1988	H358990	Bird-Red, BirdsDir-A2.2
Chiffchaff	*Phylloscopus collybita*	12/05/1988	H358990	0
Willow Warbler	*Phylloscopus trochilus*	12/05/1988	H358990	Bird-Amber
Raven	*Corvus corax*	12/05/1988	H358990	0
Rook	*Corvus frugilegus*	12/05/1988	H358990	BirdsDir-A2.2
Woodpigeon	*Columba palumbus*	12/05/1988	H358990	BirdsDir-A2.1
Chaffinch	*Fringilla coelebs*	12/05/1988	H358990	0
Blackbird	*Turdus merula*	12/05/1988	H358990	BirdsDir-A2.2
Yellowhammer	*Emberiza citrinella*	12/05/1988	H358990	BAP-2007, Bern-A2, Bird-Red, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Goldcrest	*Regulus regulus*	12/05/1988	H358990	Bern-A2
Wren	*Troglodytes troglodytes*	12/05/1988	H358990	Bern-A2
Magpie	*Pica pica*	12/05/1988	H358990	BirdsDir-A2.2
Whooper Swan	*Cygnus cygnus*	28/10/1995	H39	Bern-A2, Bird-Amber, BirdsDir-A1, CMS_A2, CMS_AEWA-A2, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Tree Sparrow	*Passer montanus*	22/11/1997	H39	BAP-2007, Bird-Red, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Black Redstart	*Phoenicurus ochruros*	07/04/1999	H39	Bern-A2, Bird-Red, WACA-Sch1_part1
Long-Eared Owl	*Asio otus*	10/10/2014	H39	Bern-A2, ECCITES-A, W(NI)O-Sch1_part1
Long-Eared Owl	*Asio otus*	05/03/2014	C30	Bern-A2, ECCITES-A, W(NI)O-Sch1_part1
Rose-Coloured Starling	*Sturnus roseus*	14/10/2013	H39	Bern-A2
Swift	*Apus apus*	09/05/2013	H39	Bird-Amber, NIPS, Scottish_Biodiversity_List
Kestrel	*Falco tinnunculus*	18/10/2013	H39	Bern-A2, Bird-Amber, CMS_A2, ECCITES-A, FEP-007_tab2, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, Wales_NERC_S.42
Buzzard	*Buteo buteo*	18/10/2013	H39	CMS_A2, ECCITES-A, W(NI)O-Sch1_part1
Swift	*Apus apus*	08/05/2014	H39	Bird-Amber, NIPS, Scottish_Biodiversity_List

Jay	*Garrulus glandarius*	06/03/2011	H39	BirdsDir-A2.2
Sparrowhawk	*Accipiter nisus*	06/03/2011	H39	CMS_A2, ECCITES-A, W(NI)O-Sch1_part1
Buzzard	*Buteo buteo*	06/03/2011	H39	CMS_A2, ECCITES-A, W(NI)O-Sch1_part1
Cattle Egret	*Bubulcus ibis*	02/11/2012 - 11/11/2012	H39	CMS_AEWA-A2, ECCITES-A
Gannet	*Sula bassana*	30/05/2011	H39	Bird-Amber, CMS_AEWA-A2
Swift	*Apus apus*	08/05/2011	H39	Bird-Amber, NIPS, Scottish_Biodiversity_List
Spotted Flycatcher	*Muscicapa striata*	01/06/2011	H39	BAP-2007, Bern-A2, Bird-Red, CMS_A2, England_NERC_S.41, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, Wales_NERC_S.42
Barn Owl	*Tyto alba*	05/11/2016	H39	Bern-A2, ECCITES-A, FEP-007_tab2, NIPS, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Swift	*Apus apus*	17/07/2014	H3396	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	*Apus apus*	09/08/2014	H3396	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	*Apus apus*	18/07/2014	C3500	Bird-Amber, NIPS, Scottish_Biodiversity_List
Swift	*Apus apus*	08/05/2014	H3396	Bird-Amber, NIPS, Scottish_Biodiversity_List
Peregrine	*Falco peregrinus*	1987	H358992	Bern-A2, BirdsDir-A1, CMS_A2, ECCITES-A, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Peregrine	*Falco peregrinus*	1988	H358992	Bern-A2, BirdsDir-A1, CMS_A2, ECCITES-A, Scottish_Biodiversity_List, W(NI)O-Sch1_part1, WACA-Sch1_part1
Collared Dove	*Streptopelia decaocto*	12/04/2016	H346984	BirdsDir-A2.2
Pied Wagtail	*Motacilla alba subsp. yarrellii*	02/06/2016	H340977	Bern-A2
Pied Wagtail	*Motacilla alba subsp. yarrellii*	15/12/2015	H338978	Bern-A2
Blackbird	*Turdus merula*	27/04/2016	H34409863	BirdsDir-A2.2
Blackbird	*Turdus merula*	27/04/2016	H34569881	BirdsDir-A2.2
Blackbird	*Turdus merula*	15/12/2015	H348990	BirdsDir-A2.2
Pied Wagtail	*Motacilla alba subsp. yarrellii*	23/03/2017	H334982	Bern-A2
Rook	*Corvus frugilegus*	23/03/2017	H339977	BirdsDir-A2.2
Jackdaw	*Corvus monedula*	23/03/2017	H335982	BirdsDir-A2.2

4.2 Previous surveys

Previous breeding bird and non-breeding winter surveys had been carried out by the previous project ecologist Eamonn Delaney of Delichon Ecology in 2020. A pre-determined transect route was walked throughout the survey area which included all field boundaries within the site. Records were made of birds singing or calling, repeated territorial calls, territorial aggression, displaying, adults carrying food or nesting material, juvenile birds and family groups.

Instances where a nest was directly observed, an individual was carrying nesting material, or where an obvious male-female pair was present were all recorded as a breeding pair (BP).

Table 4: Summary of likely breeding behaviour from Delichon's previous surveys

Transect Number	Species	BTO Code	Early Season	Late Season	Conservation Status[1]
Transect 1	Blackcap	BC		✓	Green
	Grey Heron	H.		✓	Green
	Goldcrest	GC	✓	✓	Amber
	Wren	WR	✓	✓	Green
	Woodpigeon	WP		✓	Green
	Rook	RO		✓	Green
	Blackbird	B.	✓	✓	Green
	Hooded Crow	HC		✓	Green
	Pheasant	PH		✓	Green
	Song Thrush	ST	✓	✓	Green
	Chiffchaff	CC		✓	Green
	Chaffinch	CH	✓	✓	Green
	Robin	R.	✓	✓	Green
	Magpie	MG	✓		Green
	House Sparrow	HS	✓		Amber
	Willow Warbler	WW	✓		Amber
Transect 2	Wren	WR		✓	Green
	Grey Heron	H.	✓	✓	Green
	Rook	RO	✓	✓	Green
	Sedge Warbler	SW		✓	Green
	Magpie	MG	✓	✓	Green
	Willow Warbler	WW		✓	Amber
	Woodpigeon	WP	✓	✓	Green
	Song Thrush	ST		✓	Green
	Dunnock	D.		✓	Green
	Swift	SI		✓	Red
	Blackbird	B.	✓		Green

Transect Number	Species	BTO Code	Early Season	Late Season	Conservation Status[1]
	Starling	SG	✓		Amber
	Swallow	SL	✓		Amber
	Feral Pigeon	FP	✓		n/a
	Jackdaw	JD	✓		Green
	Robin	R.	✓		Green
	Chaffinch	CH	✓		Green
	Common Sandpiper	CS	✓		Amber
	Hooded Crow	HC	✓		Green
	Shelduck	SU	✓		Amber
Transect 3	Blue Tit	BT		✓	Green
	Blackbird	B.	✓	✓	Green
	Goldcrest	GC	✓	✓	Amber
	Chaffinch	CH	✓		
	Blackcap	BC		✓	Green
	Woodpigeon	WP	✓	✓	Green
	Grey Heron	H.		✓	Green
	Wren	WR		✓	Green
	Dunnock	D.		✓	Green
	Rook	RO	✓	✓	Green
	Song Thrush	ST		✓	Green
	Starling	SG	✓	✓	Amber
	Mallard	MA		✓	Amber
	Common Gull	CM		✓	Amber
	Wren	WR	✓		Wren
	Starling	SG	✓		Amber
Transect 4	Blue Tit	BT		✓	Green
	Wren	WR		✓	Green
	Song Thrush	ST		✓	Green
	Blackcap	BC		✓	Green
	Chaffinch	CH		✓	Green
	Blackbird	B.		✓	Green
	Goldcrest	GC		✓	Amber
	Woodpigeon	WP		✓	Green
	Magpie	MG		✓	Green
	Chiffchaff	CH		✓	Green
Transect 5	Bullfinch	BF		✓	Green
	Wren	WR		✓	Green
	Song Thrush	ST		✓	Green
	Woodpigeon	WP	✓	✓	Green
	Dunnock	D.		✓	Green
	Willow Warbler	WW	✓	✓	Amber
	Magpie	MG		✓	Green
	Blue Tit	BT		✓	Green
	Robin	R.	✓	✓	Green
	Blackcap	BC		✓	Green
	Rook	RO	✓	✓	Green

Transect Number	Species	BTO Code	Early Season	Late Season	Conservation Status[1]
	Goldcrest	GC		✓	Amber
	Chaffinch	CH		✓	Green
	Buzzard	BZ		✓	Green
	Starling	SG	✓	✓	Amber
	Blackbird	B.	✓		Green
	Hooded Crow	HC	✓		Green
Transect 6	Chiffchaff	CH		✓	Green
	Goldcrest	GC		✓	Amber
	Song Thrush	ST		✓	Green
	Chaffinch	CH	✓	✓	Green
	Wren	WR		✓	Green
	Blue Tit	BT	✓	✓	Green
	Woodpigeon	WP	✓	✓	Green
	Blackbird	B.	✓	✓	Green
	Blackcap	BC		✓	Green
	Robin	R.	✓	✓	Green
	Starling	SG	✓	✓	Amber
	Dunnock	D.		✓	Green
	Willow Warbler	WW	✓		Amber
	Hooded Crow	HC	✓		Green
	House Sparrow	HS	✓		Amber
	Meadow Pipit	MP	✓		Red
	Rook	RO	✓		Green
	Jackdaw	JD	✓		Green
	Feral Pigeon	FP	✓		n/a
	Cormorant	CA	✓		Amber

Most registrations recorded during the surveys were of species that were listed as green on the BoCCI scale. Nine species are listed as amber: goldcrest, house sparrow, willow warbler, starling, swallow, common sandpiper, shelduck, mallard and common gull. While two species are listed as red: swift and meadow pipit.

In total, 30 bird species were observed on site during the breeding bird surveys.it was identified that a common assemblage of passerine birds which are often associated with treelines, hedgerows, woodland and pastoral habitats were located throughout the proposed site area. The majority of bird activity was observed along these linear features and habitats and it was observed that these features and habitats were primarily used for foraging and commuting.

Other bird species observed on site but not during designated breeding bird transect surveys are displayed in table 6.

Table 5: Summary of birds observed outside of breeding bird surveys from Delichon's previous surveys

Species	BTO Code	Conservation Status
Linnet	LI	Amber
Sand Martin	SM	Amber
Jackdaw	JD	Green
Reed Bunting	RB	Green
Swallow	SL	Amber
Long-tailed Tit	LT	Green
House Sparrow	HS	Amber
Great Tit	GT	Green
Cormorant	CA	Amber
Spotted Flycatcher	SF	Amber
House Martin	HM	Amber
Feral Pigeon	FP	N/A
Pied Wagtail	PW	Green
Grey Wagtail	GL	Red
Common Sandpiper	CS	Amber
Long-eared Owl	LE	Green

It was noted by Delichon that the River Foyle and its riparian area supports its own collective of riverine breeding bird species such as grey heron, sand martin, cormorant, mallard and common gull. The close proximity of Lifford town and Strabane to the study area also has influence on the site's bird species composition observed by the presence of swifts, sand martins and house sparrows.

Buzzards and a long-eared owl were identified by Delichon Ecology across the site. the long-eared owl has been identified as breeding on site on the Lifford side of the site having a nest within the conifer treeline in the western area of the site, (Appendix 8-10 Breeding Bird Survey report). Confirmation of the long-eared owl breeding was acquired during the June 2020 site walkover when young chicks were audibly heard calling.

5.0 FIELD STUDY

5.1 Results

Table 6. Summary of results recorded during VP survey 06/07/2021

Species	Time observed	VP	No. of Birds	Flight Behaviour/ Age of Bird	Time at Risk Height for Flight in Secs	Total Time at Risk Height (multiplied where more than one bird involved in the flight) in secs
Grey Heron	12:33	1	1	Grey heron observed flying across the River Foyle from the Lifford side approximately 200m south of VP below estimated bridge span height	0	0
Grey Heron	12:34	1	1	A second grey heron was observed flying to the same location as the previous bird again below the estimated bridge span height	0	0
Black-Headed Gull	13:20	1	1	Black-Headed Gull was observed flying north along the river well above the estimated bridge span height following the avifauna commuting corridor	0	0
Grey Heron	12:30	2	1	A single grey heron was observed standing on the banks of the Lifford side south of VP resting and foraging	0	0
Black-Headed Gull	13:08	2	1	Black-Headed Gull was observed flying along the avifauna commuting corridor following the river going south well above the estimated bridge span height	0	0

Grey Heron	13:11	2	2	Two herons were observed flying across the river going north descending from above the estimated bridge span height to below before landing on the Lifford side of the river	15	30
Tufted Duck	13:23	2	1	A tufted duck was observed flying the avifauna commuting corridor following the river from the Lifford side before crossing over to the Strabane side going south-west well above the estimate bridge span height	0	0
Grey Heron	13:26	2	3	Three heron were observed flying north well above the estimated bridge span height and descended to below before landing on the Lifford side of the river	20	60

Table 7. Summary of results recorded during VP survey 15/07/2021

Species	Time observed	VP	No. of Birds	Flight Behaviour/ Age of Bird	Time at Risk Height for Flight in Secs	Total Time at Risk Height (multiplied where more than one bird involved in the flight) in secs
Grey Heron	12:26	1	1	A single grey heron was observed standing and foraging along the banks of the Lifford side of the river north-west of the VP before taking off and flying well below the estimated bridge span height along the riverbank further north	0	0
Lesser Black Backed Gull	12:26	1	3 (1x adult and 2x juveniles)	Three lesser black backed gulls were observed standing and foraging along the banks of Corkan Island just north of the VP	0	0
Sand Martin	13:05	1	1	Single adult sand martin was observed flying along the surface of the river following the avifauna commuting corridor well below the estimated bridge span height	0	0
Grey Heron	13:08	1	1	Single grey heron observed standing and foraging along the banks of the Lifford side of the river south of the VP	0	0

Buzzard	13:15	1	1	Single buzzard observed circling over the hare coursing grounds on the Lifford side of the site well above the estimated bridge span height before heading north-west disappearing from view	0	0
Buzzard	13:17	1	1	Single buzzard observed exhibiting similar behaviours and flight patterns to the previous buzzard. Observed well above the estimate bridge span height	0	0
Grey Heron	12:42	2	1	A single heron was observed flying south before turning east along the river well above estimated bridge span height flying towards Lifford before turning back towards Strabane	0	0
Grey Heron	12:46	2	1	Single grey heron observed flying north well above the estimated bridge span height from Strabane before landing on the riverbank and foraging east of the VP	0	0

Black-Headed Gull	13:14	2	1	Flying north-east below estimate bridge span height following the avifauna commuting corridor	0	0
Buzzard	13:21	2	1	A single buzzard was observed circling over the hare coursing grounds area on the Lifford side of the site above the estimate bridge span height before it dove to catch prey	0	0
Grey Heron	13:32	2	1	A single grey heron observed flying south starting off above estimated bridge span height before beginning its descent from Lifford to the Strabane side riverbank before landing on a handrail near the VP to begin grooming	10	10
Grey heron	13:34	2	1	The same grey heron then took off going north before turning southeast continuing back to Strabane side of the river crossing at the estimated bridge span height	300	300

Table 8. Summary of results recorded during VP survey 20/07/2021

Species	Time observed	VP	No. of Birds	Flight Behaviour/ Age of Bird	Time at Risk Height for Flight in Secs	Total Time at Risk Height (multiplied where more than one bird involved in the flight) in secs
Black-Headed Gull	12:00	1	1	Single gull observed sitting on the banks of Corkan Island just north of the VP	0	0
Grey Heron	12:00	1	1	Single grey heron observed resting on the banks of the Lifford side of the river	0	0
Juvenile Greater Black Backed Gull	12:02	1	1	A single juvenile gull was observed circling over the river near the VP before travelling south along the avifauna commuting corridor following the river before circling near VP again over the river. All observed occurring at the estimated bridge span height	300	300
Black-Headed Gull	12:10	1	1	Single gull observed flying well above the estimated bridge span height following the river along the avifauna commuting corridor going north	0	0
Herring Gull	12:11	1	2	Two herring gulls observed following the river along the avifauna commuting corridor going north before	300	600

				following the river northwest along the Lifford riverbank where the river splits at Corkan Island. All observed at estimated bridge span height		
Grey Heron	12:20	1	1	Observed circling over the river and landed near the VP on the Strabane side riverbank. Initially observed above the estimated bridge span height but crossed through it during descent	5	5
Grey Heron	12:27	1	2	Two grey herons flew from Strabane side riverbank going north along the Lifford side riverbank before circling over the Strabane riverbank and disappearing behind a treeline. All observed at estimated bridge span height	300	600
Black-Headed Gull	12:31	1	1	Single gull observed flying south before circling over the Strabane side of the river and Corkan Island then followed the Lifford riverbank north-west all above the estimated bridge span height	0	0

Grey Heron	12:37	1	2	Single heron was observed flying from the Strabane to the Lifford side of the river to land next to another heron before both herons took off and flew north along the avifauna commuting corridor circled above the river before landing on the bank of the Lifford side of the river opposite the VP. They then took off once again and flew west over the Lifford side of the site before circling back towards Strabane and disappearing behind a treeline. All observed at estimated bridge span height	600	1200
Black-Headed Gull	13:06	1	1	Single gull observed flying south along the avifauna commuting corridor at the estimated bridge span height	60	60
Grey Heron	12:00	2	1	Single heron observed sitting on the riverbank of the Lifford side before taking off and flying south-east towards Strabane initially started below the estimated bridge span height and rose to above	20	20

Common Gull	12:05	2	1	Single gull was observed flying south before turning west as it travelled along the avifauna commuting corridor along the river alternating altitude from below to above the estimated bridge span height	120	120
Grey Heron	12:20	2	1	Single heron observed flying south starting below the estimated bridge span height and gained altitude to above. It then circled over the river before travelling west and then south again	0	0
Grey Heron	12:30	2	1	Observed sitting on the banks of the Lifford side of the river opposite the VP	0	0
Grey Heron	12:38	2	2	Two herons observed flying east at the estimated bridge span height before landing on the riverbank of the Lifford side of the river. Both birds then took off again gaining altitude circling over the river, one heron landed on the Strabane side of the river while the other continued on towards Strabane	180	360

Grey Heron	13:01	2	1	Single heron observed flying north descending from above to below estimated bridge span height from Strabane to the Lifford side of the river before landing	60	60
Black-Headed Gull	13:08	2	1	Single gull observed flying along the river before turning west alternating from estimated bridge span height to just above as it flew out over Lifford	300	300
Grey Heron	13:14	2	1	Single heron observed foraging on banks of Lifford side of river	0	0

With the exception of the sand martin, the primary use of the avifauna commuting corridor along the River Foyle is by target bird species such as gulls and waders. The grey heron was the most commonly observed species with at least one heron observed along the River Foyle during each VP session. This suggests that this particular stretch of the river is a popular hunting ground for the grey heron, which is further confirmed by the presence of jumping salmon observed during the VP surveys. Bird Activity along this stretch of the River Foyle is moderately high with a total of 35 birds observed flying along this stretch of the river during the VP survey sessions. Of these 35 birds 16 were observed flying at the estimated bridge span height posing a considerable risk for potential collision. Other bird species observed during the 2020 bird surveys may have also flown at the estimated bridge span height, but this data is not available.

Current findings support Delichon's deduction that bird activity and abundance on and around the site are higher during the breeding season and decreases during the winter non-breeding season suggesting the greatest risk of collision may occur during the breeding season with more abundance of bird, greater diversity and higher activity levels.

6.0 PROPOSED BRIDGE STRUCTURE

The proposed bridge structure at the Riverine Scheme site is a single span foot/cycle path bridge allowing public access to both the Lifford and Strabane side of the site through a system of proposed pathways. The bridge is to be a metal framework structure with aesthetic stonework walls at both the Lifford and Strabane entrances to the bridge. Lighting has been proposed for the bridge structure and has been outlined in the Bat Activity Report also carried out by MCL Consulting.

The dimensions for the bridge are approximately:

- 7m above water level
- 134m long
- 6m high
- 4.2m wide

The proposed structure is stationary and will not include any glass surfaces, which have been known to attract and confuse birds through reflection of light, that would contribute to potential collision risks. Proposed lighting is also minimal with no flood or intense lighting proposed due to concerns regarding bats and salmonid species within the River Foyle. This also helps contribute to a reduction in potential collision risk as for night-time flyers as it would illuminate the structure, but no birds will become trapped within, attracted to or disoriented by high intensity long beams of light (see Appendix: XV).

7.0 COLLISION RISK

In terms of potential collision risk at the proposed Riverine Scheme site, the primary concerns are due to the proposal of a single span foot/cycle bridge to be constructed across the River Foyle from Strabane to Lifford to allow for continued connectivity between the two areas of the proposed site. The collision risk for the Riverine scheme has followed guidance from the Band (2021) model as well as guidance from BTO, JNCC and Scottish Natural Heritage.

Table 9. Target bird species observed crossing proposed bridge location over the River Foyle with the total number of crossing and the number of crossings within the bridge collision risk zone.

Species		Survey Dates and Recordings						Total Number of Crossing for Each Species	Total Number of Crossing for Each Species at Collision Risk Height	Total Number of Crossing for Each Species at Collision Risk Height (%)
		06/07/2021		15/07/2021		20/07/2021				
Common Name	Scientific Name	VP1	VP2	VP1	VP2	VP1	VP2			
Grey Heron	*Ardea cinerea*	2	6	2	4	9	7	30	16	53.33333333
Black-Headed Gull	*Chroicocephalus ridibundus*	1	1	0	1	4	1	8	2	25
Tufted Duck	*Aythya fuligula*	0	1	0	0	0	0	1	0	0
Lesser Black-Backed Gull	*Larus fuscus*	0	0	3	0	0	0	0	0	0
Sand Martin	*Riparia riparia*	0	0	1	0	0	0	1	0	0
Buzzard	*Buteo buteo*	0	0	2	1	0	0	0	0	0
Greater Black-Backed Gull	*Larus marinus*	0	0	0	0	1	0	1	1	100
Herring Gull	*Larus argentatus*	0	0	0	0	2	0	2	2	100
Common Gull	*Larus canus*	0	0	0	0	0	1	1	1	100

Overall bird activity on site is high with a high diversity of bird species during the breeding season occupying all habitats observed across the site. The 2021 vantage point surveys carried out by MCL consulting focused primarily on diurnal raptors, waders, waterfowl and gulls. More common resident passerine bird species were not included in the vantage point surveys are these species are primarily year-round residents and were mostly located further inland from the riverbanks on both sides of the River Foyle in both Lifford and Strabane. The target species for the vantage point surveys were species known to be migratory, long ranging commuters or were identified as previously using the avifauna commuting corridor along the River Foyle by Eamonn Delaney of Delichon Ecology.

The majority of the crossings were made by grey herons, (68%), which were often observed entering or leaving the survey area for foraging opportunities often alternating between both riverbanks throughout the survey sessions. Gulls were the second most common making 28% of the crossings across 5 different species seen following the avifauna commuting route as well as foraging at various points along the riverbanks. However, it is noted that the results illustrate a 100% chance of collision risk for three of the five gull species, (common, herring and greater black backed gull), the ecologist would like to address that these results are not representative of the true collision risk posed by these species on site. Due to a very tight deadline, vantage point surveys to collect flight path, height and behavioural data by MCL consulting could only be carried out during the month of July 2021 and as such only provide a brief overview/indication of bird species along the avifauna commuting corridor and their flight behaviours. It is of the ecologist's opinion that further vantage point surveys throughout the year would yield a better representation from a greater survey sample population.

The site yielded one species of waterfowl, the tufted duck, which was observed as a single individual on one occasion. Whooper swan have been recorded for the site with sightings reported by the previous project ecologist Eamonn Delaney of Delichon Ecology. However, no further information regarding flight height was available and no whooper swans were observed during MCL's vantage point surveys. It is the opinion of the ecologist based on previous observation studies that this species would have flown well above the estimated bridge span height as they migrated to over-wintering grounds and as such would not have been of considerable risk with regards to collision. However, without observing them during

a vantage point survey this deduction is currently speculation based upon whooper swan migration flight patterns.

Previous bird surveys carried out by Eamon Delaney of Delichon identified that bird activity on site was much higher during the breeding season and a greater diversity of birds was present on site during this time. Vantage point surveys carried out by MCL consulting support this deduction with other species such as raven, hooded crow and wood pigeon also observed crossing the River Foyle from one side to the other, however, these species were not observed following the avifauna commuting corridor and as such were not considered sensitive to the proposed bridge structure.

Collision risks have been represented by percentages in table 9 of birds observed crossing the proposed bridge location at the estimated bridge span height. As the majority of reference information available such as the Brand (2012) model focus on off and on shore wind farms guidance was taken from this model on how best to evaluate and assess collision risk while result presentation followed guidance from a case study Godinho *et al* (2017) which investigated the "*Bird Collisions in a Railway Crossing a Wetland of International Importance (Sado Estuary, Portugal)*". Evaluation of potential bird collision risks based upon the observed bird flight crossings of a stationary structure more closely resembled the models based on wind turbines as these included calculation data for rotor speed and movement which would not affect the local bird population of the proposed Riverine Scheme.

8.0 CONCLUSIONS & RECOMMENDATIONS

In conclusion, overall activity by birds on the site along the avifauna commuting corridor is considered to be high. The River Foyle provides suitable migrating and foraging habitats and routes for numerous bird species and provides suitable year-round foraging habitat for grey heron.

The collision risk results have been provided based upon observations made by MCL consulting ecologists during the 2021 breeding season. Due to a tight deadline this was the only period available in order to collect up-to-date, real-time data on bird flight behaviour and activity to determine potential collision risk. It is of the ecologist's opinion that while this does allow for a brief glimpse into potential impact of the proposed bridge structure on the local bird population the small sample population recorded during this survey is not a true

reflection and as such results may be skewed. However, based on the current data available of the 44 crossings observed 50% of these were through the estimated collision risk height. It is believed a large sample population would reflect a reduced collision risk percentage across a greater diversity of species utilising the avifauna commuting corridor. The ecologist would also like to note that currently there is a stationary bridge structure located approximately 687m southwest of the proposed bridge structure's location. This current bridge structure would sit approximately the same height off the water surface; however, the proposed Riverine Scheme's bridge structure would be taller in order for the single span design to maintain structural integrity. There are also no proposed central piers for the Riverine Scheme bridge, unlike the current road bridge southwest of the site. Several flight observations were made of birds flying below the estimated bridge span height just above the water surface as well above the collision risk height, this proposed design would allow local birds utilising the avifauna commuting corridor to pass over or under the bridge freely without obstruction to their flight path.

The structure is also stationary in nature and will remain in place with no mechanical moving parts which again will help to reduce the collision risk of birds in the local area as they will be able to freely pass over and under the structure unimpeded. The structure does not propose and glass materials or components for the side facades which may potentially reflect light, attracting or confusing birds along the river, and will be creating a structure which can be clearly seen and distinguished from the rest of the surrounding environment.

Proposed lighting for the bridge has been made with consideration towards local wildlife species, in particular, aquatic species. This will further reduce potential collision risks as there will be no intense, high lumen lighting to attract birds or disorient them, particularly any night flying species, causing them to collide with the structure. With the proposed lighting also being sensitive towards local aquatic species it is less likely to cause fish species such as salmon and smelt to congregate under the bridge due to the impact of the light on the water. Maintaining an even distribution of fish travelling along the river will ensure wild birds do not begin to utilise the bridge as a foraging ground to catch fish that have heavily grouped together under the lighting. In turn this avoids excessive grouping of species at a location where collisions may be possible as they land to forage or to take fish from the surface or on the wing.

The results for this collision risk assessment are more qualitative and based on the recorded bird activity on site and use of the avifauna commuting corridor. However, based on the evidence gathered it is considered that the proposed bridge structure may not provide a severe collision risk to the local bird population and species utilising the avifauna commuting corridor. The proposed structure is stationary in nature, combined with the bat and fish sensitive lighting and the lack of central piers allowing birds utilising the avifauna commuting corridor to freely pass below and above the bridge structure offer a reduced low risk of collision.

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Consultant Ecologist	**Graduate Ecologist**

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FIGURES

Figure 3. Riverine habitat running through centre of the proposed site used as an avifauna commuting corridor and the proposed location of the bridge structure

Figure 4. River Foyle bank on the Strabane side going south where grey heron were observed foraging

Figure 5. River Foyle bank on the Strabane side going north

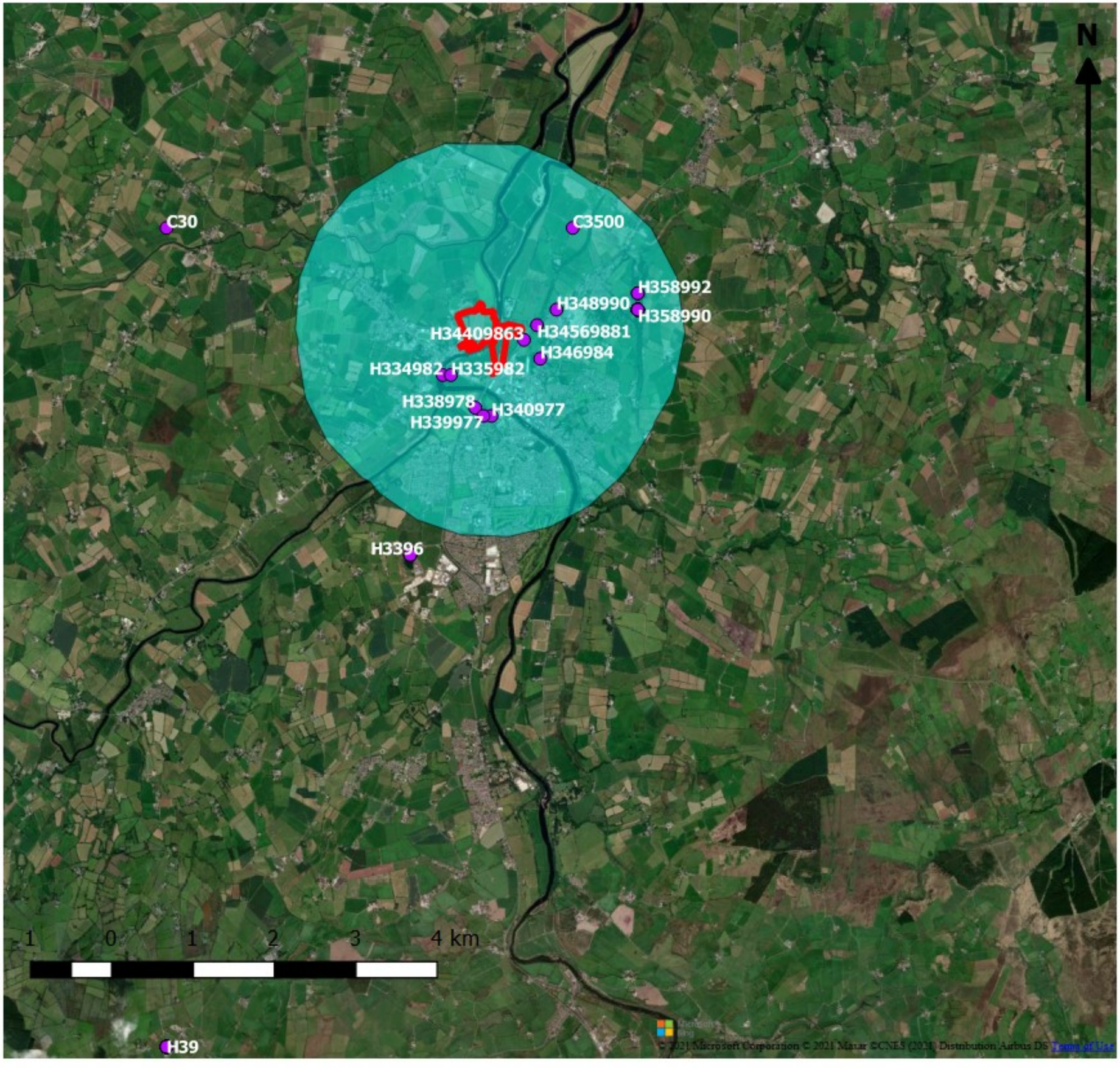
Figure 6. River Foyle looking south with both Strabane and Lifford banks

Figure 7. Overview of Lifford side of site with hare coursing ground

Figure 8. Treelines located along eastern boundary of the Strabane side of the site

Figure 9. North facing view of River Foyle banks on the Strabane side with Wooded areas just north of the proposed bridge landing site

Appendices



Legend

- CEDaR Bird Records
- Red Lined Boundary
- Buffer

Appendix I: CEDaR Bird Records with 2km Buffer

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:65800 @ A3

Date: 08/08/2021

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Belfast
BT3 9BJ
Tel: 02890747766

Appendix II: Tabulated 2016 A5 Historic Bird Records

Table 11P. 1 Summary of raptor breeding sites data

Species	Scientific name	Grid reference
Hen harrier	*Circus cyaneus*	H4982
Common buzzard	*Buteo buteo*	C3827
		H3482
		H4484
		H5455
Peregrine	*Falco peregrinus*	C4816
		H4899
		H4484
		H3171
		H6067
		H6454
		C4213
		H4995
		H3781
		H6967
		C4317
Merlin	*Falco columbarius*	H3570
Kestrel	*Falco tinnunculus*	H5549
		H5849
Barn owl	*Tyto alba*	C4308

Table11P.2 Summary of UWT barn owl data

Grid reference	Date
H 302 615	2003
H 394 795	July 2004

Grid reference	Date
H 308 949	July 2004
H 437 090	Aug 2008
H 76 56	May 2008
H 670 523	April 2008

Table 11P.3 Summary of BTO heronry records

Grid reference	Location	Year of most recent record
H 615 528	Favour Royal Forest	2003
C 376 038	Cloghcor	1977
H 524 543	Killyfaddy, Clogher	2003
H 559 538	Augher Castle	2004
H 64 58	Martray House, Ballygawley	1969
H 34 99	Strabane Old Canal	1988
H 43 80	Cottage Farm, Tattynure	1991
C 368 033	Farm Hill, Ballymagorry	2008
H 435 760	Rash House, Omagh	1985
H 305 948	Urney Park, near Clady	1977
C 390 124	Mullennan House	1985
C 463 155	River Faughan, just north of Drumahoe	2000

Appendix III: 2016 A5 Breeding Bird survey Results

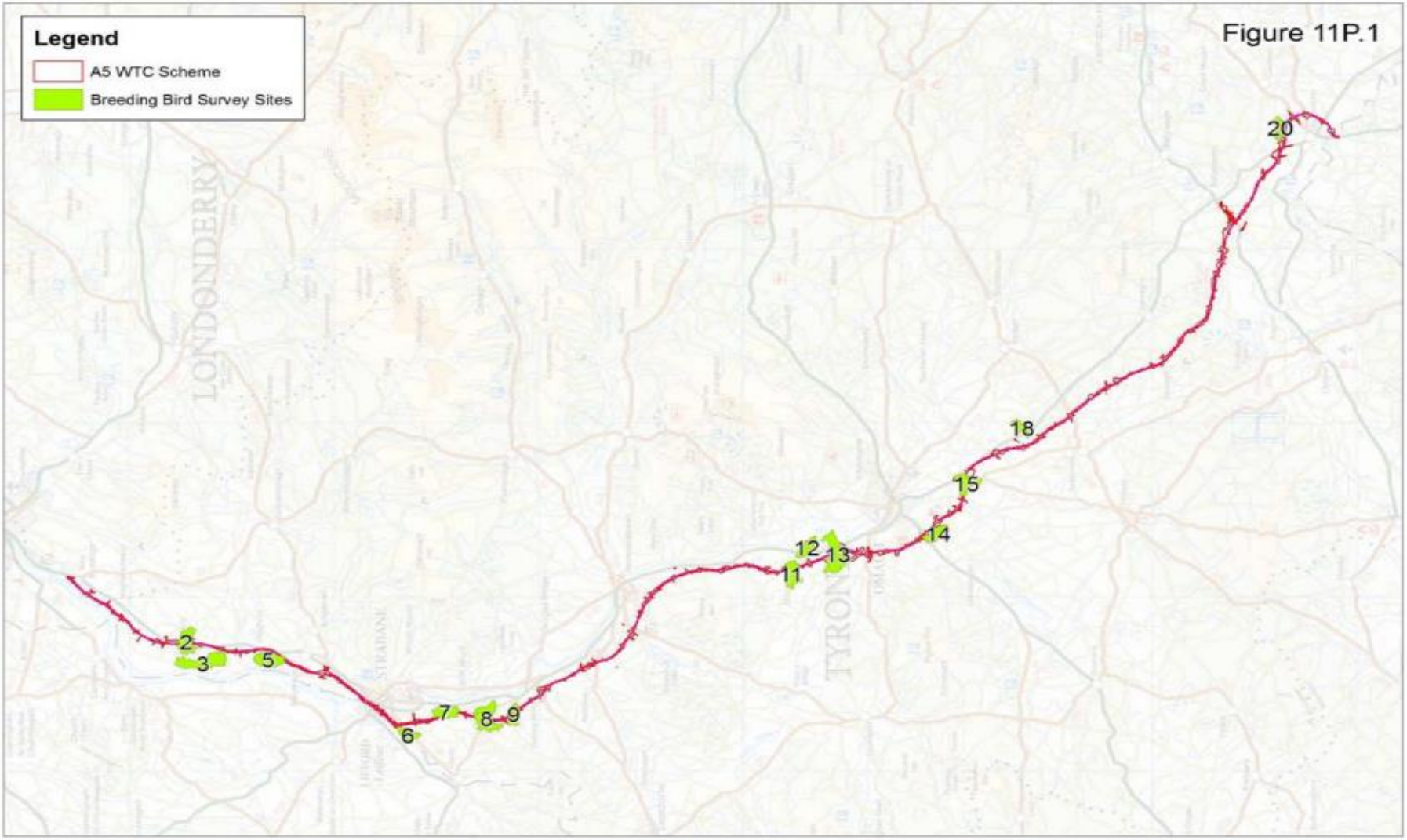
Table 11P.4 2014 BBS field data summary[2,3]

	Sites and habitat description														
	2 237558, 407178	3 236410, 406371	5 236514, 403166	6 232239, 396367	7 233499, 394508	8 233182, 392527	9 233302, 391192	11 241426, 377588	12 242931, 376899	13 242557, 375527	14 243747, 370555	15 246669, 369111	18 249802, 366396	20 267036, 353823	
Species	Arable, improved & semi-improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy grassland, scrub, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy broadleaved woodland, species-poor hedge	Arable, improved grassland, species-poor hedge	Improved grassland, broadleaved woodland, running water, species-poor hedge,	Wet bog, modified woodland, broadleaved arable, improved grassland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Raised bog, arable, broadleaved woodland, improved grassland, species-poor hedge	Improved grassland, plantation, hedge, coniferous species-poor broadleaved woodland	Arable, improved grassland, species-poor hedgerow, wet modified bog, open water, coniferous plantation	Improved grassland, broadleaved woodland, marshy grassland	Improved grassland, broadleaved woodland, marshy grassland, species-poor hedge	Cumulative abundance
Grey heron+	1	1	0	1	0	0	0	0	0	2	0	0	0	0	5
Canada goose	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Mallard*	0	5	5	0	0	0	0	0	0	4	0	0	0	0	14
Sparrowhawk+	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Buzzard+	2	4	1	2	0	1	0	1	2	2	4	0	1	3	23
Pheasant	2	2	4	2	3	0	0	0	0	9	0	1	0	1	24
Moorhen	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Lapwing*	100	0	0	100	0	0	0	0	0	0	0	100	0	1	301
Snipe*	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Lesser black-backed gull*	2	0	0	2	0	0	0	0	0	1	2	4	0	0	11
Great black-backed gull	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Feral pigeon	0	1	0	0	0	0	0	0	0	2	10	0	0	0	13
Wood pigeon	27	14	10	27	22	70	24	7	17	71	82	35	52	58	516
Collared dove	2	0	0	2	0	1	3	0	1	0	0	2	0	0	11
Swift*	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Skylark*	12	14	8	12	4	4	0	0	0	17	0	0	0	1	72
Swallow*	16	10	12	16	11	16	17	13	6	2	57	12	66	26	280
House martin*	16	3	0	16	0	2	0	9	9	0	0	15	22	4	96
Meadow pipit*	3	10	6	3	2	6	0	17	0	74	0	2	0	55	178
Pied wagtail	0	3	2	0	6	2	2	4	2	3	8	3	7	2	44

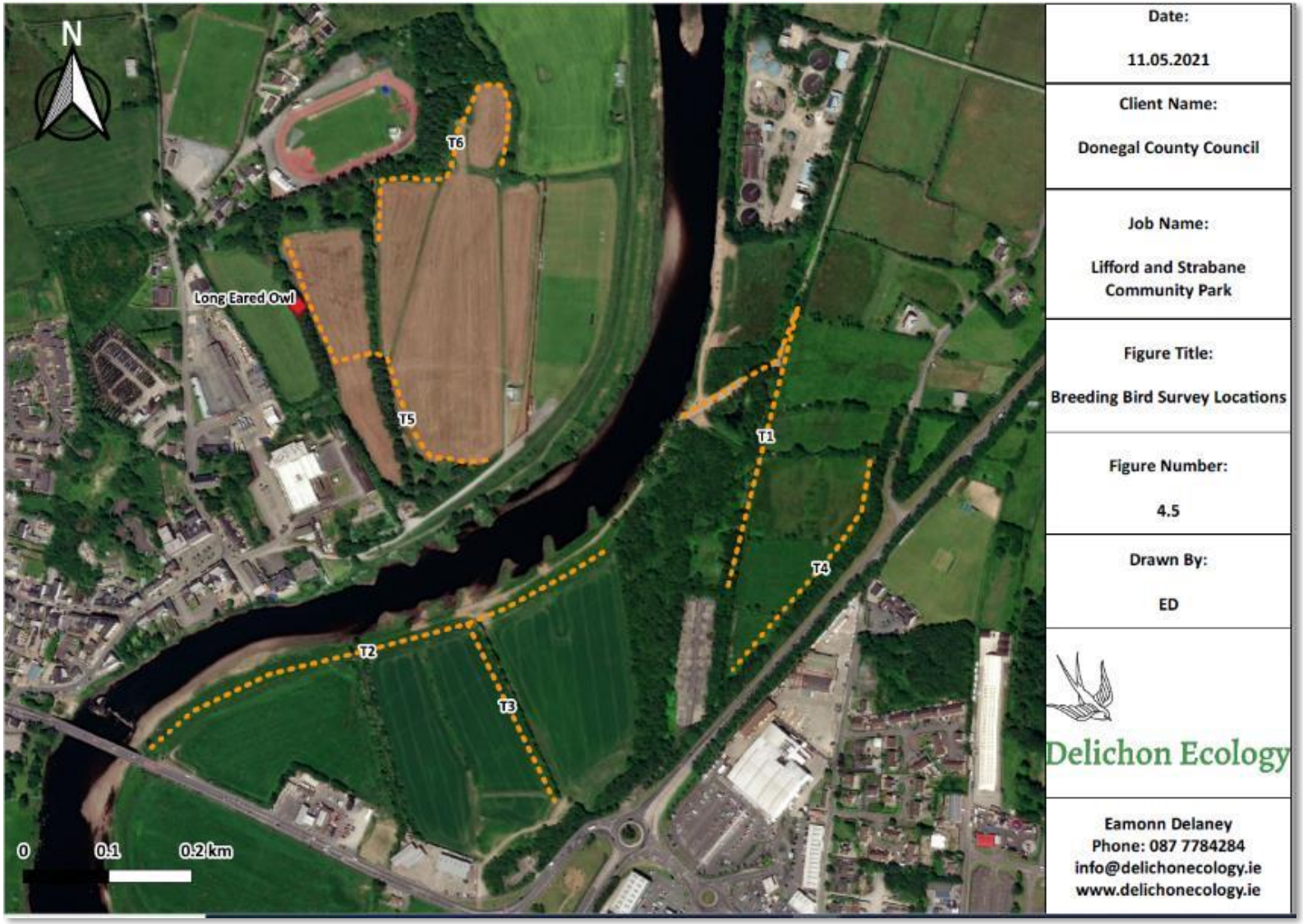
	Sites and habitat description														
	2 237558, 407178	3 236410, 406371	5 236514, 403166	6 232239, 396367	7 233499, 394508	8 233182, 392527	9 233302, 391192	11 241426, 377588	12 242931, 376899	13 242557, 375527	14 243747, 370555	15 246669, 369111	18 249802, 366396	20 267036, 353823	
Species	Arable, improved & semi-improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy grassland, scrub, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, species-poor hedge	Improved grassland, broadleaved woodland, running water, species-poor hedge,	Wet modified bog, broadleaved woodland, arable, improved grassland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Raised bog, arable, broadleaved woodland, improved grassland, species-poor hedge	Improved grassland, plantation, hedge, coniferous species-poor broadleaved woodland	Arable, improved grassland, species-poor hedgerow, wet modified bog, open water, coniferous plantation	Improved grassland, broadleaved woodland, marshy grassland	Improved grassland, broadleaved woodland, marshy grassland, species-poor hedge	Cumulative abundance
Wren	65	29	60	65	46	21	42	28	24	72	72	83	69	66	742
Dunnock*	11	6	9	11	13	15	11	3	4	11	20	18	14	14	160
Robin	22	24	23	22	15	6	18	25	23	29	43	41	50	33	374
Blackbird	14	14	18	14	22	17	11	8	12	20	31	31	14	21	247
Song thrush*	5	7	4	5	2	4	3	3	5	6	8	13	11	13	89
Mistle thrush*	0	1	0	0	1	1	1	5	4	3	3	3	0	0	22
Grasshopper warbler*	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Sedge warbler	17	10	1	17	4	7	0	0	5	0	0	7	0	0	68
Whitethroat*	0	0	0	0	0	4	0	0	1	2	3	2	5	1	18
Blackcap	0	3	2	0	2	0	0	0	3	3	2	2	1	3	21
Chiffchaff	0	0	0	0	0	0	3	1	1	1	2	5	1	11	25
Willow warbler*	18	16	21	18	17	1	6	12	7	37	19	27	18	30	247
Goldcrest*	0	0	1	0	0	0	1	7	1	4	6	6	5	10	41
Long-tailed tit	0	0	0	0	0	0	0	0	0	2	11	8	5	5	31
Coal tit	0	4	2	0	2	0	1	2	1	5	5	5	11	1	39
Blue tit	3	9	3	3	2	7	16	15	3	14	26	19	30	23	173
Great tit	4	3	4	4	3	7	19	9	6	12	32	23	13	17	156
Treecreeper	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Magpie	18	7	5	18	13	18	10	9	8	41	43	29	22	32	273
Jackdaw	101	32	26	101	14	23	80	68	48	40	100	83	221	43	980
Rook	102	46	5	102	97	30	79	120	165	93	77	282	173	93	1464
Carrion crow	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
Hooded crow	17	23	5	17	0	0	2	4	1	10	39	8	29	35	190
Raven	0	2	0	0	0	1	0	0	0	0	0	0	1	2	6

	Sites and habitat description														
	2 237558, 407178	3 236410, 406371	5 236514, 403166	6 232239, 396367	7 233499, 394508	8 233182, 392527	9 233302, 391192	11 241426, 377588	12 242931, 376899	13 242557, 375527	14 243747, 370555	15 246669, 369111	18 249802, 366396	20 267036, 353823	
Species	Arable, improved & semi-improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy grassland, scrub, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Arable, improved grassland, marshy broadleaved woodland, species-poor hedge	Arable, improved grassland, species-poor hedge	Improved grassland, broadleaved woodland, running water, species-poor hedge,	Wet modified bog, broadleaved woodland, arable, improved grassland, species-poor hedge	Arable, improved grassland, broadleaved woodland, species-poor hedge	Raised bog, arable, broadleaved woodland, improved grassland, species-poor hedge	Improved grassland, plantation, hedge, coniferous species-poor broadleaved woodland	Arable, improved grassland, species-poor hedgerow, wet modified bog, open water, coniferous plantation	Improved grassland, broadleaved woodland, marshy grassland	Improved grassland, broadleaved woodland, marshy grassland, species-poor hedge	Cumulative abundance
Starling*	38	9	16	38	6	185	25	27	93	6	410	43	124	57	1077
House sparrow*	56	22	15	56	14	21	40	8	31	4	36	25	20	3	351
Tree sparrow*	11	4	2	11	2	25	0	0	0	0	0	6	0	0	61
Chaffinch	15	28	33	15	25	19	37	24	25	63	68	58	60	71	541
Greenfinch	0	0	0	0	2	0	1	0	0	1	1	0	3	0	8
Goldfinch	3	0	0	3	0	0	3	4	8	0	0	0	12	2	35
Linnet*	3	1	2	3	0	0	0	0	0	0	0	3	0	0	12
Lesser redpoll*	1	1	6	1	0	0	0	0	0	0	0	0	0	0	9
Bullfinch*	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Yellowhammer*	0	0	0	0	16	53	2	0	0	0	2	0	0	2	75
Reed bunting*	0	5	3	0	0	1	0	0	0	0	0	5	1	1	16
Total number of species recorded	**31**	**35**	**32**	**31**	**29**	**29**	**27**	**26**	**31**	**35**	**31**	**35**	**32**	**34**	**55**

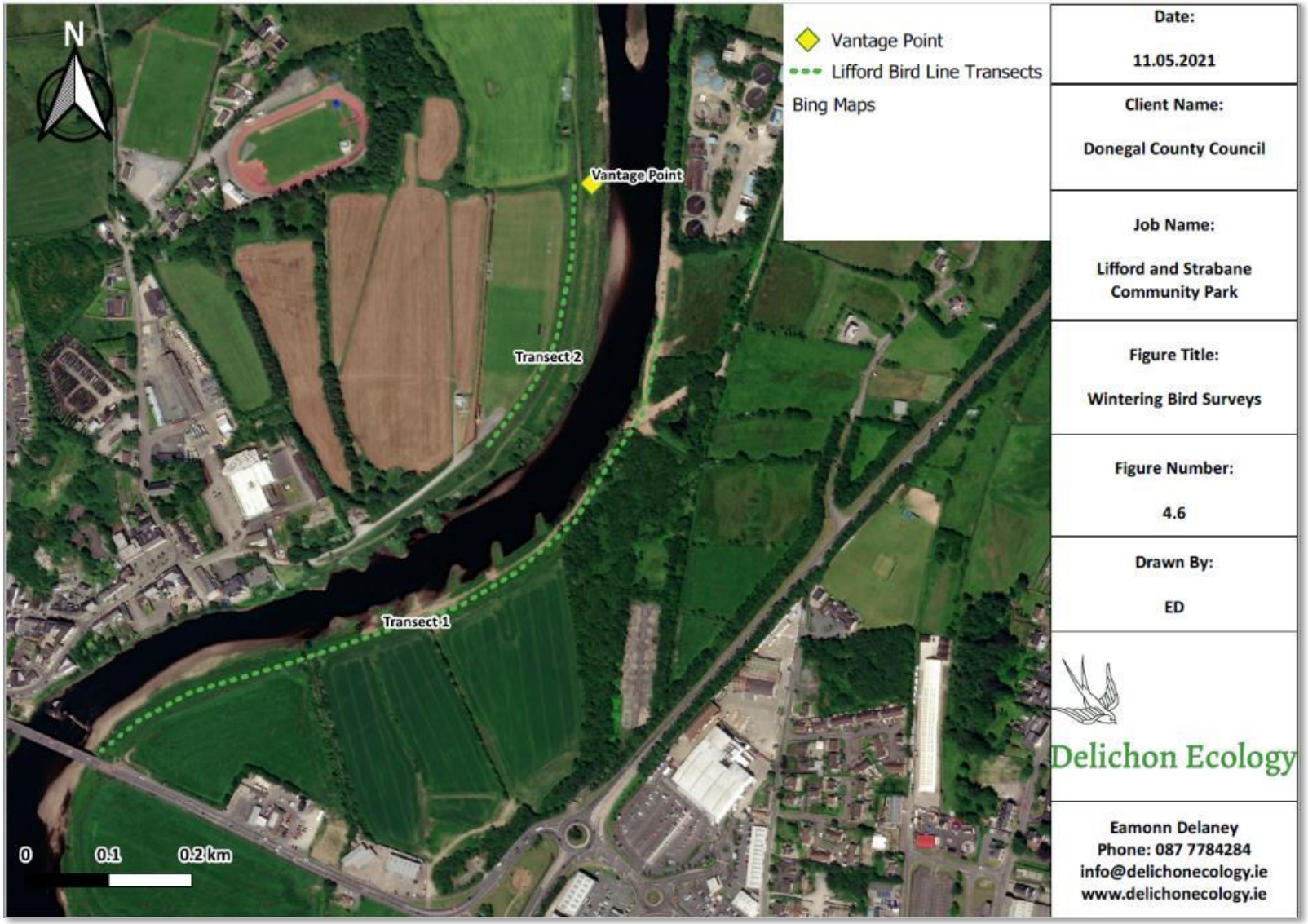
Appendix IV: 2016 A5 Breeding Bird survey Sites



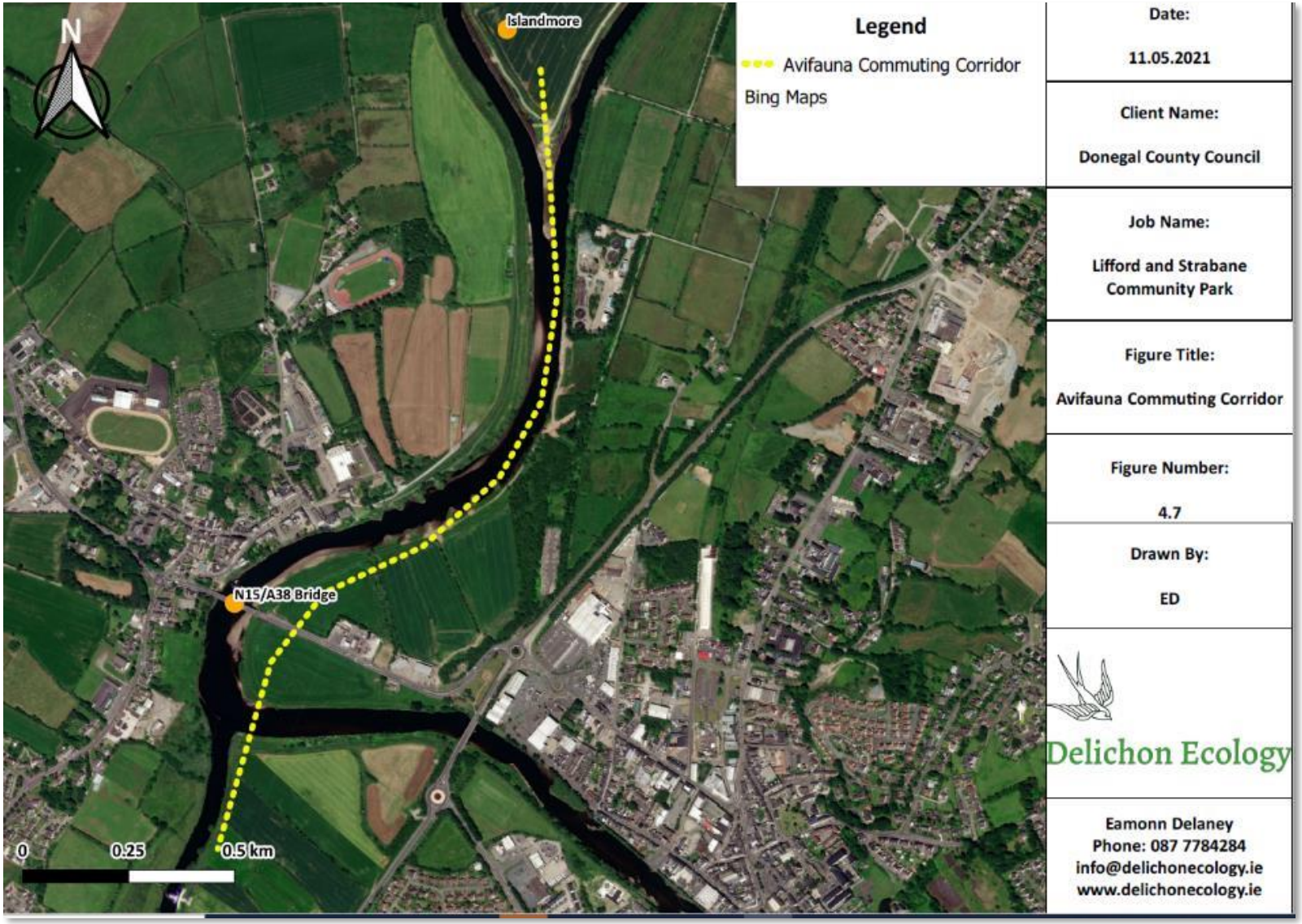
Appendix V: 2020 Delichon Breeding Bird Survey Transects

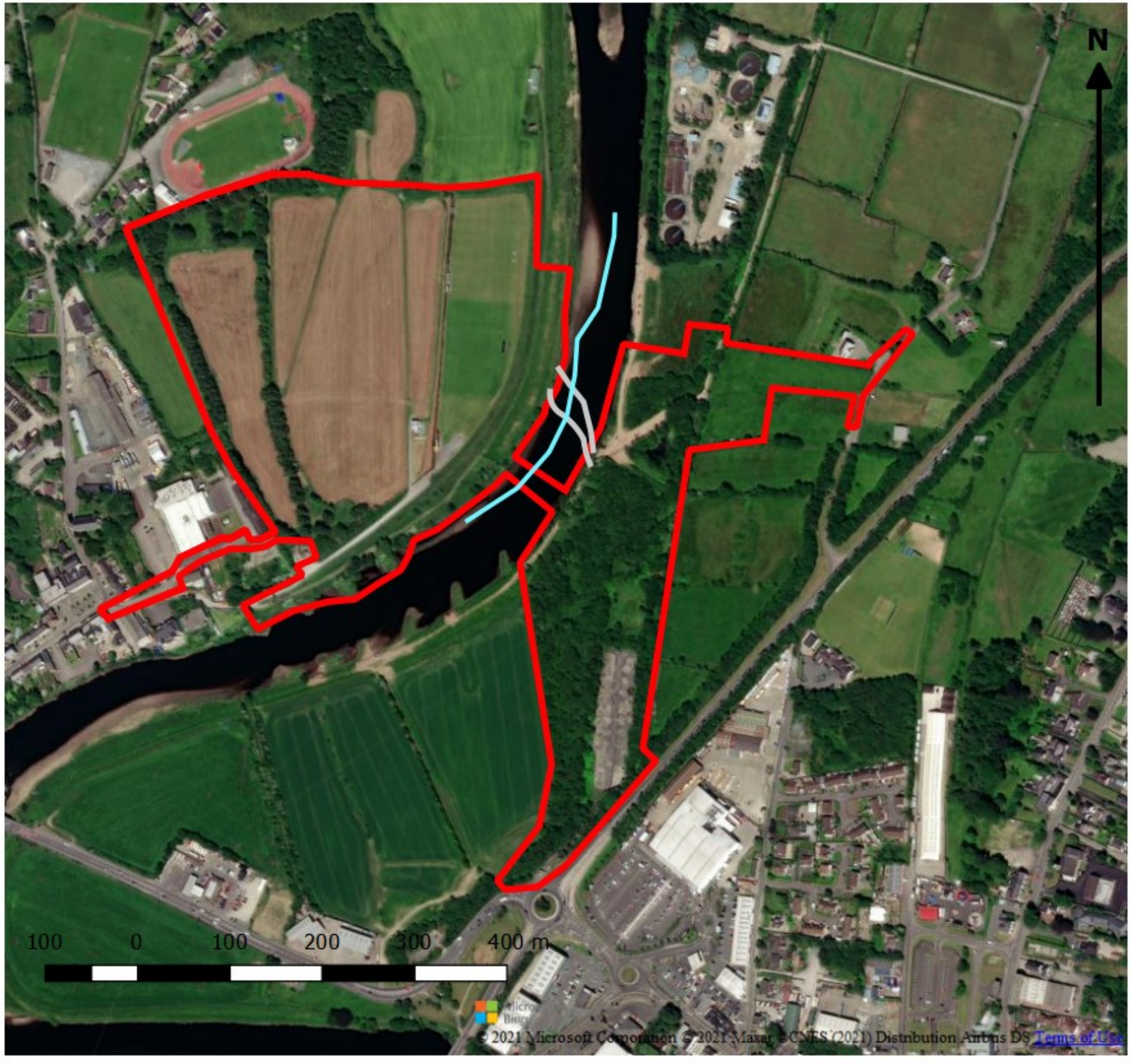


Appendix VI: 2020 Delichon Wintering Bird Survey Locations



Appendix VII: 2020 Delichon Avifauna Commuting Corridor





Legend

Vantage Point 1

VP Survey 06/07/2021

Black-Headed Gull Flight Path

Grey Heron Flight Path

Red Lined Boundary

Appendix VIII: Vantage Point 1 Survey 06/07/2021

Created by: Ryan Boyle

Reviewed by: Emily Taylor

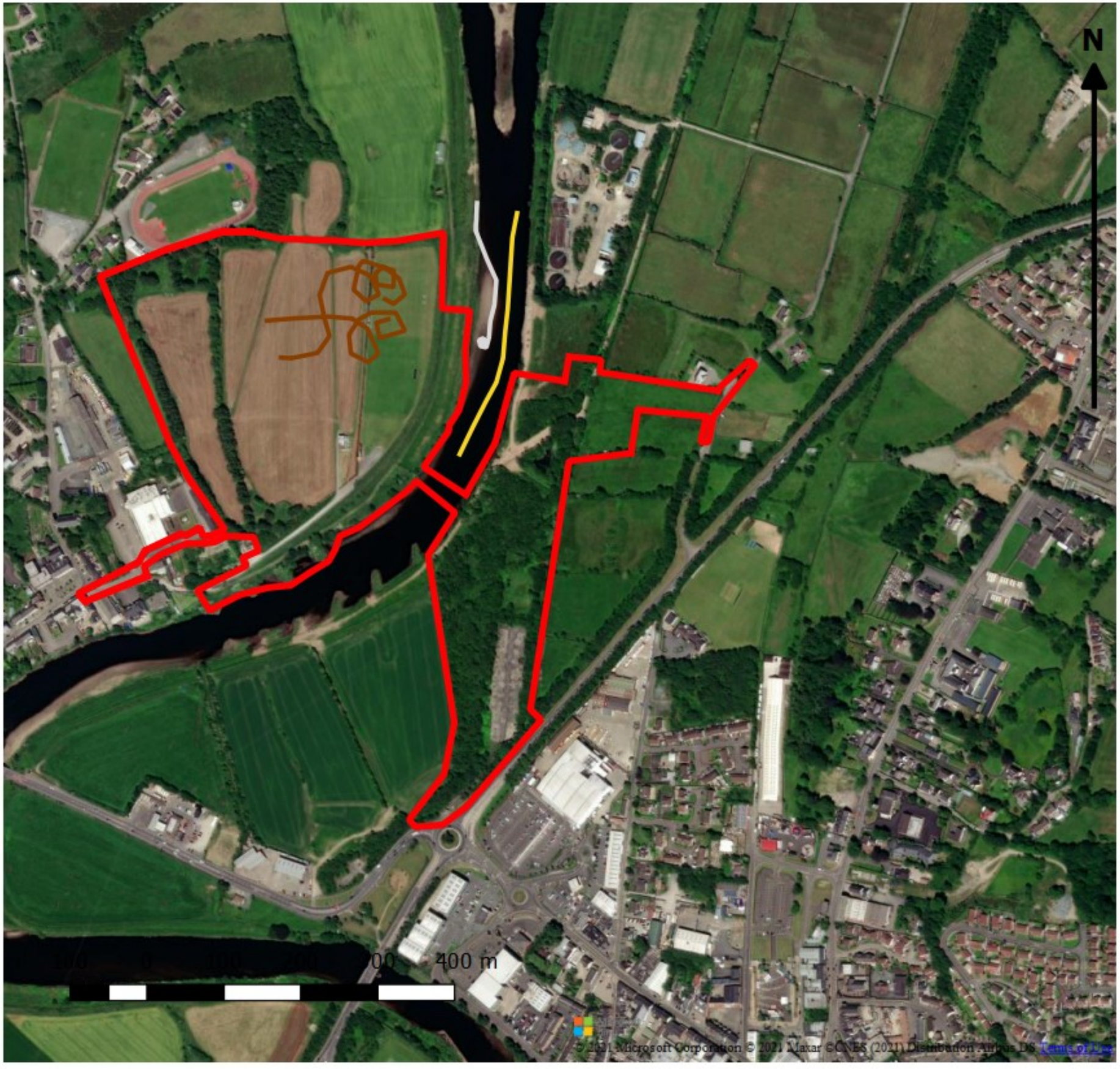
Client: McAdam Design

Scale: 1:5785 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

Vantage Point 1

VP Survey 15/07/2021

- Buzzard Flight Path
- Sand Martin Flight Path
- Grey Heron Flight Path
- Red Lined Boundary

Appendix VIIII: Vantage Point 1 Survey 15/07/2021

Created by: Ryan Boyle

Reviewed by: Emily Taylor

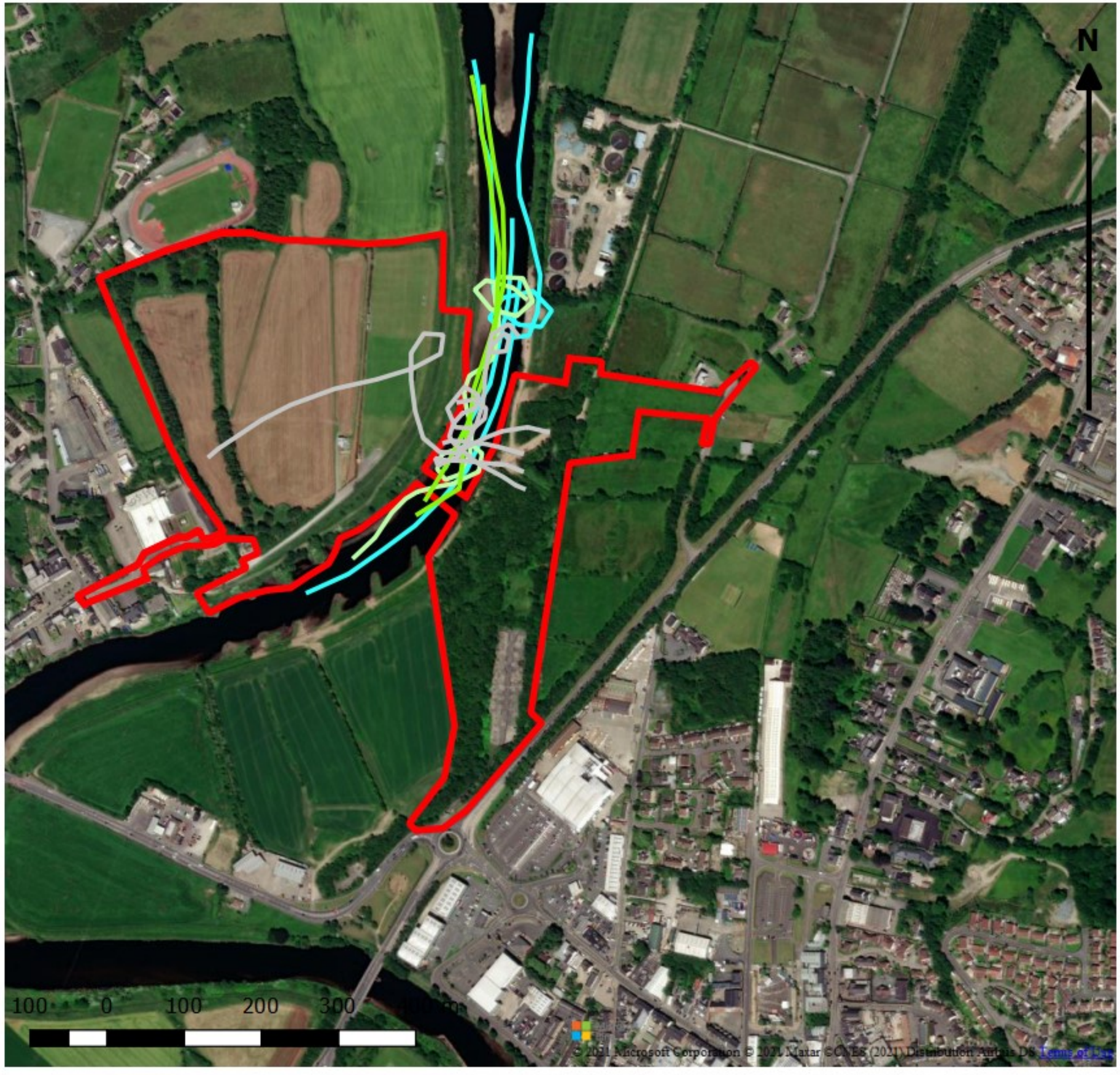
Client: McAdam Design

Scale: 1:7000 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

Vantage Point 1

VP Survey 20/07/2021

- Grey Heron Flight Path
- Herring Gull Flight Path
- Greater Black Backed Gull Flight Path
- Black-Headed Gull Flight Path
- Red Lined Boundary

Appendix X: Vantage Point 1 Survey 20/07/2021

Created by: Ryan Boyle

Reviewed by: Emily Taylor

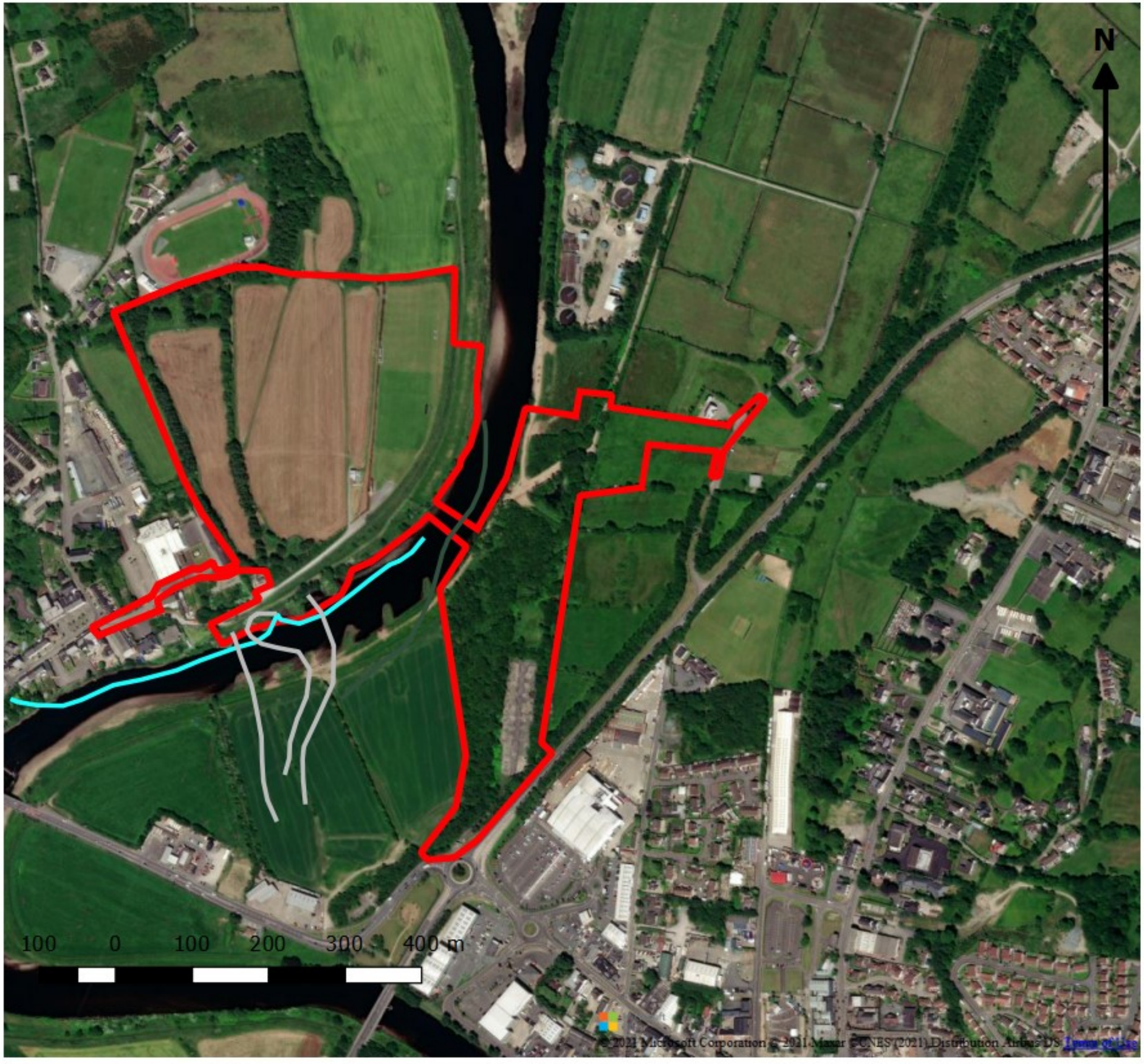
Client: McAdam Design

Scale: 1:7000 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

Vantage Point 2

VP Survey 06/07/2021

- Grey Heron Flight Path
- Black-Headed Gull Flight Path
- Tufted Duck Flight Path
- Red Lined Boundary

Appendix XI: Vantage Point 2 Survey 06/07/2021

Created by: Ryan Boyle

Reviewed by: Emily Taylor

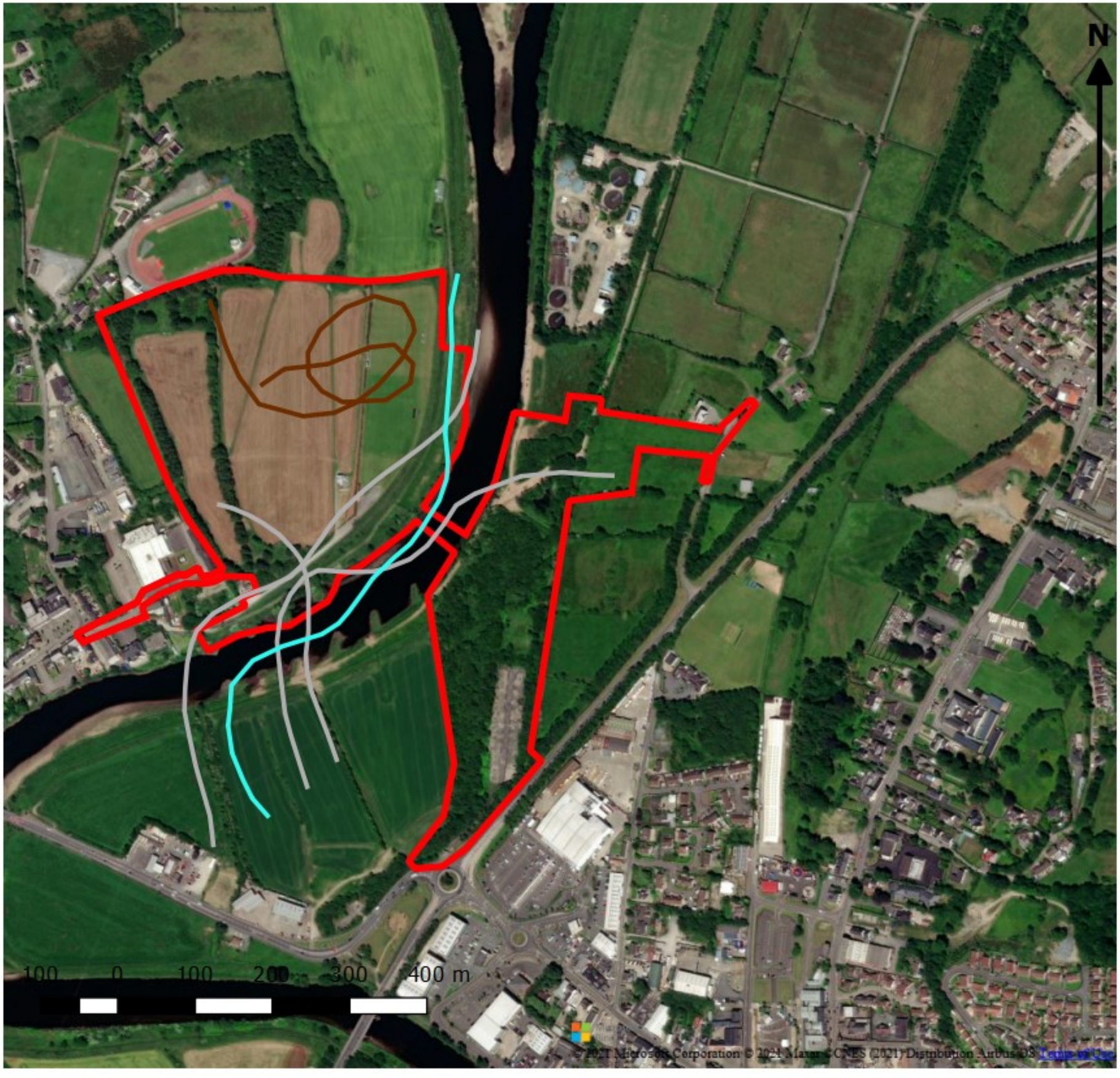
Client: McAdam Design

Scale: 1:7000 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

Vantage Point 2

VP Survey 15/07/2021

- Black-Headed Gull Flight Path
- Buzzard Flight Path
- Grey Heron Flight Path
- Red Lined Boundary

Appendix XII: Vantage Point 2 Survey 15/07/2021

Created by: Ryan Boyle

Reviewed by: Emily Taylor

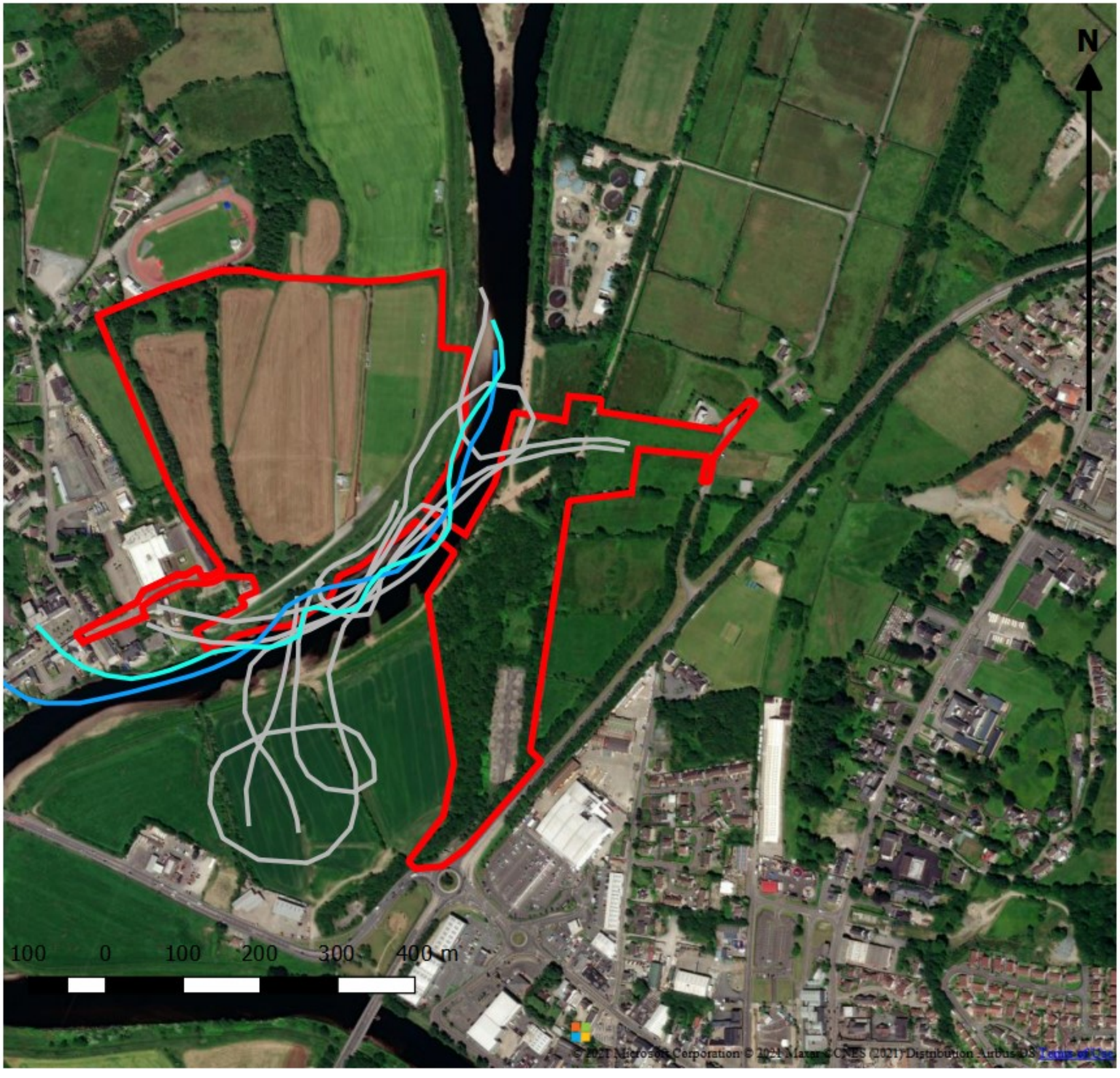
Client: McAdam Design

Scale: 1:7000 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

Vantage Point 2

VP Survey 20/07/2021

- Black-Headed Gull Flight Path
- Common Gull Flight Path
- Grey Heron Flight Path
- Red Lined Boundary

Appendix XIII: Vantage Point 2 Survey 20/07/2021

Created by: Ryan Boyle

Reviewed by: Emily Taylor

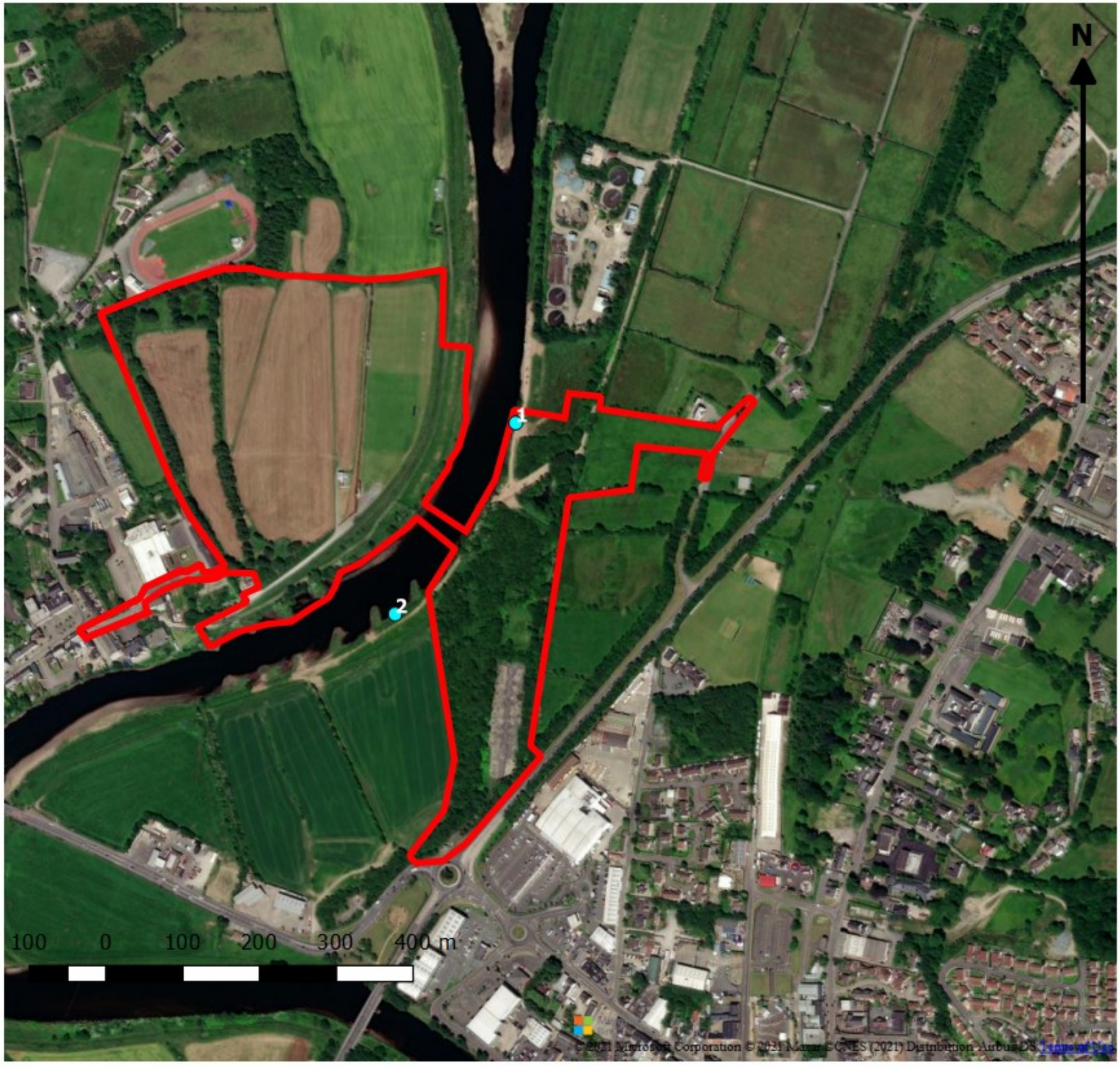
Client: McAdam Design

Scale: 1:7000 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



Legend

- Vantage Points
- Red Lined Boundary

Appendix XIV: Vantage Point Locations

Created by: Ryan Boyle

Reviewed by: Emily Taylor

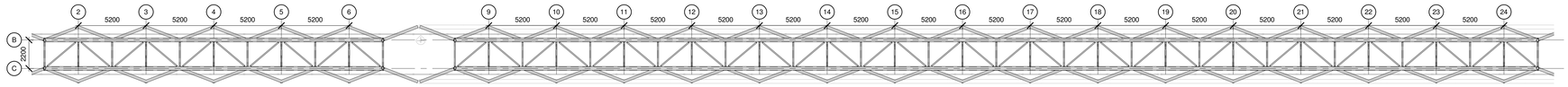
Client: McAdam Design

Scale: 1:7000 @ A3

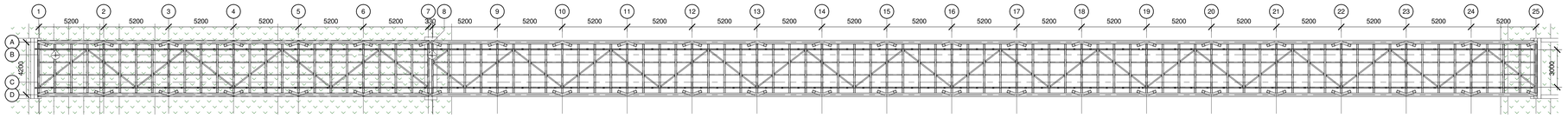
Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

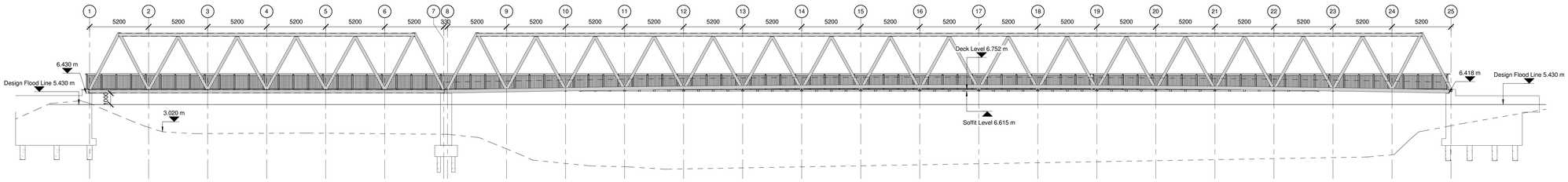
Unit 5, Forty Eight North, Duncrue Street
Belfast
BT3 9BJ
Tel: 02890747766



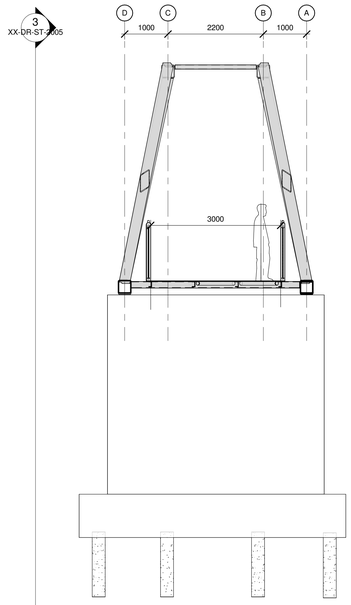
1 A-3001 **Plan View @ Top Rail**
Scale: 1 : 150



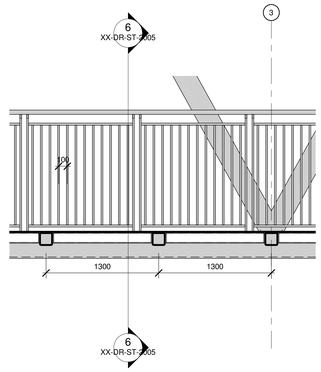
2 A-3001 **Plan View @ Deck Level**
Scale: 1 : 150



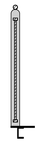
3 A-1101 **Typical Bridge Section**
Scale: 1 : 150



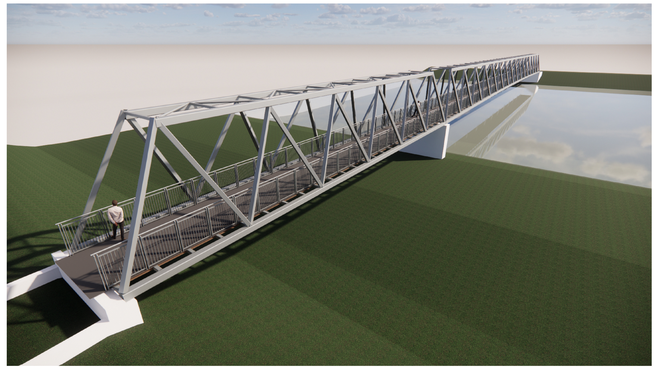
4 A-1101 **Typical Bridge Section**
Scale: 1 : 50

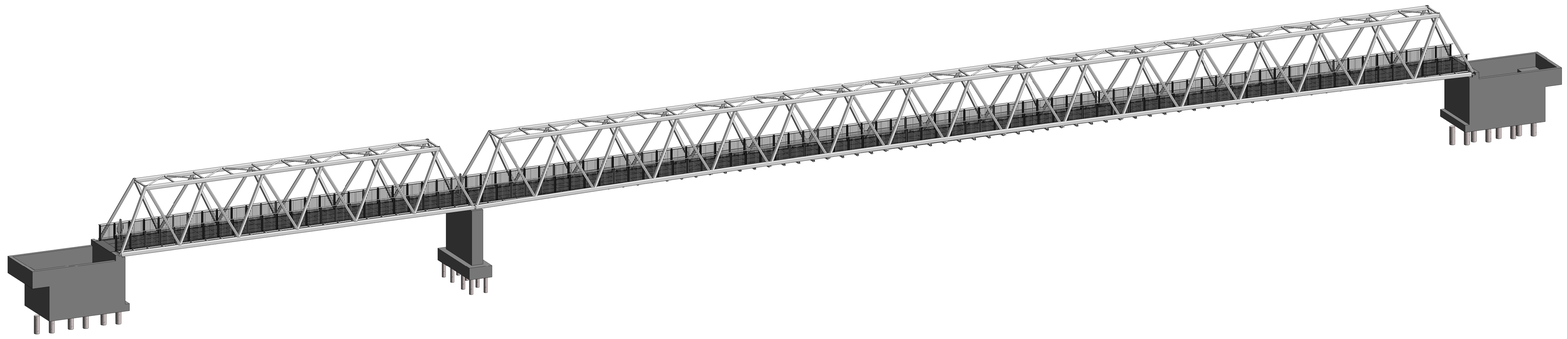


5 A-1101 **Parapet Detail**
Scale: 1 : 25



6 XX-DR-ST-2005 **Section 6**
Scale: 1 : 25





3D **3D View**
Scale:

Rev	Issue Date	Description	Issued By

Quantity Surveyors
Sammon
9-11 Corporation Square
Belfast, BT1 3AJ
T 028 7127 1323
info@sammon.eu
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belfast@paulhogarth.com
www.PaulHogarth.com

Project Manager, Civil & Structural Engineers
McAdam Design Ltd
1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ
T 028 9040 2000
admin@mcadamdesign.co.uk

Founder
Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

Project Status:
STAGE 1 - FEASIBILITY

Project
RIVERINE
COMMUNITY PARK

Drawing
Proposed Bridge Layout

Scale: @ A0
As indicated
0.5 0 0.5 1 1.5 2 2.5
SCALE 1:50
m

Drawn	Author	Checked	Checker	Approved	Approver
Date		Date		Date	

Drawing No.
RVCP-MCD-Z4-XX-DR-ST-2005
Rev.

Project Number:
E2256
Status Code & Description
S2

Plot Date: 11-Jun-21 11:36:49 AM

River Foyle

Marsh

Wetland

SUDs

Overhead Electric Lines

Park Road

Barnhill Road

Existing Water Level +(2.00)

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road influences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

N

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of the items in the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

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Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Ghoirtha Báin
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · ZO · XX · DR · LA · 102 · P00

Project Number: 1383

Status code & Description: PLANNING

LEGEND

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MISCELLANEOUS

- Riverine Community Park Boundary
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2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	15.02.21	Issued for planning	DM
P02	17.03.21	Issued for planning	DM

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

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Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: LIFFORD LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	ZO	XX	DR	LA	101	DRAFT

Project Number: 1383
Status code & Description: PLANNING

Appendix 8-12

Aquatic Survey

APPENDIX 8-12

Aquatic Survey

Riverine Community Park
Lifford-Strabane

Client: McAdam Design

Issued: July 2021

MCL Consulting Ltd
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CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

In 2021 MCL Consulting was appointed by McAdam Design Ltd to write up a collision risk desk study on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing lands on the outskirts of Strabane and Lifford.

1.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns. The site measures approximately 11.69 hectares in total, with approximately 5.73 hectares on the Lifford side and 5.96 hectares on the Strabane side.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused concrete hardstand, with the rest of the site consisting of wet woodland and soil embankments.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

Figure 1: Site location

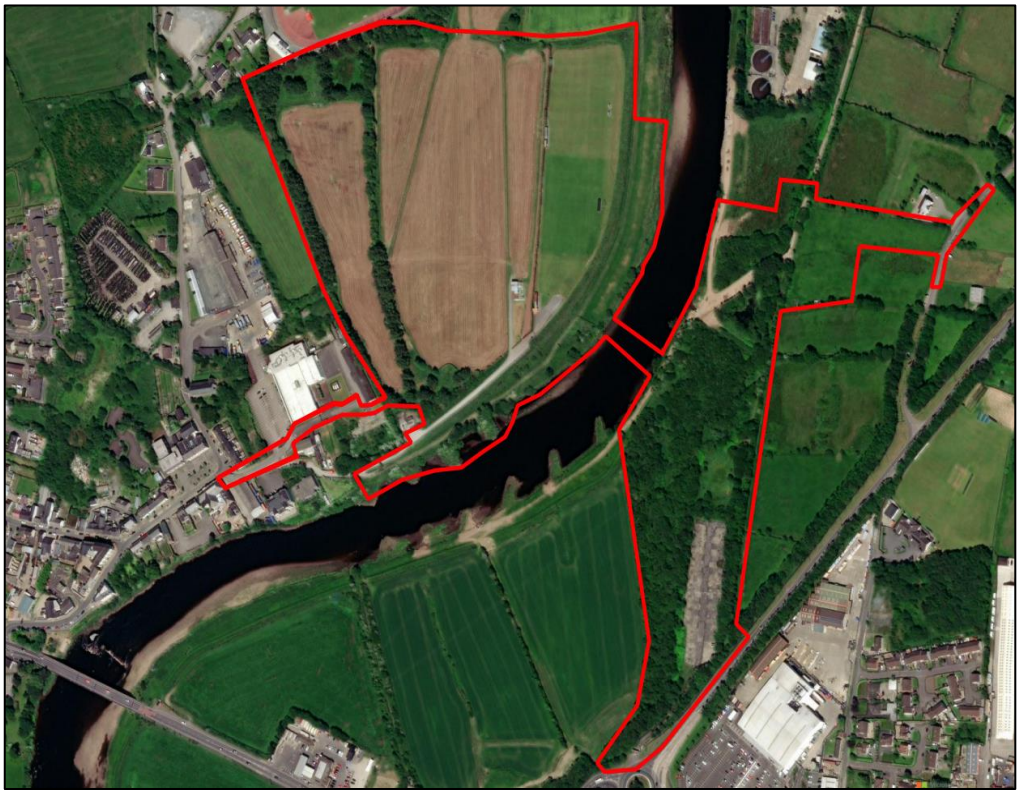

Figure 2: Site boundary

1.2 Development Proposal

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long-lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped greenspaces interlaced with a network of pathways, cycleways and retained wetlands. The development will be supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 11 hectares by utilising agricultural land and wetlands lying along either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The bridge will be a single span with the central, (in river), piering removed, with landing points on either side of the riverbanks. The Park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities on the Lifford side of the proposed development.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events on the Lifford side of the proposed development.

- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane will be made available on the Lifford side of the proposed development.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

1.3 Rationale Aquatic and Marine Desk Study

The purpose of the aquatic species desk study is to utilise historic records along with results from previous studies to determine the potential risk to the aquatic habitat within the River Foyle and its tributaries by the proposed Riverine Scheme. Impacts from a development by a running water body are often not felt at site itself but further down or upstream, becoming longer lasting and more detrimental to the greater aquatic environment and its species. The River Foyle and its Tributaries are a recognised SAC/ASSI and as such are protected by The Environment (Northern Ireland) Order 2002 to ensure sensitive sites are protected. With a proposed single span bridge structure over the water body involving the implementation of a temporary construction platform on the Lifford side of the site, it is important to determine the potential impacts and provide suitable mitigation to protect the aquatic habitat and species within. This is required to assess the likelihood of any impacts upon the local aquatic community in association with the proposed development. The aim of this report is to: -

- Baseline ecological conditions through a desk study of the site and the surrounding environs, involving designations local to the site and protected species that could be affected by this development.
- Identify what fish are using the site for breeding and commuting purposes;
- Identify the likely impacts on fish and other aquatic wildlife the development is likely to impose upon any local fish populations;
- Identify any ecological issues that could potentially hinder this application, such as the presence of protected species and invasive weeds and recommend the need for further survey; and

- Recommend suitable mitigation to reduce potential impacts and ensure ecological concerns are observed and management plans are adhered to.

1.4 Surveyors/Authors

MCL Consulting is a Northern Ireland based multidisciplinary environmental consultancy which provides expert advice for a wide range of ecological services in support of Environmental Impact Assessments (EIA).

Ryan Boyle BSc MSc – Consultant Ecologist

Fieldwork was carried out and assisted by Ryan Boyle a consultant ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queen's University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 7 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc – Graduate Ecological Consultant

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, a seasonal

volunteer for the Bat Conservation Trust and a member of the Botanical Society of Britain and Ireland. She regularly takes part in newt, lizard and bat surveys, as well as botanical identification outings.

Conor Finlay BSc MSc – Graduate Ecologist

All surveying and reporting were assisted by Conor Finlay, a graduate ecologist at MCL Consulting. He has a master's degree (MSc) in Ecological Management and Conservation Biology from Queen's University, Belfast, a bachelor's degree (BSc) in Environmental Sciences from Ulster University, Coleraine and previous employment experience working as a Park Ranger within Stormont Estate assisting contractor ecologists in biodiversity checklists within veteran woodlands and conservation wetlands. He has professional experience assisting bat activity surveys, bat analysis, ecological biodiversity checklists, breeding bird's surveys, badger surveys and desktop study experience in Amphibian conservation working within Global Amphibian Biodiversity Project (GABiP).

2.0 LEGISLATION

2.1 International (E.U)

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna)	Main legislative body for the protection and conservation of biodiversity within the European Union (EU). The Habitats Directive lists habitats and species that must be protected within Special Areas of Conservation (SAC) on Annexes I and II respectively. The Habitats Directive additionally identifies plant and animal species on Annex IV which are subject to strict protection anywhere they occur.

2.2 National (Northern Irish)

The Conservation (Nature Habitats, etc.) Regulations (Northern Ireland) 1995 and its amendments.	Under the regulations, public bodies have a duty in exercising their functions to have regard to the EC Habitats Directive.
The wildlife (Northern Ireland) order 1985 (as amended)	Primary Legislation in Northern Ireland for the protection of wild animals, birds, plants and their habitats
The wildlife and natural Environment Act (Northern Ireland) 2011	This amended the Wildlife (Northern Ireland) order 1985 by giving protection to a wider range of plants, animals and birds. This included the increase of enforcement powers and penalties for wildlife related offences. It also introduced a statutory duty on all public bodies to further the conservation of biodiversity.

The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2012.	Sets out the requirements for Environmental Impact Assessments of proposed developments in Northern Ireland.
The Environment (Northern Ireland) order 2002	Grants authority to the DOENI to declare areas of land as ASSIs.
The Nature Conservation and Amenity Lands (Northern Ireland Order 1985) (as amended)	Sets out the DOENI (Department of the Environment for Northern Ireland) rights and duties to protect and enhance sites of natural beauty or specific scientific interest in Northern Ireland.
Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003	Transposes the Water Framework Directive into the NI statute book.

Salmonid fish species have specific protection due to the importance of their supporting habitat in NI and the value they provide as a commercial resource (angling). The Foyle Fisheries Act (Northern Ireland) 1952 (as amended) and the Fisheries Act (Northern Ireland) 1966 (as amended) (the Fisheries Act) provide protection to salmonid spawning habitat and legislate against:

- disturbance of species using this habitat (young and breeding individuals),
- obstruction to migration, and the capture,
- disturbance or obstruction of spawn or fry passage,
- and capture of salmonid fish by certain methods.

The Fisheries Act also provides legislative protection against the taking, disturbing or obstructing the passage of eels.

Directive 2000/60/EC, The Water Framework Directive (WFD), implemented in Northern Ireland by The Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003, makes provision for the maintenance and improvement of the ecological status of inland surface waters.

Directive 2006/44/EC on the quality of fresh waters needing protection or improvement in order to support fish life (the Freshwater Fish Directive (consolidated)) (FFD), makes provision for the protection and improvement of the quality of running and standing waters capable of supporting (or potentially capable of supporting if pollution was reduced or eliminated) fish

species belonging to indigenous species offering natural diversity or species the presence of which is judged to be desirable for water management purposes.

Directive 2004/35/EC - The Environmental Liability Directive - is implemented in Northern Ireland by The Environmental Liability (Prevention and Remediation) Regulations (Northern Ireland) 2009. The Directive establishes a framework for environmental liability based on the "polluter pays" principle, with a view to preventing and remedying environmental damage. The Directive defines protected species as those listed in Annex I of the Directive 2009/147/EC on the conservation of wild birds (codified version) (the Birds Directive) and in Annexes II and IV of the Habitats Directive.

The Water (Northern Ireland) Order 1999 makes provisions to combat and prevent pollution affecting waterways and groundwater, and therefore has implications for all fish species.

2.3 Planning Policy

The strategic planning policy for Northern Ireland (SPPS) sets out the core principals of forward planning and development management in Northern Ireland. These must be considered by Local Planning Authorities (LPAs) in the preparation of any Local Development Plans (LPDs).

The Planning Policy Statement 2 (PPS 2), Natural Heritage, NH2	Indicates that development proposals are required to be sensitive to all protected species and sited and designed to protect them, their habitats and prevent from deterioration and destruction of their breeding sites or resting places.
International Designations - Developments are restricted where they are likely to impact upon the integrity of European or RAMSAR sites as these are afforded the highest form of statutory protection. Planning will only be granted for a development which is not likely to have a significant impact on a SPA or proposed SPA, ASSI or proposed ASSI, SAC or Ramsar. **Protected Species** - If there is evidence to suggest that a protected species is present on site or may be impacted by the development, appropriate assessments must be undertaken to determine if the species is present. Requirements of the species must be factored into planning and design of the development and any likely impacts on the species must be fully considered before determination. Planning will only be granted for development proposals that are not likely to harm a European protected species. In exceptional circumstances a development proposal which is permitted to harm these species may only be permitted where; no alternative solution is available, it is required for imperative reasons of overriding public interest, there is no detriment to the maintenance of the population of the species at a favoured conservation status and compensatory measures are agreed and fully secured. Developments are always required to be sensitive to all protected species, habitats and prevent deterioration and destruction of their breeding sites or resting places.	

National Designations- Planning will only be granted for a development proposal which is not likely to have an impact on any ASSI which contain flora, fauna or any features designated under part IV of the Environment (NI) order 2002. These also include Nature Reserves or National Nature Reserves which are usually managed by the department, council or NGO's. Marine Nature Reserves or sea areas including the inter-tidal zones are designated by the DOE under part 3 of the Marine Act (Northern Ireland 2013) and are established for the conservation of marine flora and fauna, habitats and geological features. A development may only be permitted where the benefits may outweigh the value of the site. In such cases appropriate mitigation and compensatory measures will be required. **Area of Outstanding Natural Beauty (AONB)** - AONBs are designated for high landscape quality, wildlife importance and rich cultural heritage under the Nature Conservation and Amenity lands (NI) Order 1985. Development proposals in AONBs must be sensitive to the distinctive special character of the area and quality of their landscape. **Local Designations** – These can be established by councils under the provisions of nature conservation and amenity lands (NI) order 1985. The department can also provide a wildlife refuge under the wildlife (NI) order 1985. A development proposal which could have a significant adverse impact on a site of local importance should only be permitted where the benefits of the development outweigh the value of the site. This will require appropriate mitigation and compensatory measures.	
NI Biodiversity Strategy	Outlines a cross-sector approach to conserving biodiversity in Northern Ireland and provides the platform from which Species Action Plans (SAPs) and Habitat Action Plans (HAP's) are compiled for the most ecologically valuable and threatened flora and fauna.
Strategic Planning Policy Statement (SPPS), September 2015.	Eventually will combine all separate planning policy statements (PPSs) into one

2.4 Target Species

2.4.1 Marine

Basking Shark – *Cetorhinus maximus*

The basking shark is the largest fish found in Northern Ireland waters. They are benign feeders, foraging on plankton which they filter feed from the surrounding water by holding their mouths agape as they swim. They are seasonal visitors to Irish waters mostly seen between April and September. Basking sharks are listed as Vulnerable on the IUCN Red List of threatened species 2004, on Appendix 11 of CITES, Appendix 1 and 11 of the Bonn Convention on Migratory Species, and Schedule 5 of the UK Wildlife and Countryside Act 1981. They are also a UK action plan species and are protected under the Common Fisheries Policy (CFP). In 2007 basking sharks became a Prohibited Species in the EU, meaning EU commercial fishing vessels are prohibited from targeting, retaining, trans-shipping or landing them. This also applies to third country vessels in EU waters.

Due to their migratory nature and far-reaching commuting routes basking sharks are also protected under the following global legislation:

- International Union for Conservation of Nature (IUCN) - Basking sharks are listed as Endangered on the IUCN Red List of Threatened Species (on the Global, European, and Mediterranean assessments). They face a very high risk of extinction in the wild, so immediate monitoring and management is needed.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) - The basking shark is listed under Appendix II of the CITES. International trade is controlled to ensure it doesn't threaten the survival of the species.
- Convention on Migratory Species (CMS) - Basking sharks are listed in Appendices I and II of the CMS. Basking sharks know no borders, so it's vital they're protected in all waters. Cooperation across countries is vital.
- United Nations Convention on the Law of the Sea (UNCLOS) - The basking shark is listed under Annex I – Highly Migratory Species – of the UNCLOS. Article 64 of UNCLOS directs signatory States to cooperate to ensure the conservation of this species, in addition to encouraging optimal utilisation if they're caught.

Figure 3. Basking shark

Harbour Porpoise – *Phocoena phocoena*

The harbour porpoise is the smallest and most common cetacean found in the coastal waters around Ireland with a primary stronghold along the North Antrim Coast, however a decrease in their population has been observed over the last 50 years. Adults usually reach around 1.5-1.9m in length and are often black/grey in colouration with a pale underbelly. Harbour porpoise are residents to Irish waters and can be seen all year round often seen near small harbours and ports. They are currently protected under:

- Schedule 5 of the Wildlife (Northern Ireland) Order 1985,
- Annex A of EU Council Regulation 338/97 and are therefore treated by the EU as if they are on CITES, Appendix I, thus prohibiting their commercial trade,
- Appendix II of CITES,
- Appendix II of the Convention on the Conservation of Migratory Species (The Bonn Convention),
- The Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS),
- Appendix II of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention),
- IUCN 2002 Red List, under which they are classified as “Vulnerable”,
- Annex II and IV (Animal and Plant Species of Community Interest in Need of Strict Protection) of the EC Habitats Directive,
- The Convention for the Protection of the marine Environment of the North-East Atlantic (OSPAR),
- Council Regulation (EC) No. 812/2004,
- Wildlife Act (1976),
- Wildlife (Amendment) Act (2000),
- Whale Fisheries Act 1937.

Figure 4. Harbour porpoise

Harbour (Common) Seal – *Phoca vitulina*

The harbour seal, also known as the common seal, is found along Ireland's coastline with a stronghold along the County Down coast and Strangford Lough, which hosts the largest breeding colony in Ireland, where it can regularly be seen hauled out onto sandbanks and rocky shorelines. They are mostly seen from July to September at haul out sites during the breeding season but are found in Irish waters year-round. Whilst primarily a marine species, it is not uncommon for these seals to venture future upstream of freshwater systems such as the River Foyle and its tributaries in the search for food. They are protected under:

- Habitats Directive (92/43/EEC), Annex II, Annex V,
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) Appendix III,
- Wildlife Act (1976),
- Wildlife (Amendment) Act (2000),
- Wildlife (N.I.) Order of 1985.

Figure 5. Harbour seal

2.4.2 Molluscs

Freshwater Pearl Mussel – *Margaritifera margaritifera*

The freshwater pearl mussel is a large and solid bivalve shell living in fast-flowing, clean rivers in Ireland. It gains its name due to its ability to produce pearls from the mother-of-pearl nacre secreted on the inside of its valves, much like oysters. Until recently this species was included within semi-commercial fisheries for pearls in areas where it was common, however, a severe decline over most of its range has placed it on the conservation agenda, halting commercial exploitation. These molluscs have a close relationship with the lifecycle of abundant trout and salmon populations as their free-swimming larvae attach to the gills of young salmonid fish during the breeding season. These remain attached until the following spring, when the young mussels hatch from the encysted larvae and fall to the bottom of the river. They are:

- Listed as Endangered on the IUCN Red List and are one of the 365 most endangered species in the world,
- Protected under the Wildlife Act and Annex II and V of the EU Habitats Directive.

Figure 6. Freshwater pearl mussel

2.4.3 Fish

Atlantic Salmon – *Salmo salar*

Atlantic salmon are renowned for their vast migration routes across the north Atlantic. They make their way from marine ocean habitat up freshwater river systems to reach their ancestral spawning grounds, before returning to the same rivers they were spawned in every year. This leads to genetically distinct populations between each river system. These fish are found in larger, unpolluted river systems in Ireland, spawning in turbulent, fast flowing and well oxygenated upstream river tributaries. Atlantic salmon are best seen in autumn as they migrate upstream. This species is currently found in all larger, non-polluted river systems without barriers for upstream migration from the sea. Currently the River Foyle supports one of the largest populations of Atlantic salmon during the salmon run to their spawning grounds. The Atlantic salmon is protected under:

- Annexes IIa and Va of the EC Habitat and Species Directive and in Appendix III of the Bern Convention,
- Habitats Directive [92/42/EEC] Annex II, Annex V,
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) Appendix III (in freshwater only),
- Fisheries Acts 1959 to 2006,
- The Convention for the Protection of the marine Environment of the North-East Atlantic (OSPAR),

- Fisheries Acts 1959 to 2006,
- Fisheries Act (Northern Ireland) 1966,
- Foyle Fisheries Act (NI) 1952,
- Foyle and Carlingford Fisheries Act 2007.

Figure 7. Atlantic salmon

<u>European Eel – *Anguilla anguilla*</u>

This is the only eel found in the freshwater systems of Ireland and is still of commercial importance to Northern Ireland despite its international decline. These eels are found in most lowland rivers and lakes preferring slow flowing or still water. They are primarily nocturnal and best observed in commercial fisheries or when migrating between fresh and salt water. Currently this species is listed in the Ireland Red list (King et al 2009) as "Critically endangered". This listing reflects its global IUCN status. The eel management plans drawn up under the EU eel regulation were incorporated into Northern Ireland law with the enactment of the Eel Fishing Regulations (Northern Ireland) 2010. (Statutory Rules of Northern Ireland 2010 no 166). Under these regulations, which came into operation on 1st June 2010, all commercial eel fishing is prohibited in Northern Ireland except for Lough Neagh and the existing eel weirs on the Lower River Bann. Anglers may no longer retain eels caught on rod and line anywhere in Northern Ireland. They are also listed under:

- Habitats Directive [92/42/EEC] Annex II, Annex V,
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) Appendix III (in freshwater only),

- Fisheries Acts 1959 to 2006,
- Fisheries Acts 1959 to 2006,
- Fisheries Act (Northern Ireland) 1966,
- Foyle Fisheries Act (NI) 1952,
- Foyle and Carlingford Fisheries Act 2007.

Fishing for trap-and transport of European eel past the River Erne hydro-electric stations is permitted under section 14 of the NI fisheries act (1966), as can be any fishery activity for the purposes of research or monitoring of stocks. Legal provisions exist in the 1966 fisheries act to enforce fitting of eel passes to weirs or other man-made barriers built after 1842. For weirs built before that date, construction of a pass can be legally enforced where the weir is modified, repaired or water abstracted for a changed use (e.g. hydropower generation). CITES Annex 2 listing of the eel in 2009 requires any movement of glass eel to aquaculture outside Europe to be accompanied by a "non-detriment" finding. Trade within Europe is regulated by the 2009 EU eel regulations.

Figure 8. European eel

Brown Trout – *Salmo trutta*

Brown trout are a salmonid fish species of varying appearances due to a highly diverse genetic lineage since the last ice age. Their highly diverse genetics and appearance have yielded

variations in life histories including river-sea migratory forms known as sea trout. Brown trout are found in all non-polluted rivers and lakes, and is best seen in rivers with slow flowing, clear water. Juveniles are often difficult to distinguish from juvenile Atlantic salmon. The presence of brown trout in a water system is often considered a good indicator of a healthy aquatic environment. Current protection of this species involves prohibition of angling during the spawning season and regulations regarding methods of catching and numbers of fish that can be taken in some waters. These regulations are enforced by the Fisheries Conservancy Board for Northern Ireland and by the Loughs Agency in the Foyle and Carlingford systems, together with bailiffs from local angling clubs. Regulations are primarily concerned with maintaining fisheries and are deficient in terms of conservation needs.

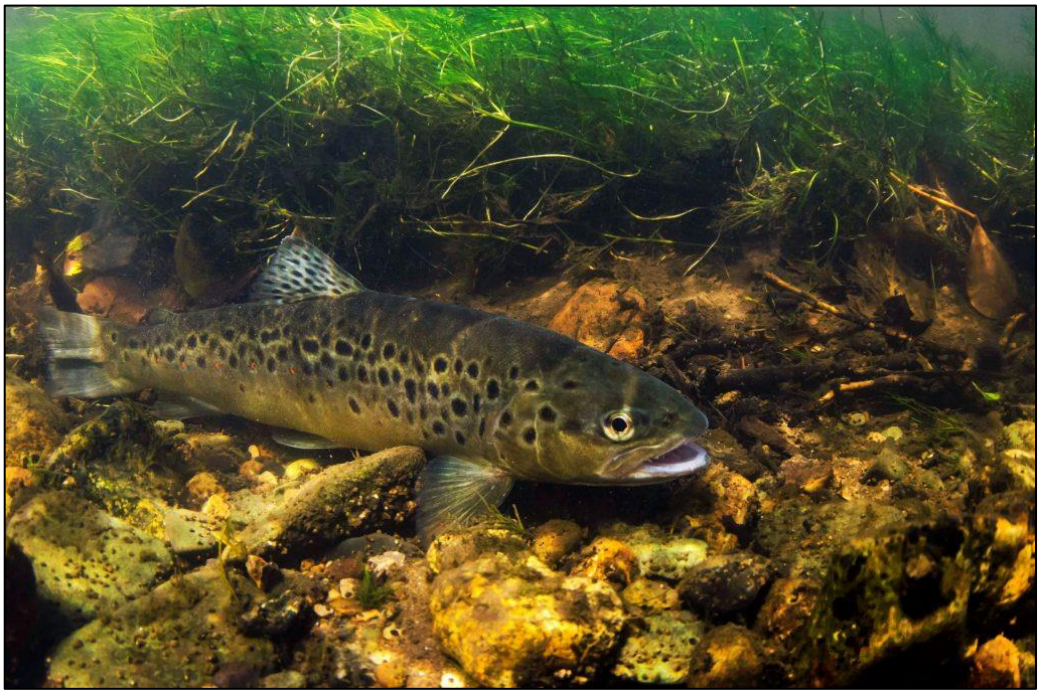

Figure 9. Brown trout

Smelt – *Osmerus eperlanus*

Smelt are distantly related to the salmon family and are considered an important species in the study of the salmon family evolution. They are a small shoaling fish found in relatively shallow coastal and estuarine waters. Smelt have been recorded within Lough Foyle and the River Foyle where they spawn and are considered an important part of the diet for much of the area's wildlife. The best time to see this species is from February to March in the lower reaches of rivers and estuaries during the spawning season. More detailed study of this species distribution is required. Internationally, smelt are considered "Least Concern"

according to the IUCN Red List, however, due to the poor distribution records and lack of detailed study they are considered rare in Northern Ireland and are classified as “Vulnerable” in the Irish Red Data Book. They are also a UK Biodiversity Action Plan Priority Species.

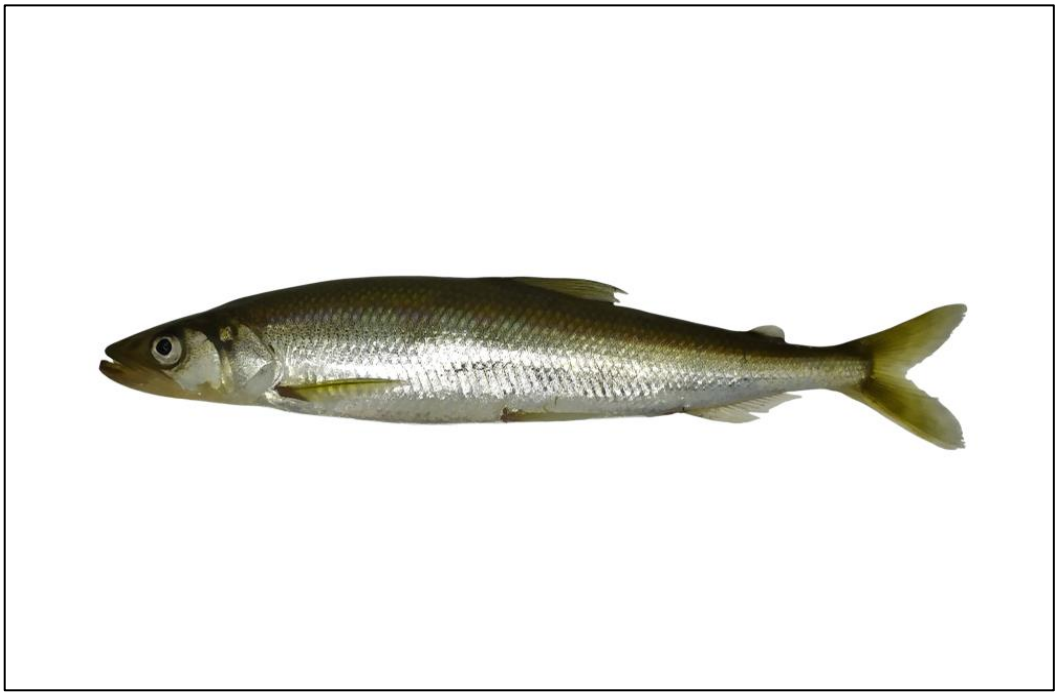

Figure 10. Smelt

Twaite Shad – *Fallax fallax*

The twaite shad is a member of the herring family found from coastal waters around Iceland and Norway to the Mediterranean. Shad normally live in estuarine and coastal waters but will venture into the lower reaches of rivers to spawn. As with smelt, very little is known about their distribution, apart from in the River Barrow, where there is a well-established population. It is unclear if they are breeding here or are derived from other populations. Shad are anadromous, migrating from sea to the lower reaches of freshwater or brackish reaches of river systems for spawning in May and June. While the distribution is not fully known within Northern Ireland shad are listed under:

- EU Habitats Directive [92/43/EEC] Annex II and V,
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) Appendix III,
- Fisheries Acts 1959 to 2006,
- Fisheries Act (Northern Ireland) 1966,

- Foyle Fisheries Act (NI) 1952,
- Foyle and Carlingford Fisheries Act 2007.

Figure 11. Twaite Shad

River Lamprey – *Lampetra fluviatilis*

Lampreys are amongst the most primitive of vertebrates. They are classified as 'agnathans' or jawless fish, distinguished from true fish by their lack of jaws and pelvic fins. They have a skeleton formed of cartilage and a suckered mouth rather than jaws. They are predominantly anadromous, breeding in freshwater as adults with offspring migrating to sea after a freshwater phase prior to maturation. In the freshwater phase high quality waters are most beneficial for this species. Adults need clean gravel beds for spawning, and the ammocoetes require silty sands in high quality freshwater. They are listed under:

- Habitats Directive [92/42/EEC] Annex II, Annex V,
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) Appendix III,
- Fisheries Acts 1959 to 2006,
- Fisheries Act (Northern Ireland) 1966,
- Foyle Fisheries Act (NI) 1952,
- Foyle and Carlingford Fisheries Act 2007.

Figure 12. River lamprey

Asian Clam – *Corbicula fluminea*

A fresh water bivalve species which grows up to 25mm in length with larger forms growing to 50-65mm. it is a yellowish brown to black shell with concentric, evenly spaced ridges on the shell surface. This species is hermaphroditic with a high level of rapid reproduction and is considered highly invasive. Freshwater lakes and streams of all sizes with mud, silt, sand and gravel benthic substrate (The benthic zone is the ecological region at the lowest level of a body of water such as an ocean, lake, or stream, including the sediment surface and some sub-surface layers). C. fluminea is present in both Ireland and Northern Ireland. It is now known to be present in the River Foyle, the River Shannon, Keeldra Lough (Leitrim), Lough Derg, The River Barrow and the River Nore.

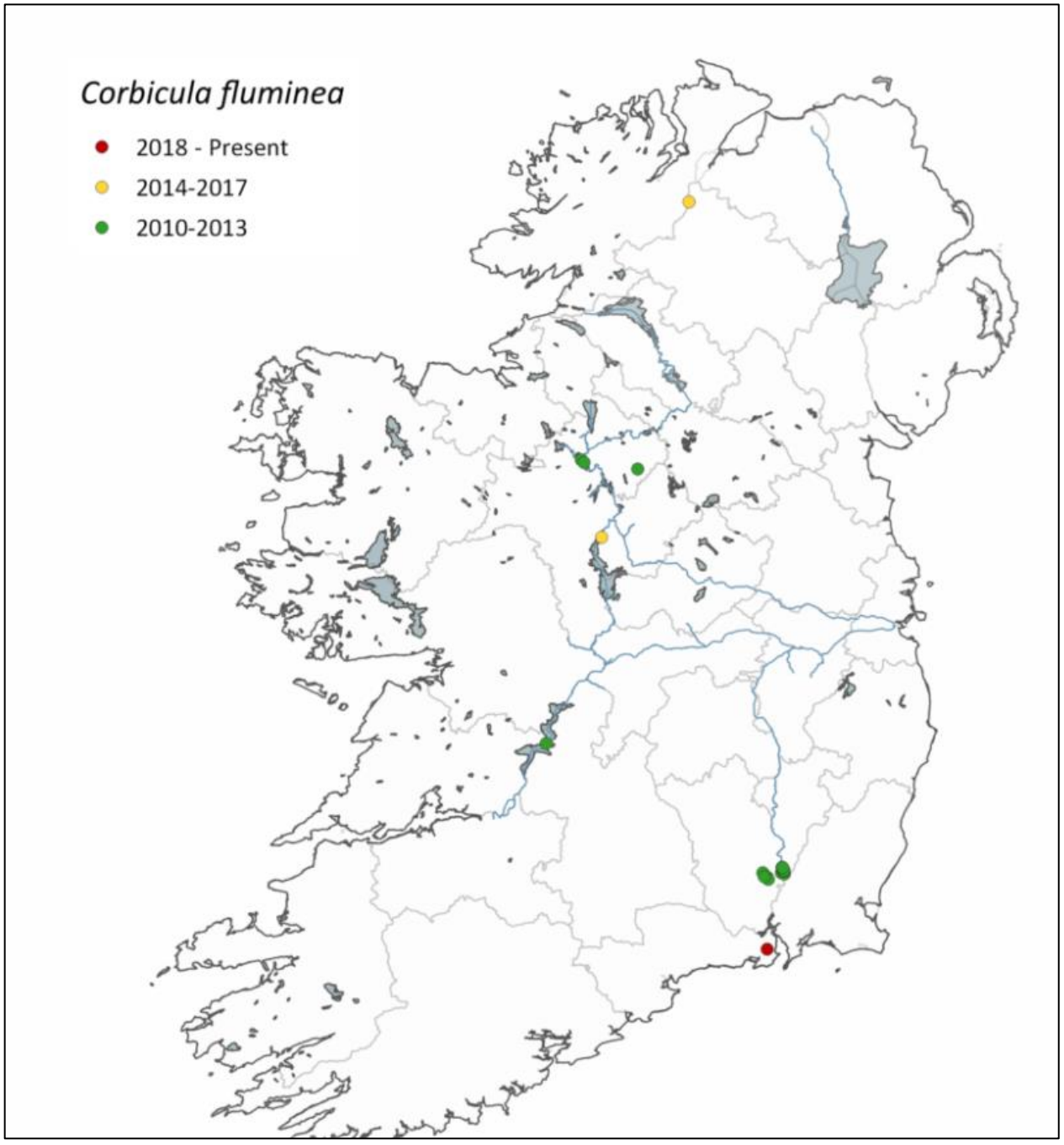

Figure 13. Map Showing Distribution of recorded locations of Asian Clam

Figure 14. Asian Clam.

3.0 METHODOLOGY

This assessment comprised of a combination of desk study and field investigations, and used the following scope of works as a basis for the assessment:

- Desk study and review of potential development proposals;
- Site visit and walk over;
- Recording of geo-referenced target notes and production of GIS databases;
- Review of land designation GIS datasets (to include NIEA designations, Natura 2000 network sites etc.);
- Assessment on the potential impacts that the proposed development may have on local ecological environs and designated sites; and
- Recommendations for further ecological assessments, as required.

3.1 Desk Study

A desk study was undertaken to determine if any statutory or non-statutory designations, ancient woodland or priority species were within proximity to the site. This involved using digital GIS datasets as well as contacting local recording groups for relevant information.

The data sources for the desk study were:

- Department of Agriculture, Environment and Rural Affairs (DAERA),
- NIEA Natural Environment Map Viewer,
- NI Planning portal,
- Relevant NGO Websites,
- Centre for Environmental Data and Recording (CEDaR) requested 20th July 2020,
- NBN Atlas,
- Lough's Agency.

3.2 Field Study

Due to a tight time frame to achieve planning submission deadlines, no field studies were able to be carried out regarding fish surveys at the proposed Riverine Scheme site. However, fish activity was noted through observation during vantage point surveys carried out for the collision risk assessment.

Several shoals of minnows (*Phoxinus phoxinus*) were observed near the surface close to the banks on the Strabane side of the site shoaling amongst the rocks and crevices located along the banks and vegetation.

There were 45 observed incidents of salmon jumping to catch invertebrates, flying across or resting on the surface of the water. The head of a dead salmon was also located on one of the angling piers, remains from an otter, (see Figure. 25).

Table 1: Summary of the survey dates and weather from each visit

Survey ID	Date	Start Time	Survey Duration	Weather
1	06/07/2021	12:30	3hrs	12°C, Beaufort 2, 8/8, 25% precipitation
2	15/07/2021	12:30	3hrs	19°C, Beaufort 3, 5/8, 25% precipitation
3	20/07/2021	12:00	3hrs	21°C, Beaufort 4, 0/8, 0% precipitation

4.0 RESULTS

4.1 Desk study

4.1.1 Natura 2000 & Land Designations

Following a search of the NIEA GIS databases for protected and designated areas, the application site is not located fully within any sites that are nationally or internationally designated for their nature conservation importance. However, the proposed development site does sit located on the banks of the River Foyle and Tributaries SAC and ASSI. In addition, 16 sites are located within approx. 15km of the site. The application area is not within any areas designated as local wildlife sites, however, there are 7 within roughly 5km (*see* Table 3 & 4).

Table 2: International/National Designations within 15km of the site

Designation	Site Name	Setback Distance
Special Areas of Conservation	River Finn 002301	The proposed development is partially located within the River Finn SAC site on the western Lifford side
Special Areas of Conservation	River Foyle and Tributaries UK0030320	The proposed development is located partially within the River Foyle and Tributaries SAC site with the River Foyle itself going through the centre of the proposed site separating Strabane and Lifford
Special Areas of Conservation	Owenkillew River UK0030233	Owenkillew River SAC site is located at a setback distance of 13.9km southeast of the proposed development site
Area of Special Scientific Interest	River Foyle and Tributaries ASSI229	The proposed development is located partially within the River Foyle and Tributaries SAC site with the River Foyle itself going through the centre of the proposed site separating Strabane and Lifford
Area of Special Scientific Interest	Owenkillew River ASSI213	13.6km southeast of the proposed development site
Natural Heritage Area	River Foyle Monagavlin to Carrigans 002067	7.6km north of the proposed development site

Table 3: Local Wildlife sites within 15km of the site.

Designation	Site Name	Setback Distance	Summary of Features
Local Wildlife Site	Glenmornan River	4.9km northeast of proposed development site	Local wildlife site

River Finn

002301

Distance: Proposed development site is partially located within the River Finn site on the western Lifford side.

Summary:

Within Northern Ireland the River Finn forms part of the River Foyle Tributaries and as such shares similar description features due to its hydrological link with the River Foyle SAC and ASSI.

River Foyle and Tributaries

SAC: UK0030320

ASSI: ASSI229

Distance: The proposed development is located partially within the River Foyle and Tributaries SAC site with the River Foyle itself going through the centre of the proposed site separating Strabane and Lifford.

Summary:

The River Foyle and Tributaries ASSI/SAC includes that part of the River Finn which lies within Northern Ireland, the River Mourne and its tributary the River Strule (up to its confluence with the Owenkillew River) and the River Derg, along with two of its sub-tributaries, the Mourne Beg River and the Glendergan River. In total, the area encompasses 120km of watercourse and is notable for the physical diversity and naturalness of the banks and channels, especially in the upper reaches, and the richness and naturalness of its plant and animal communities, in particular the population of Atlantic Salmon (*Salmo salar*), which is of international importance. The area is also important as a river habitat. In their upper catchments, the tributaries are all fast-flowing spate rivers with dynamic flow regimes, characterised by sequences of rapid, riffle and run. Although the banks have been modified, the channel is natural and composed of large cobble substrate with scattered boulders and

sandy marginal deposits, while cobble side and point bars and discrete sand deposits are common features.

At the upper end of the River Derg and its two tributaries, the aquatic flora reflects the highly acidic character of the water, with mosses such as *Brachythecium plumosum*, *Fontinalis squamosa* and *Racomitrium* spp. and liverworts including *Marchantia polymorpha* on stabilised boulders and rocks. Downstream, beds of Stream Water-crowfoot (*Ranunculus penicillatus* ssp. *Penicillatus*) occur where the flow is less dynamic, particularly in the lower sections of the River Derg and Mourne Beg River and along the Strule and Mourne Rivers down to Strabane. Mosses and liverworts still remain a significant component of the aquatic plant community, while other higher plants such as Pondweeds (*Potamogeton* spp.), Starworts (*Callitriche* spp). and Water-milfoils (*Myriophyllum* spp.) intermix with the Stream Water-crowfoot (*R. penicillatus* ssp. *Penicillatus*) in the channel. Along the banks, there are emergent stands of Branched Bur-reed (*Sparganium erectum*) and Reed Canary grass (*Phalaris arundinacea*).

Downstream of Strabane, the River Foyle is slow-flowing and subject to tidal influences. The channel is extremely limited in aquatic plants, particularly in the more saline areas where marine algae make up the main component. Sheltered riverbanks in this section have a band of tall herb-fen dominated by Reed Canary-grass (*Phalaris arundinacea*) and other grasses. This becomes extensive in the large silty bays found at Saint Johnstone and 2 Grange. Associated fen species include Marsh-marigold (*Caltha palustris*), Hedge Bindweed (*Calystegia sepium*), Great Willowherb (*Epilobium hirsutum*), Meadowsweet (*Filipendula ulmaria*), Purple-loosestrife (*Lythrum salicaria*), Common Valerian (*Valeriana ofjicinalis*), Monkeyflower (*Mimulus guttatus*), Cow Parsley (*Anthriscus sylvestris*) and Bulrush (*Typha latifolia*). Willows (*Salix* spp.) are scattered throughout.

4.1.2 CEDaR Protected Species Search

A written request was submitted to obtain data from the CEDaR recorded species dataset, and the results obtained from the CEDaR search provided a list of recorded species within a 2km radius of the site. Given the number of provided search records, the primary findings are summarised below in Table 3 and the full list of notable species records.

Table 4: CEDaR species records

Taxon Common Name	Taxon Latin Name	Event Date	Sample Spatial Reference	All Designations - Short Names
Atlantic Salmon	*Salmo salar*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Sea Trout	*Salmo trutta*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Eel	*Anguilla anguilla*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Cyprinidae	*Cyprinidae*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Three-Spined Stickleback	*Gasterosteus aculeatus*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Gudgeon	*Gobio gobio*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Flounder	*Platichthys flesus*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Atlantic Salmon	*Salmo salar*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Sea Trout	*Salmo trutta*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Stone Loach	*Barbatula barbatulus*	Jul-09	bony fish (Actinopterygii)	River Finn at Strabane
Cyprinidae	*Cyprinidae*	Jul-09	bony fish (Actinopterygii)	River Finn at Strabane

Three-Spined Stickleback	*Gasterosteus aculeatus*	Jul-09	bony fish (Actinopterygii)	River Finn at Strabane
Flounder	*Platichthys flesus*	Jul-09	bony fish (Actinopterygii)	River Finn at Strabane
Atlantic Salmon	*Salmo salar*	Jul-09	bony fish (Actinopterygii)	River Finn at Strabane
Eel	*Anguilla anguilla*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Stone Loach	*Barbatula barbatulus*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Cyprinidae	*Cyprinidae*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Three-Spined Stickleback	*Gasterosteus aculeatus*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Gudgeon	*Gobio gobio*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Flounder	*Platichthys flesus*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Atlantic Salmon	*Salmo salar*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Sea Trout	*Salmo trutta*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Eel	*Anguilla anguilla*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane
Stone Loach	*Barbatula barbatulus*	Jul-09	bony fish (Actinopterygii)	Mourne River at Strabane

Atlantic Salmon	*Salmo salar*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Sea Trout	*Salmo trutta*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Eel	*Anguilla anguilla*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Stone Loach	*Barbatula barbatulus*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Three-Spined Stickleback	*Gasterosteus aculeatus*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Smelt	*Osmerus eperlanus*	14/03/2017	bony fish (Actinopterygii)	Strabane Bridge, Mourne River
Perch	*Perca fluviatilis*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Minnow	*Phoxinus phoxinus*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)

Roach	*Rutilus rutilus*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Stone Loach	*Barbatula barbatulus*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Three-Spined Stickleback	*Gasterosteus aculeatus*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Perch	*Perca fluviatilis*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Minnow	*Phoxinus phoxinus*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Roach	*Rutilus rutilus*	Oct-10	bony fish (Actinopterygii)	River Finn (unlocalised)
Atlantic Salmon	*Salmo salar*	1974	bony fish (Actinopterygii)	Burn Dennett (unlocalised)
Lamprey Sp.	*Lampetra*	Jul-09	jawless fish (Agnatha)	Mourne River at Strabane
Lamprey Sp.	*Lampetra*	Jul-09	jawless fish (Agnatha)	River Finn at Strabane
Lamprey Sp.	*Lampetra*	Jul-09	jawless fish (Agnatha)	Mourne River at Strabane
River Lamprey	*Lampetra fluviatilis*	Oct-10	jawless fish (Agnatha)	River Finn (unlocalised)
Brook Lamprey	*Lampetra planeri*	Oct-10	jawless fish (Agnatha)	River Finn (unlocalised)
Sea Lamprey	*Petromyzon marinus*	Oct-10	jawless fish (Agnatha)	River Finn (unlocalised)
River Lamprey	*Lampetra fluviatilis*	Oct-10	jawless fish (Agnatha)	River Finn (unlocalised)
Brook Lamprey	*Lampetra planeri*	Oct-10	jawless fish (Agnatha)	River Finn (unlocalised)
Sea Lamprey	*Petromyzon marinus*	Oct-10	jawless fish (Agnatha)	River Finn (unlocalised)
Freshwater Pearl Mussel	*Margaritifera margaritifera*	1905	mollusc	Mourne River at Strabane

Freshwater Pearl Mussel	*Margaritifera margaritifera*	01/02/1900	mollusc	Mourne River at Strabane
Freshwater Pearl Mussel	*Margaritifera margaritifera*	05/08/1899	mollusc	Mourne River at Strabane
Freshwater Pearl Mussel	*Margaritifera margaritifera*	1899	mollusc	Milltown Bridge, Cavanalee River
River Limpet	*Ancylus fluviatilis*	01/03/1992	mollusc	Strabane Glen ASSI

4.1.3 NBN Atlas

A search of the NBN Atlas Northern Ireland returned no species within the site boundary but five records for 3 species within 2km of the site area. The most recent records are from 2017 with one record produced within that year.

4.1.4 National Biodiversity Data Centre

Table 5: National Biodiversity Data Centre species records

Common Name (Species Name)	Record Date	Conservation Status
Canadian Waterweed (*Elodea canadensis*)	31/12/2010	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Giant Hogweed (*Heracleum mantegazzianum*)	24/01/2018	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Common Porpoise (*Phocoena phocoena*)	20/07/2014	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention
Freshwater Pearl Mussel (*Margaritifera* (*Margaritifera)* *margaritifera*)	02/09/1996	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts

4.1.5 National Parks and Wildlife Service

Table 6: National Biodiversity Data Centre species records

Taxon Common Name	Taxon Latin Name	Event Date	Sample Spatial Reference
Sea Lamprey	*Petromyzon marinus*	0	C340000

4.1.6 A5 Approval of Planning Permission 2016

Previous studies carried out as part of the planning process for the proposed A5 development project included an in-depth investigation into fish species within the water systems located along its proposed route. Part of this route runs within close proximity to the proposed Riverine Scheme site layout following the River Foyle route. This study included an investigation for fish species within the area, survey locations 8 and 9, (see Appendix: XIII). The study looked at 13 water courses, classified these under the Water Framework Directive and undertook surface water status determination to consider the status of biological, hydromorphological, chemical and physio-chemical elements. Included in this was the River Finn and Mourne, both of which are directly linked to the River Foyle over which the proposed Riverine Scheme is located. It was determined that the River Mourne had a moderate surface water status, but no fish fauna status classification was awarded. The River Finn was given a poor surface water status with a moderate fish fauna status. The results of this study can be found in Appendix: VIII.

4.1.7 Irish Whale and Dolphin Group (IWDG)

The IWDG were approached regarding historical records for pinnipeds, cetaceans, and basking sharks for evidence of potential animals which may have travelled further inland upstream. No records were returned. However, anecdotal sightings were brought to the ecologist's attention through discussion with local residents during survey sessions of harbour seals regularly coming up stream and being sighted within the stretch of the River Foyle included in the proposed Riverine Scheme. The previous project ecologist Eamonn Delaney also noted a sighting of a potential harbour seal during his baseline surveys.

4.1.8 Salmon Watch Ireland

A written request was submitted to obtain data from the Salmon Watch Ireland recorded species dataset, within a 2km radius of the site. No records were returned.

4.1.9 Loughs Agency

A request was submitted to obtain data from the Loughs Agency recorded species dataset, following previous consultation discussions regarding proposed designs for the bridge crossing the River Foyle. Unfortunately, the proposed location of the Riverine Scheme and 2km beyond the site the site boundary has not previously been included within Loughs Agency's survey areas as seen below.

Figure 15. Map illustrating Lough's Agency's survey areas.

However, surveys have been carried out within river catchments surrounding the proposed site believed to be hydrologically linked to the River Foyle. A 2018 "Foyle Area and Tributaries Catchment Status Report" was provided with collated data ranging back over the last 50 years.

Figures for the net count of records by the fish counter station located at the weir in Sion Mills on the Mourne River from 2012 to 2020 were also provided.

Table 7. Sion Mills Counter figures

Year	Net Up Count
2012	2836
2013	3162
2014	3852
2015	1824

2016	1350
2017	912
2018	1214
2019	2824
2020	3915

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Species Records

Loughs Agency's records provide the greatest detail regarding fish density and movements through the River Foyle and its Tributaries. Net fisheries have not operated in the Foyle area since 2009. Records for commercial catch of Atlantic salmon have seen a decline since the 1960s with spikes in salmon catch during the 1980s. However, in recent years the number of salmon caught has drastically decreased, with none caught since 2009. It is stated that this is assigned to the fact no commercial fisheries have operated here since 2009.

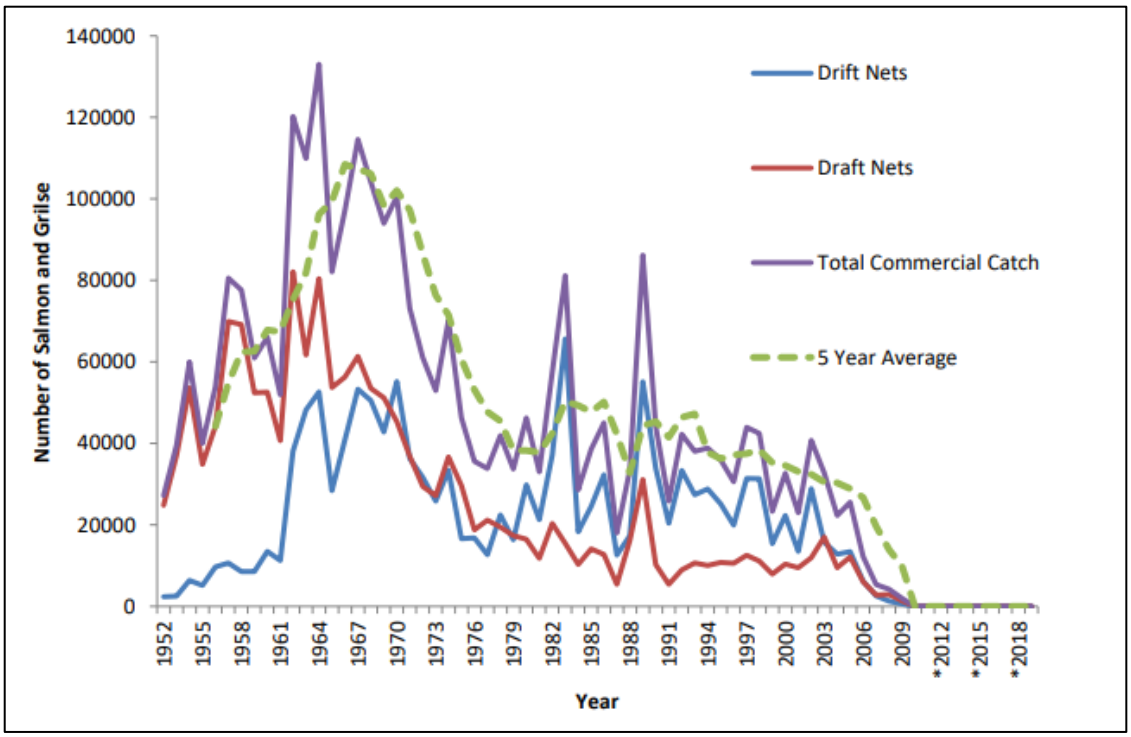

Figure 16. Atlantic Salmon total commercial catch 1952-2018. Loughs Agency 2019.

It was reported that the total rod catch returns were 13% in 2018 with a total of 1598 salmon/grilse caught in the Foyle and Carlingford areas in 2018. Loughs Agency reported that 66% of the reported rod catch were caught and released. The rod catch return records are of great value as they indicate:

- "How many fish were caught in YOUR RIVER OR LAKE?
- What % of fish were caught and released in YOUR RIVER OR LAKE?
- Is catch and release increasing?
- What species were caught?
- Essential for developing sustainable fishery management policy.
- Screening of future developments (roads, hydro etc.) against fishery interests.
- An important tool for assessing strength of runs.
- Aids with developing access and infrastructure (stiles etc.).
- It is required by law that all rod licence holders make an accurate catch return.
- Facilitates long term trend monitoring.
- Participates in the management of your river (doing your bit).
- At a time of reduced marine survival for Atlantic salmon accurate information is essential for sustainable management.
- Aids in ensuring good decision making so that future generations can enjoy the sport of fishing.
- Ensures that all species caught are sustainably managed now and in the future."

This "citizen science" take on road catch returns allows governing bodies such as the Loughs Agency to maintain accurate detailed records for certain catchment areas where fish counters are not possible and provides more detailed information on salmon runs before they reach larger river bodies.

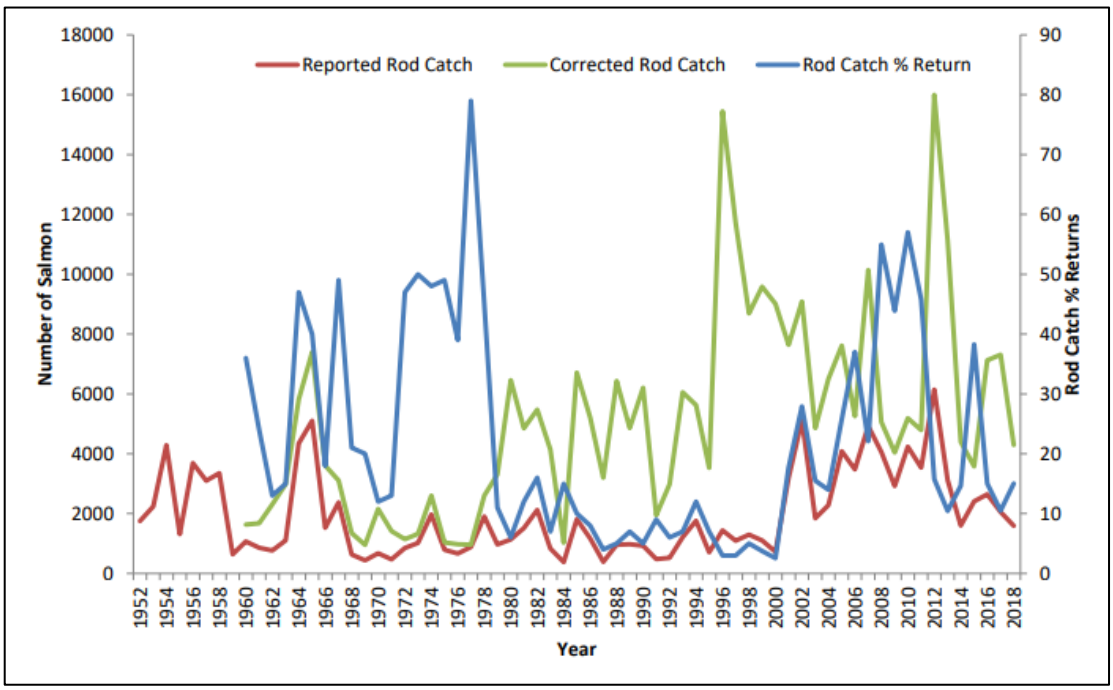

Figure 17. Loughs Agency reported and corrected rod catch with % of returns made

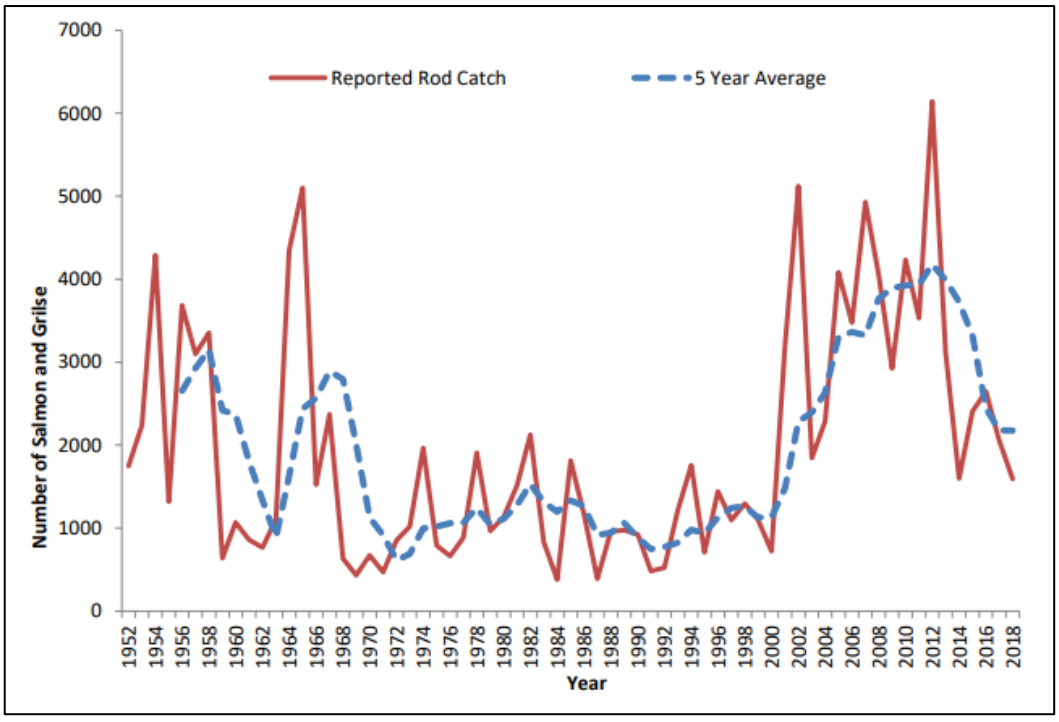

Figure 18. Reported rod catch for salmon/grilse in the Loughs Agency area

A network of electronic fish counters are located throughout the Foyle and Carlingford areas to monitor the migration of Atlantic salmon into freshwaters to spawn. These counters help to monitor fish migration populations in order to assess the attainment of conservation limits

and management targets for key catchments such as the River Foyle and its Tributaries. In 2018 the key fish counts by counters included the River Mourne and River Finn.

The River Mourne counted 1214 Salmon with a 5 year average of 1830, the management target for the River Mourne is 8000 with a conservation limit of 6400.

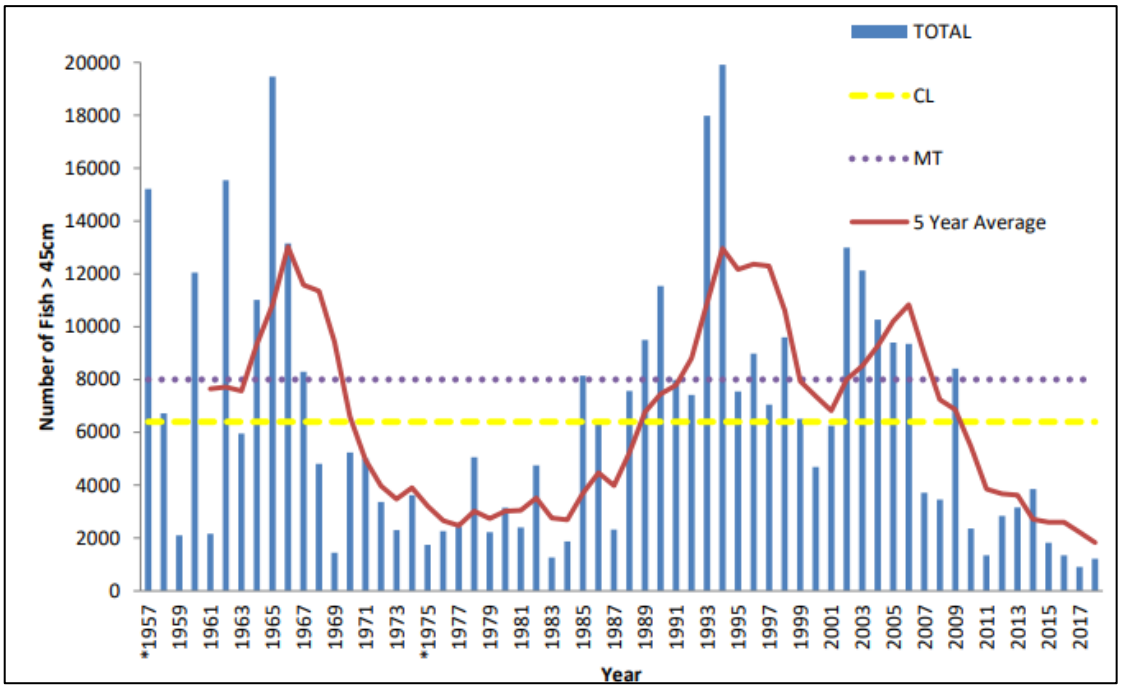

Figure 19. River Mourne annual fish counts with management target (MT) and conservation limit (CL)

As can be seen in figure 17 there have been a decrease in recent years since 2002 with salmon numbers falling below the MT and CL lines suggesting there has been a reduction in the number of salmon passing through the River Mourne in recent years.

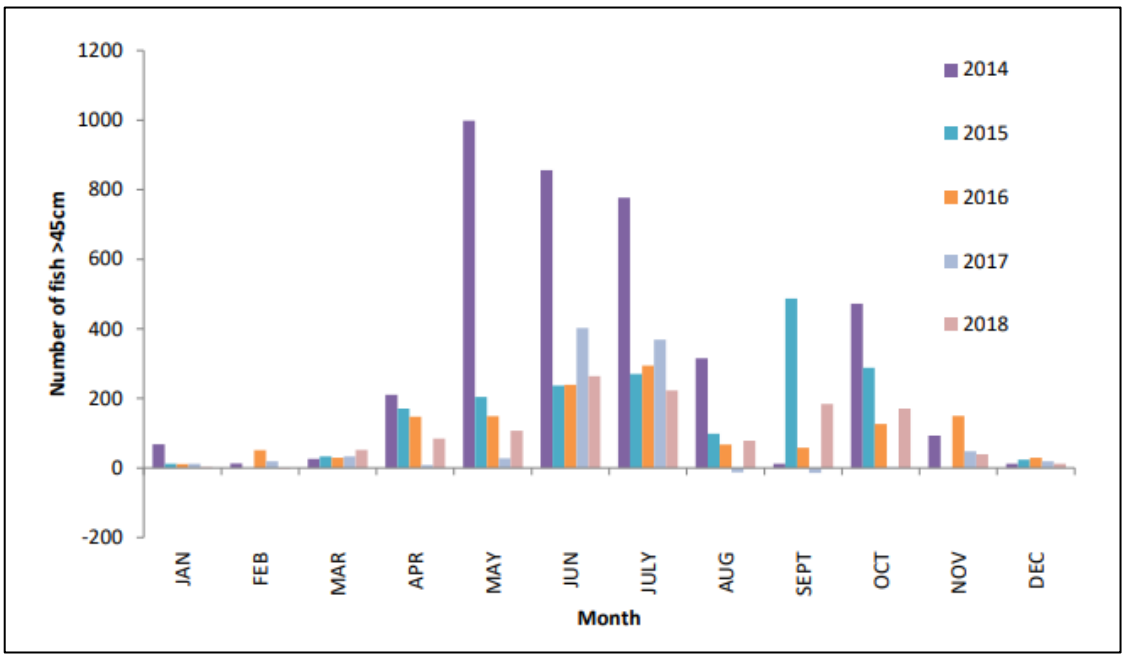

Figure 20. River Mourne monthly fish counts

Month counts also appear to have reduced over the years, however, the same pattern remains with a higher number of fish counted during the mid and late summer months with fewer in autumn and summer.

The River Finn counted 3955 Salmon with a 5-year average of 3046, the management target for the River Finn is 5410 with a conservation limit of 4328.

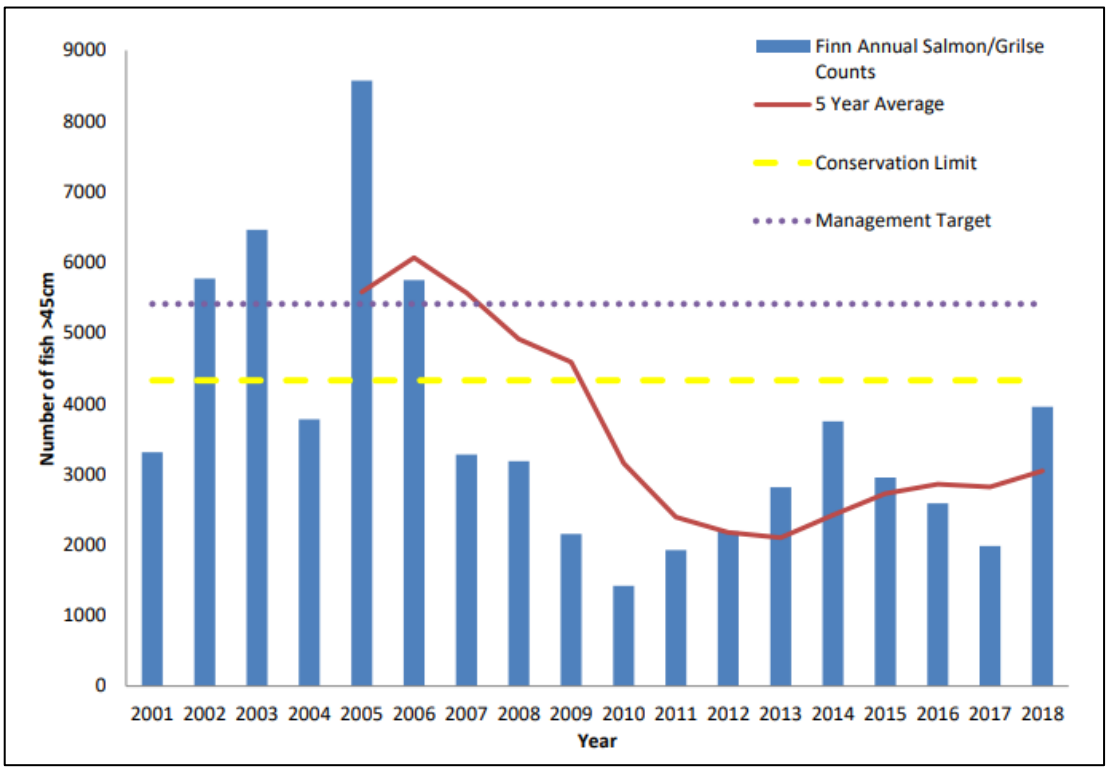

Figure 21. River Finn annual fish counts with management target (MT and conservation limit (CL)

Counts for the River Finn in the report only appear to go back as far as 2001, however, even within this time frame there has been a noticeable decrease in salmon counted over the years. Similarly, to the River Mourne, these figures have dropped below the management target and conservation limit.

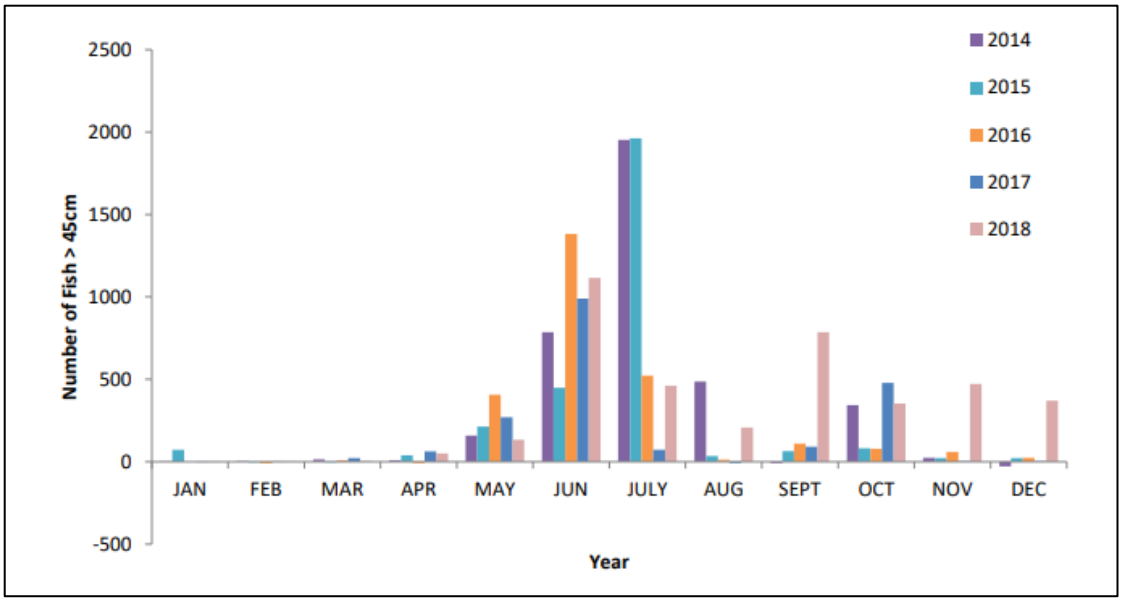

Figure 22. River Finn monthly fish counts

Again, on the river Finn there has been a decrease in monthly fish counts, with the same trend remaining regarding peak counts occurring in mid-summer. However, 2018 returned higher counts for autumn and winter months compared to previous years.

Annual salmon redd (spawning nests) counts provide good indicators regarding returning populations and have been carried out on an annual basis since 1952. In 2018/19 it was recorded that a total of 2760 redds were counted with a running average of 2586 since 1974.

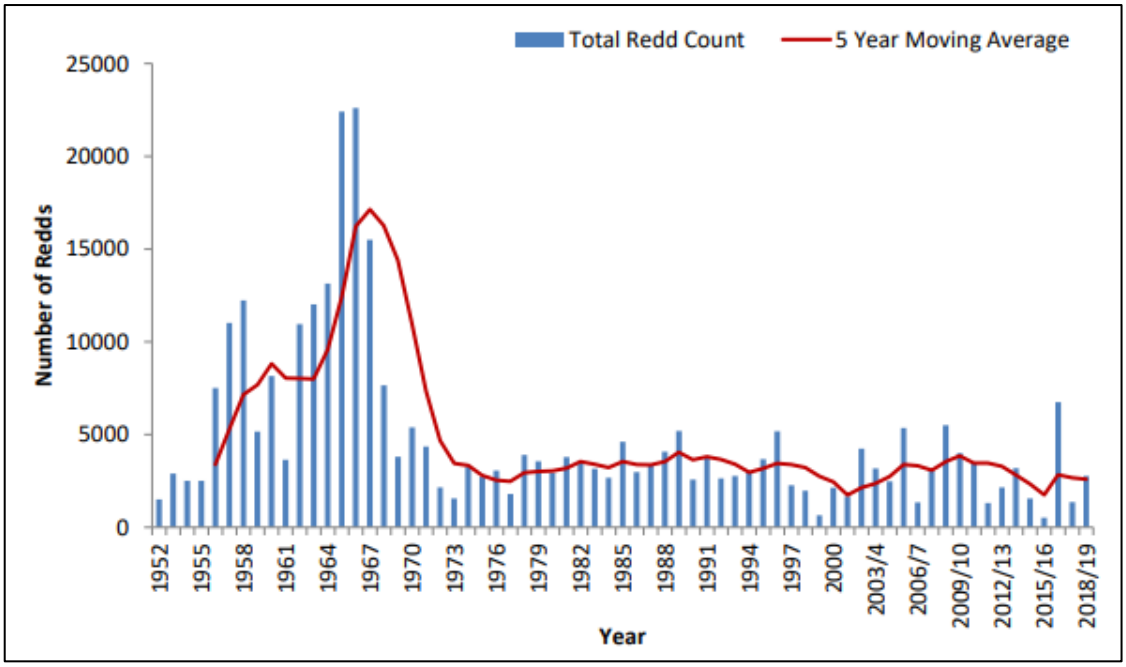

Figure 23. Annual salmon redd counts

Salmon fry index for the Foyle area in 2018 showed that the River Finn and River Mourne hold some of the highest average fry counts.

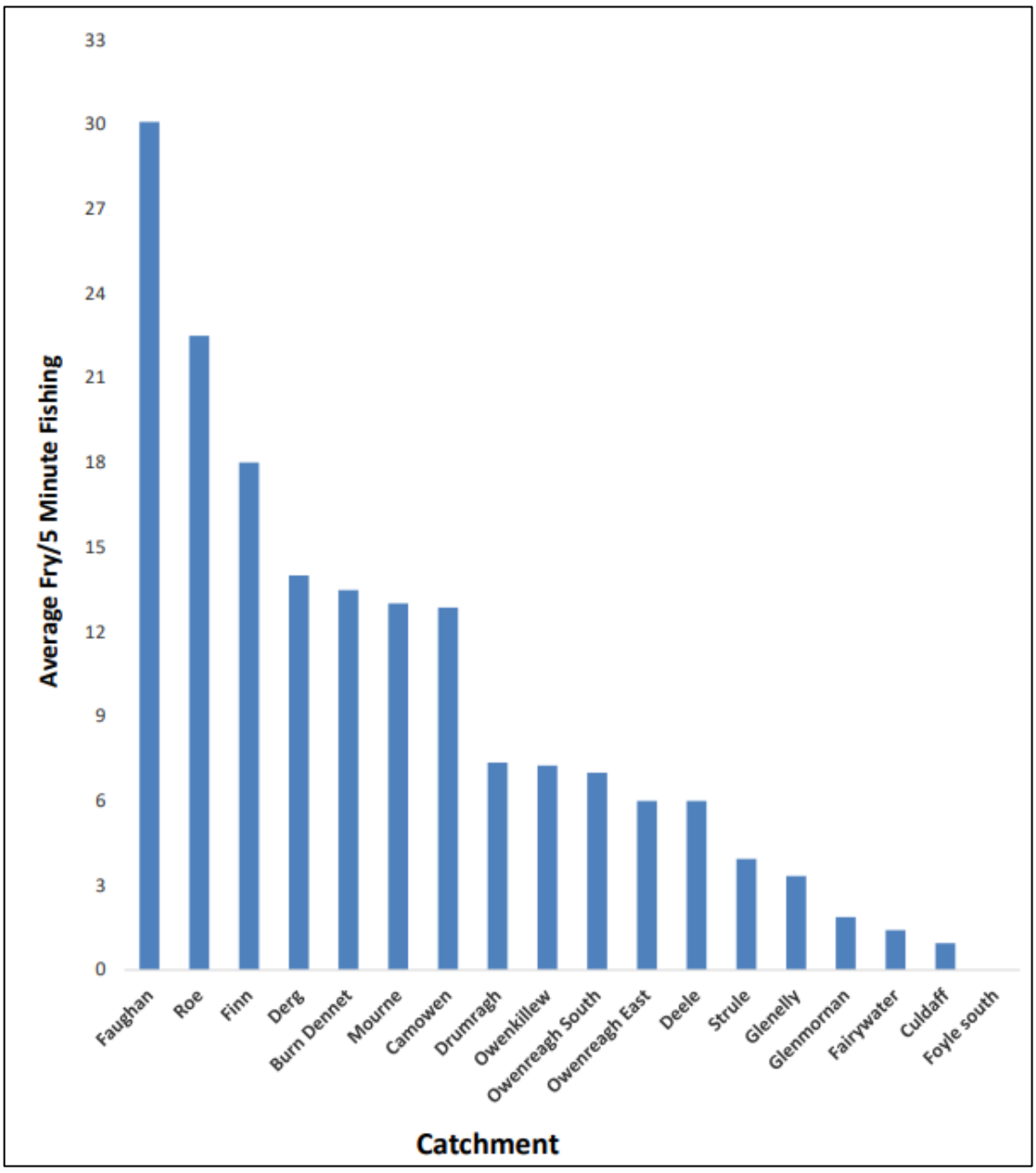

Figure 24. Foyle area salmon fry index comparison chart for 2018

Electrofishing surveys were also carried out in Foyle catchments to survey for salmon fry and classify each catchment based upon the number of fry found, (see Appendix: VIIII).

While it can be difficult to estimate the number of returning adult salmon to river systems each year, the above recorded data does highlight a rough guide for current population trends. The strength of returning cohorts is also exacerbated by extremely low marine survival rates likely due to altered marine food webs and shifts in oceanic prey distribution. However, it can be inferred that in recent years there has been a reduction in returning and

spawning salmon within the Foyle area. While no surveys have been carried out in the River Foyle, due to the hydrological link, the Rivers Finn and Mourne can help to illustrate that the River Foyle is an important run route for returning and spawning salmon.

Trout species in the Foyle area were also recorded by the Lough's Agency. In the Foyle area there is a geographic north-south divide with sea trout dominant in the northern catchments and brown trout dominating the southern catchments. Historically northern catchments and associated streams were associated with high densities of salmon which is believed to be the reason for seaward migration of juvenile trout in search of areas with less competition and predation. While southern catchments have always held good population densities these catchments are more susceptible to pollution events.

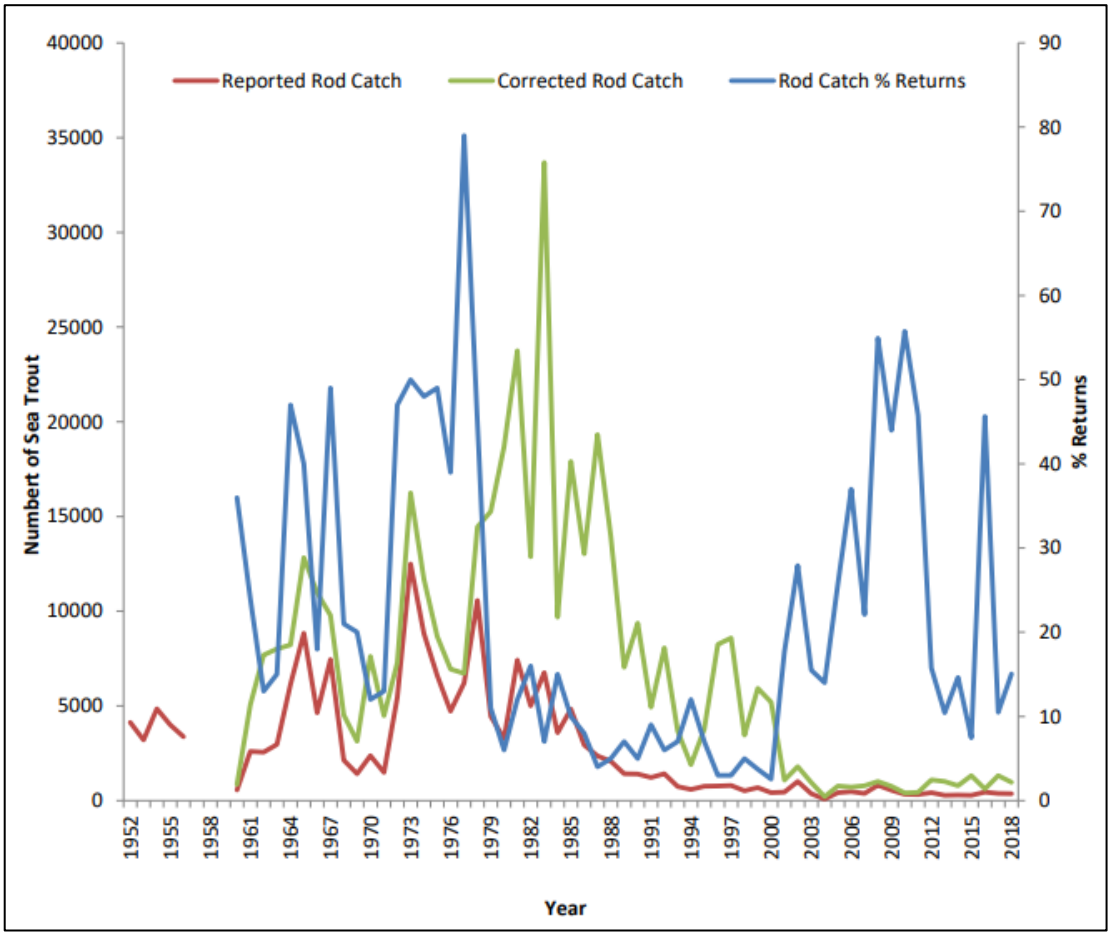

Figure 25. Loughs Agency reported and corrected rod catch with % returns of trout

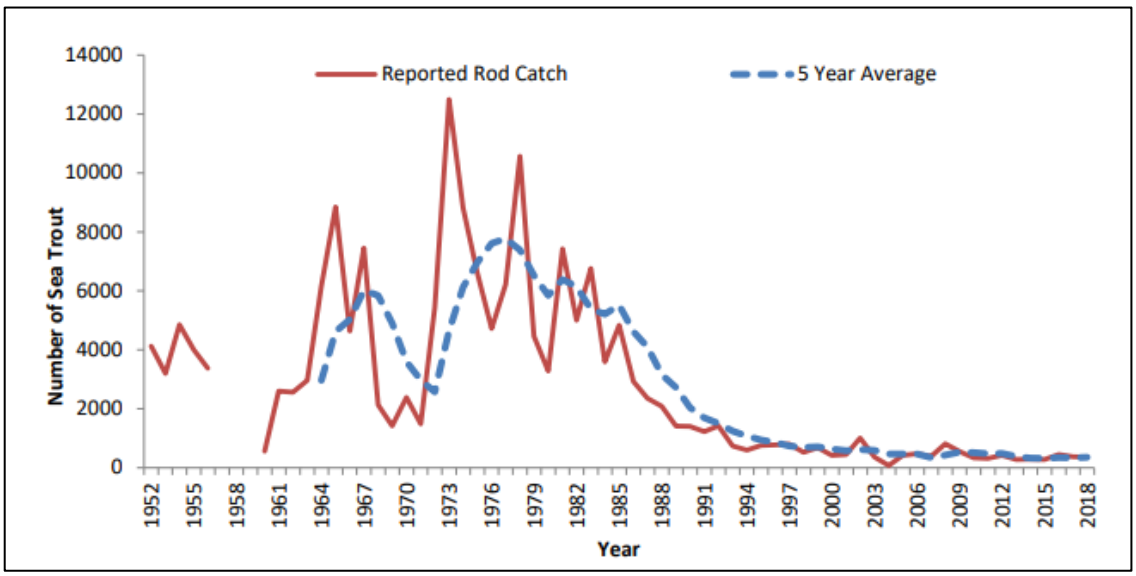

Figure 26. Reported rod catch for sea trout in the Loughs Agency area

Figure 24 reflects a huge decrease since the 1980s in rod caught trout in the Foyle catchment area. However, corrected catches and catch returns display a higher density of fish within the area with a high percentage of fish being retuned once caught.

Electrofishing surveys were also carried out to assess the trout fry numbers within each catchment in the Foyle area. Unlike with salmon, the Rivers Mourne and Finn display much lower densities of trout fry suggesting these river systems are deemed less suitable for spawning trout and are potentially primarily used as simple migratory pathways. It could also be inferred that fewer fish are present within these catchments. Each catchment was classified similarly to those for salmon (see Appendix: X).

5.2 Potential Impacts & Mitigation

The proposed bridge structure is planned to span across the River Foyle and land on the banks at Lifford and Strabane allowing for connection across the entire Riverine Scheme from both sides of the border. Due to the proposed construction and installation of this bridge across a riverine habitat, certain concerns have been raised and consultation has been carried out with the Loughs Agency in order to prevent and mitigate against potential impacts from occurring which may negatively impact the riverine habitat with long term effects.

An initial concern during the early stages of the design process was that originally the bridge structure had a central pier approximately halfway across the river which would enter the

River Foyle. Concerns were raised around this structure due to a lack of survey data for this stretch of the river. The Loughs Agency raised the concern that due to a lack of historical data there was uncertainty as to which side of the river the salmon run occurs and that a central pier could cause divisions in the run altering the distribution of fish as they commute upstream to their spawning grounds. This could potentially impact the salmon by corralling them and making them more susceptible to predation and poaching, which is known to go on in the area particularly on the Lifford side. The other concern relating to this was the location of two wastewater treatment and discharge plants located just north and south of the proposed bridge location. Concerns over how a central pier may affect the distribution and dilution factors of this discharge were raised and the impact this may have on the olfactory sense of the migrating salmon further affecting their chances of success in reaching their spawning grounds. The installation of this central pier would also require the need to potentially operate within the water body for construction where mitigation would be difficult and potentially unsuccessful. Due to these concerns and in order to remove these impacts from the proposed development a design change was ultimately suggested that the bridge be a single span structure. Without a central pier fish are able to freely pass upstream underneath the structure unimpeded (see Appendix: XIV).

Due to the design change, the construction process was also altered in order to remove the need for permanent structures in the river channel. However, this single span bridge necessitates the construction of a temporary crane pad. A temporary crane pad, extending into the river channel, on the Lifford side is required to be constructed to support the large crane used for the bridge lift. This pad must bear the weight of the crane whilst it is lifting the bridge and will be of sufficient dimension to facilitate safe lifting of the bridge structure. The crane pad structure may involve sheet piling through the riverbed to install a temporary peripheral coffer dam and/or piling through the riverbed under the crane footprint to provide a temporary foundation for the crane. The crane platform and nay associated sheet piles will be withdrawn and deconstructed once the bridge is completed. However, mitigation is required to ensure the temporary platform structure does not damage the riverbanks and introduce large amounts of silt and debris into the water system which may impact the fish and aquatic habitat. Therefore, it is recommended that a geotextile tarp layer in first installed to lay on the riverbank and riverbed in order to preserve the underlying earth and reduce silt production drifting downstream. The temporary platform should be constructed of made-up ground on the tarp layer which can then be hooked up to chains and folded out in one go

once construction has completed. This will reduce silt production and prevent destruction to the riverbank and bed which could cause large amounts of debris to enter the water system, smothering the aquatic habitat. The construction of the temporary platform should consist of locally sourced rocks/boulders, if possible, in order to prevent any potential spread of invasive species into the water system. A coffer dam is also recommended as this will ensure any potential silt production and debris is trapped and localised to the temporary platform area. Any alternative engineering solutions fort he construction of the crane pad shall ensure silt emissions to the River Foyle SAC are minimised during the installation, operational and de-construction phases. No permanent structures or materials shall ne left in the river channel for the construction of the crane pad.

Percussion piling was another concern which had been raised during the badger survey report (see Biodiversity Chapter - Appendix: 8.5). Piling is required for the installation of the bridge on both riverbanks. Standard percussion piling is currently not accepted, following consultation with NIEA, due to close proximity of the main badger sett to the proposed bridge landing site on the Strabane side of the site. Instead, the use of continuous flight auger (CFA) piling, which utilises a 'corkscrew' method has been recommended to create the required hole. This method has been deemed much less impactful that standard percussive piling methods such as driven piling. See Appendix: XVII for the diagram illustrating a vibration contour graph for a 70t CFA piling rig. Based upon this diagram the proposed method of CFA piling is not expected to have lasting impacts on the salmon and other fish population within the River Foyle. However, anecdotal reports were made to the ecologists of harbour seals (*Phoca vitulina*) coming upstream and feeding within the stretch of river. While the proposed piling system is not expected in impact on occasional seal visitations to the area, excessive vibrations caused by piling may impact the fish and act as a trigger to attract nearby seals to investigate. The CFA piling is expected to have a much lower vibration radius and therefore a lower impact or risk of attracting hunting pinnipeds into the development area during construction. However, it is recommended that constant monitoring of vibration levels throughout the construction process are carried out to ensure they are maintained within acceptable levels.

In addition to bridge abutments, where permanent CFA Piles will be used piled foundations may also need to be emplaced on land within the river margin beyond the flood embankment in proximity to the Bridge Abutment sites. This may be necessary to create a working platform

for the assembly and lifting of the bridge, which will arrive to the site in sections requiring assembly on site. This platform will support the main crane used to lift the bridge into position, smaller crane(s) used to assist with the assembly of both the main crane and bridge and to store the assembled bridge before it is lifted into place. This platform structure and will be deconstructed once the bridge has been completed. If CFA piles, which are permanent and cannot be withdrawn, have been used as foundations for this structure, then these piles shall be cut down to 1m below ground level as part of the site restoration / landscaping works following completion of bridge construction.

As part of the development, additional site investigation boreholes will be required to be drilled around the bridge site by rotary percussive techniques.

Following consultation with Loughs Agency regarding concerns over impacts to migratory fish species particularly salmon, all in-river piling and all piling works within the SAC in both Lifford, and Strabane sites must be carried out between May and September, as per seasonal restrictions outlined as follows:

Table 8: Seasonal restrictions

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
In-River Piling, Bridge Construction, In-river works, riverbank Works and piling within SAC												

Red: Exclusion Period **Green: Approved Period**

As the site is located on a riverine habitat It is also recommended that a minimum of 10 metres should be retained as a buffer between high risk construction activities, (concrete mixing and washing, stockpiling materials and waste), and the surrounding water courses to reduce any potential impact. It is also recommended that a surface water management plan be drafted and implemented to avoid potential impacts on the water courses and water quality. No potential hazardous substances should be stored near the river, and instead should be kept securely locked within the site compound. Oil storage must have a secondary containment system (of 110% capacity) to ensure that any leaking oil is contained and does not enter the

aquatic environment. Should for any reason, oil or fuel be stored in the area, it must be kept in a bunded area (providing 110% capacity of the largest stored unit), 10m from all minor water courses and 100m from the SAC. Refuelling should be place on a hardstanding area, at least 10m away from any minor watercourse, and 100m from the SAC. it is recommended that a pollution prevention plan and emergency spill response plan are implemented prior to the commencing of works and toolbox talks delivered.

It is also recommended that a soft start approach be implemented when the use and starting of heavy machinery is required. The soft-start methodology will be required every time machinery is started following a 30minute rest period. Once machinery is in full operation associated noise and vibration will keep fish outside of the area of influence allowing them time to leave the area of disturbance.

No lights from the site compound are to be directed at the river. All lighting, with the exception of safety lighting, should be directed away from the water surface and should be switched off at night once works have stopped.

The use of silt traps and or curtains has been suggested in order to trap any silt generated despite measures to attempt to reduce its production. It is essential that silt containment measures used are free flowing to avoid the accidental capture and death of fish. These traps should also be inspected on a regular basis to ensure no fish are trapped within them and to ensure they are working correctly.

Plant nappies and spill kits must be available and in working condition on site at all times with toolbox talks provided to ensure site staff are aware of potential risks and how to correctly use these response tools.

Another key concern is the presence and potential spread of invasive species in the area. Both sides of the River Foyle exhibit extensive invasive species growth of Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*) and giant hogweed (*Heracleum mantegazzianum*). There are also concerns over the presence of Asian clams (*Corbicula fluminea*) within and/or being introduced to the river itself and that proposed works may contribute to the spread of this species. Therefore, the following mitigation

measures are proposed to proactively prevent the introduction and spread of this species via construction machinery brought to the site: -

- Before any piece of construction 'machinery' including crane or mobile machinery / plant, (excavators, rollers, dumpers, tele-handlers etc.), is delivered to the site, the invasive species Clerk of Works shall be provided documentation providing details of all sites close to or involving works in water that the machinery has been working on or stored on in the last 60 days.
- The invasive species Clerk of Works may consider the need for additional biosecurity measures, such as quarantining or pre-delivery disinfection, for any high-risk machinery that has recently involved in in-river works.
- Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invasive bivalve species is as follows: -

    - On arrival at or departure from the site, **ALL** construction machinery and delivery vehicles travelling within the site beyond the construction compound/delivery bays should be visually inspected and disinfected in the biosecurity washing area of the Construction Compounds.
    - The disinfection process shall involve dosing of the exterior of the machinery with a diluted solution of 1% Vircon Aquatic solution or an approved alternative.
    - The machinery should then be power hosed with water of 60 ^{o}C + to remove disinfection solutions and any invasive species debris and any residual treated clams / eggs which may be present, followed by a final off-site visual inspection.
    - The treatment and inspection of machinery shall be overseen and approved by a qualified ecological Clerk of Works, including verification records to confirm completion of the disinfection for each piece of machinery, including any replacement / standby units intended to be used on the project. Records shall be retained for inspection by the client's representatives.
    - During the operational phase signage will be erected at key points within the site to advise that construction workers and users of the waterway at Riverine shall follow all relevant Invasive Species Ireland, NIEA & Loughs Agency Biosecurity Guidance before entering the site.

An invasive species management plan should be implemented along with strict biosecurity protocols to include thorough disinfection and cleaning of all machinery, vehicles and tools used within an area with invasive species, (see Appendix: 8-13). All staff should utilise foot dips and operate away from species such as giant hogweed which also poses a health and safety risk.

It is also recommended that all proposed construction works and mitigation measures within the SAC are carried out under the supervision of a qualified ecologist in the form of an ecological clerk of works, (ECOW).

Lighting was also raised as a concern due to its potential impacts on the local fish population. Fish are often attracted to light sources, and heavy underlighting of the bridge may cause unnatural illumination of the water surface, in particular, during the night-time hours. This may cause fish to congregate in large numbers near these light sources at the water surface making them more vulnerable to predation and poaching. Proposed lighting for the bridge structure includes the Garda Classic, asymmetric module at 2700K (less white light) and some feature lighting directed away so as to not directly land on the water surface.

Table 9. Proposed Bridge Lighting Schedule

Area	No.	Description	Image
Bridge	6	Handrail Lighting	
Bridge	7	Feature Lighting	

Bridge CCTV		Tubular CCTV columns with tilt over option	

Lower lux level lighting has been chosen with a warmer coloured light have been chosen in order to reduce potential impacts on local and migrating fish avoiding white, blue and green light as this can disorient and attract fish.

5.3 Conclusion

The River Foyle contains a diverse aquatic ecosystem and provides suitable habitat for commuting and residential fish species. Despite the lack of data for the River Foyle itself the survey data collected from the surrounding catchments and those rivers which are hydrologically linked, River Finn and Mourne, illustrates the importance of the Foyle River for migrant species such as Atlantic salmon. While overall there appears to have been a decrease in the last 50 years, currently numbers appear to be holding steady with the potential to improve so long as the riverine habitat is maintained and protected.

The mitigation outlined in this report provides suitable measures to help reduce any potential impacts on the river system and local fish stocks. This will allow for continued migration of the salmon and will minimise disturbance to the riverbed ecosystem utilised by many other species such as river lamprey. The project is not expected to have any impact on pinnipeds, sharks or cetaceans and the proposed mitigation will help prevent any impacts from spreading down river, keeping them localised to the immediate area of the bridge, and protecting the wider aquatic environment.

Due to the lack of survey data and proposed development methods it is recommended that regular monitoring of the site and the fish within the river be carried out throughout development to ensure proposed mitigation is thoroughly enforced and maintained.

Report Prepared By: -	Reviewed By: -
Ryan Boyle BSc (Hon), MSc,	**Emily Taylor BSc (Hons), MSc**
Consultant Ecologist	**Graduate Ecologist**

6.0 REFERENCES

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FIGURES

Figure 27. Salmon remains

Figure 28. Riverine Habitat

Figure 29. Banks of the Foyle Lifford Side

Figure 30. Banks of the Foyle Strabane Side

APPENDICIES

River Foyle

Marsh

Wetland

SUDs

Overhead Electric Lines

Park Road

Barnhill Road

Existing Water Level +(2.00)

Emergency / Event Entrance & Exit

Emergency access onto Park Road, as required aswell as an overflow on event days.

Proposed Car Park

A sufaced car park which will provide approximately 120 spaces and 10 disabled bays. There will also be provision for coach bays which can double as loading and offloading if required.

Bridge Landing

At the bridge landing there is a proposed seating area to make the most of the spectacular vantage point.

Proposed Boardwalk

The existing landscape in Strabane has naturalised having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience at a distance the boardwalk enables access at a sensible distance and is elevated to ensure that wildlife retains uninterrupted and safe passage.

Pathway Converging

To make the most of connections both to the Strabane North Greenway and pathway routes within the park. Junctions ensure that desire lines are managed so that walking routes are identifiable. This also reduces possibility of people walking over the planted areas.

Wildlife Gates

Gates to be located every 10m within proposed fencelines and hedging. These will provide safe access for variety of wildlife to ensure access to their feeding ground to the east.

Existing Planting

The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a quarry. The site now represents an ecologically sensitive landscape that brings along many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals ensuring that these identified areas are safeguarded. Access therefore is limited and planting will be encouraged to continue to grow. Where required and not affected by A5 route - additional native whip planting will be proposed

Existing Planting

New Tree Planting will be proposed in areas that does not conflict with the long term consequence of the A5 and where it is agreed beneficial.

Halting Site

The former halting site is identified as the location for the approach road to the proposed carpark. The proposals include removing the existing concrete base and reinstating in a mixture of wildflower native grass. This can be aloud to naturalise until such times the proposed A5 link road influences the arrangement.

Entrance

it is proposed that the site will be accessed from the Barnhill Road roundabout both for vehicles, cyclists and pedestrians.

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

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LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will provide DDA compliant access

9. Riverside Access
Note to be added

10. Planting
The general planting strategy is to use primarily a native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Note to be added

13. Invasive Weeds
Note to be added

14. No Topographic Survey Information
The principles have been considered on the basis of site visits and discussion with the engineers, ecologist, client and community groups. However, there is a substantial area of the Project Area (see hatch) that is unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detailed proposals. Levels, existing vegetation extent, type as well as extent of wetland are underlined.
on this basis the amount of tree cover identified as removed is unclear. Removed trees indicated are limited to where the survey is clear and loss is certain.

15. A5
Note to be added, if required

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and number of the items in the park may change during the detailed design phase.

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	10.06.2021	Issued for Information	DM

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Funder
Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an Ghoirtha Báin
Derry Cittie & Strabane Destrick Council

Project Status: DRAFT

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE LANDSCAPE LAYOUT

Scale: 1:500@A0

Drawn	Date	Checked	Date	Approved	Date
DM	12.02.2021	DM	12.02.2021	AH	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · ZO · XX · DR · LA · 102 · P00

Project Number: 1383

Status code & Description: PLANNING

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details ref: De_912+911
- Proposed Hedgerow planting — Refer to planting schedule and details ref: De_908
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower — Refer to planting schedule
- Proposed Woodland Wildflower — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- **Proposed Asphalt** — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Natural Stone Paving — Refer to detail ref: De_900
- Proposed Boardwalk — Refer to detail ref: De_903
- Reinforced Grass — Refer to detail ref: De_902
- Proposed Gravel Path — Refer to detail ref: De_902
- Proposed Slipway Surface — Refer to detail ref: De_904 also engineers drawings for detail.
- Wetpour Safety Surfacing — Refer to detail ref: De_902
- Reinforced Grass Safety Surfacing — Refer to detail ref: De_902
- Play Bark Safety Surface — specifically for play areas
- Stone Clusters (Play Park) — Refer to detail ref: De_905

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail ref: De_907 for fencing and De_914 for Gates
- Stock Proof Fencing — Refer to detail ref: De_906
- Steps and Terracing — Refer to detail ref: De_913
- Proposed Benches — Refer to detail ref: De_909
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 330L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail ref: De_914
- **Vehicular Upstand Kerb** — 125mm upstand. Pre Cast Concrete
- **Vehicular Flush Kerb** — Pre Cast Concrete
- **Pin Kerb** — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary
- Accommodation Works
- Proposed Bridge
- Water

LEVELS

- (4.3) — Existing Levels
- +5.3 — Proposed Levels

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports.

5. All new kerbs adjacent to exsiting roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting and all electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main areas within the park will be fully accessible.

9. Riverside Access
note to be added

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees to add formality and interest within the avenue and around the Community Hub. The shrub planting proposed around the Community Hub will be mostly ornamental grasses planted through with some ornamental structural plants to provide year round colour and interest. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. Also refer to Planting Schedule.

11. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing ref: 700 which illustrates section through the inclusive Hightower in the Senior Play Area.

12. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

13. Accommodation Works
For layout & detail please refer to engineers and architects packages

Rev	Date	Description	App
P00	16.02.2021	Issued for screening	DM
P01	12.02.2021	Issued for screening	DM
P02	10.02.2021	Issued for screening	HB

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

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www.mcadamdesign.co.uk

Funder
Peace
Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Bán
Derry Cittie & Strabane Destrick Council

Project Status: PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: LIFFORD LANDSCAPE LAYOUT

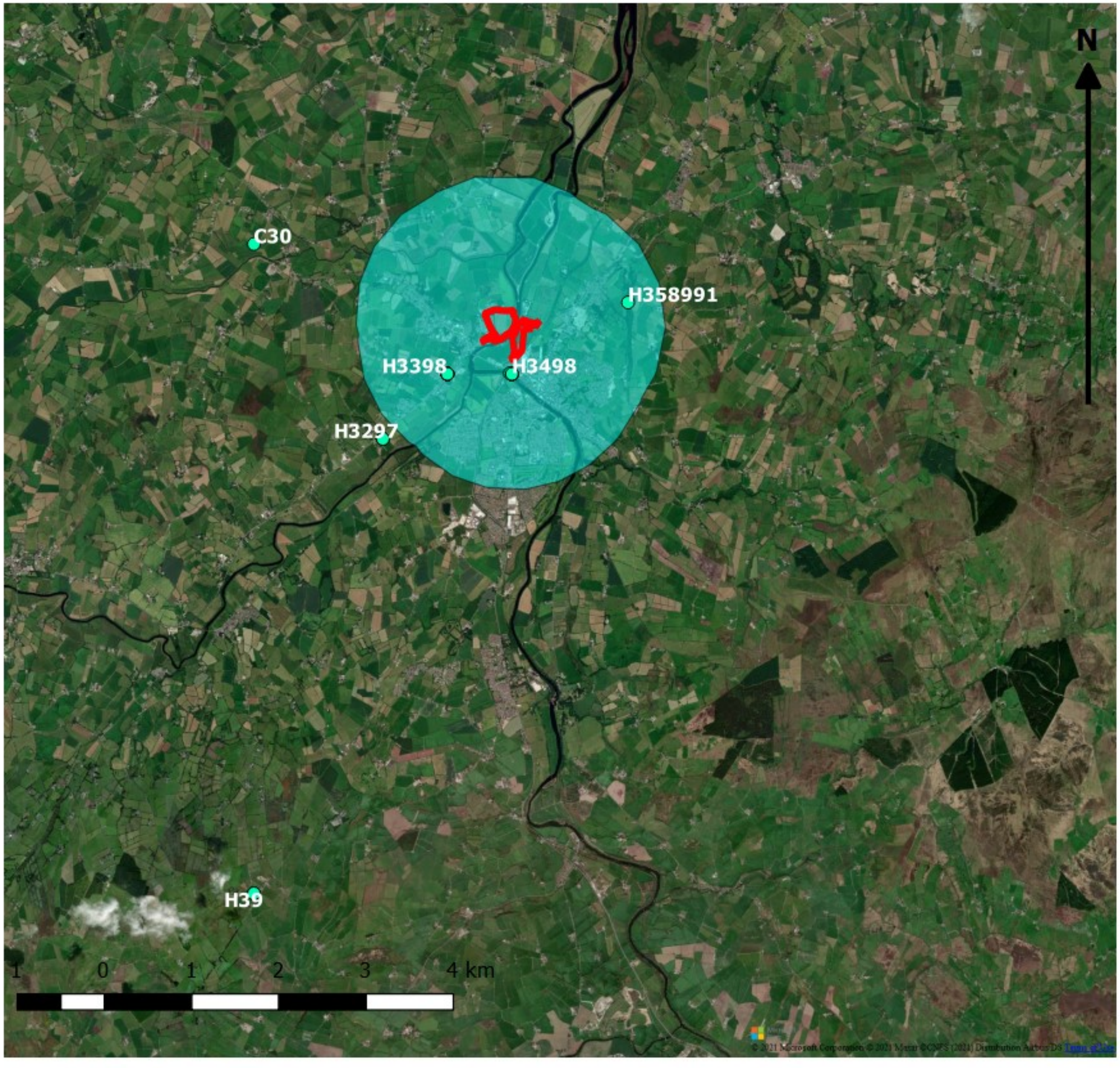
Scale: 1:500@A0

Drawn	DM	Checked	DM	Approved	AH
Date	12.02.2021	Date	12.02.2021	Date	15.02.21

Project · Organisation · Zone · Level · Type · Role · Number · Revision
1383 · TPHC · Z0 · XX · DR · LA · 101 · DRAFT

Project Number: 1383

Status code & Description: PLANNING



Legend

- CEDaR Fish Records
- Red Lined Boundary
- Buffer

Appendix III: CEDaR Fish Records with 2km Buffer

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:60961 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street
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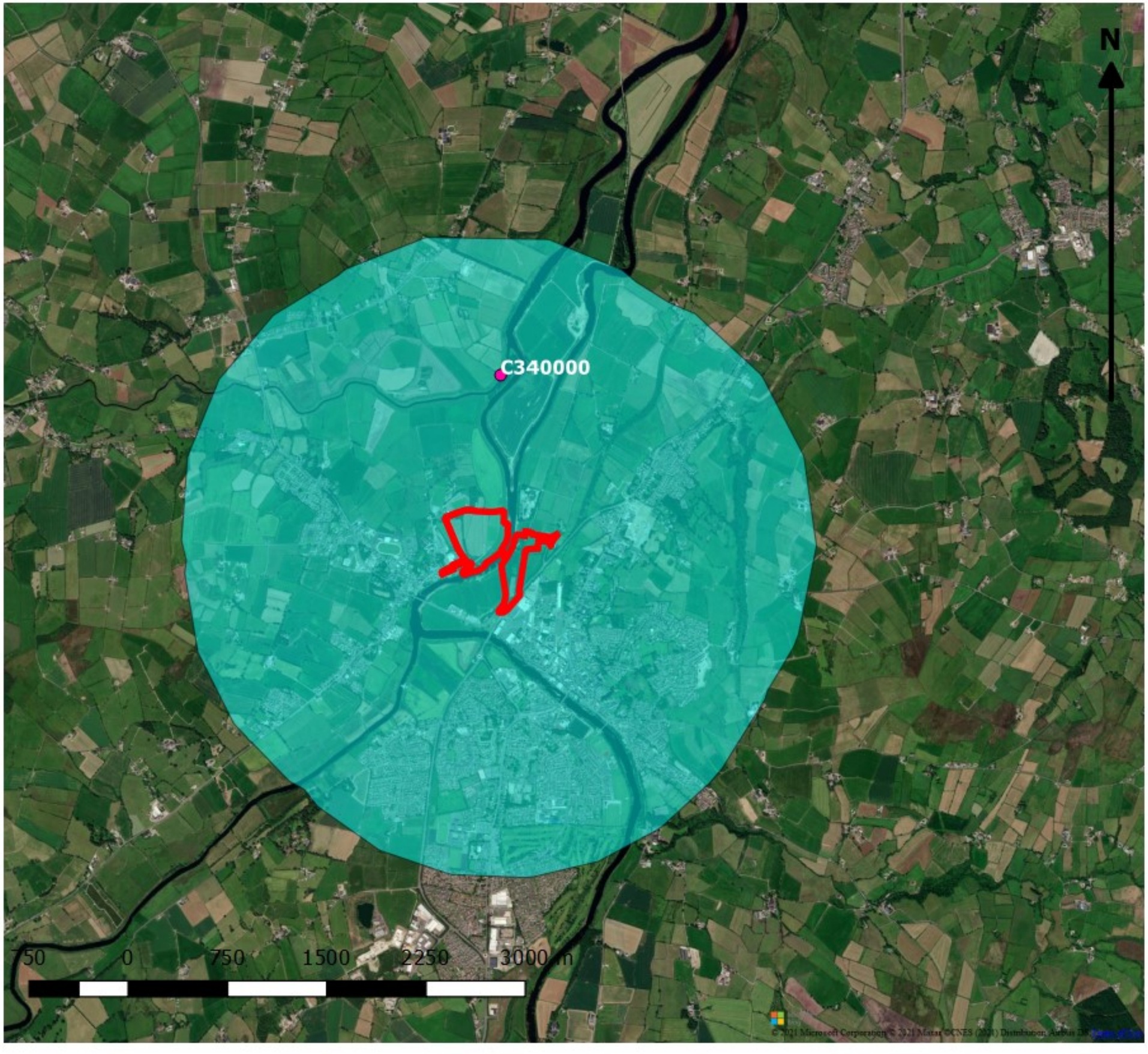
BT3 9BJ
Tel: 02890747766



Legend

- NPWS Fish Records
- Red Lined Boundary
- Buffer

Appendix IIII: NPWS Fish Records with 2km Buffer

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:39881 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
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Unit 5, Forty Eight North, Duncrue Street
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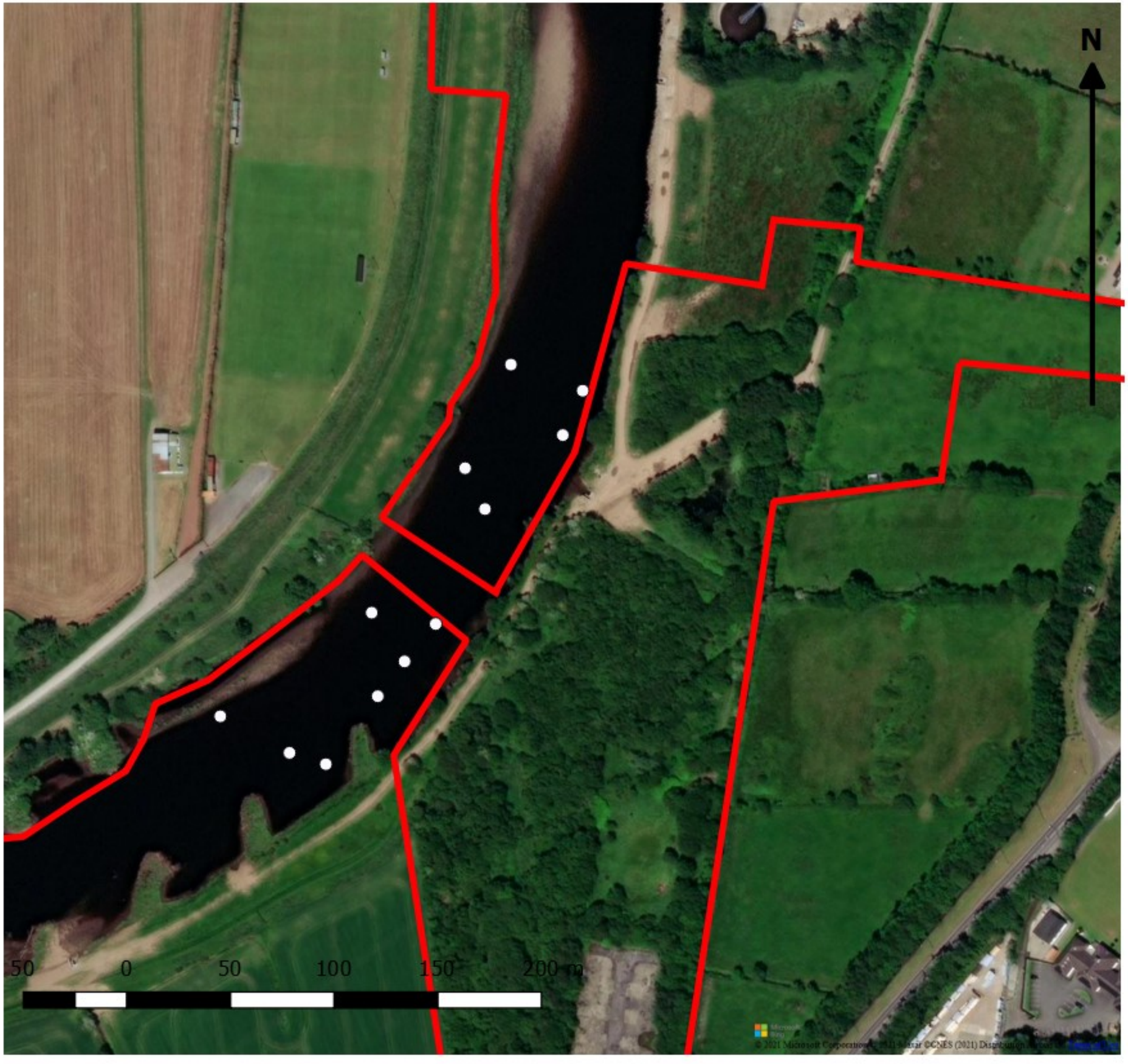
BT3 9BJ
Tel: 02890747766



Legend

- Salmon Jumps 06/07/2021
- Red Lined Boundary

Appendix V: Salmon Jumps 06.07.2021

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:2576 @ A3

Date: 08/08/2021

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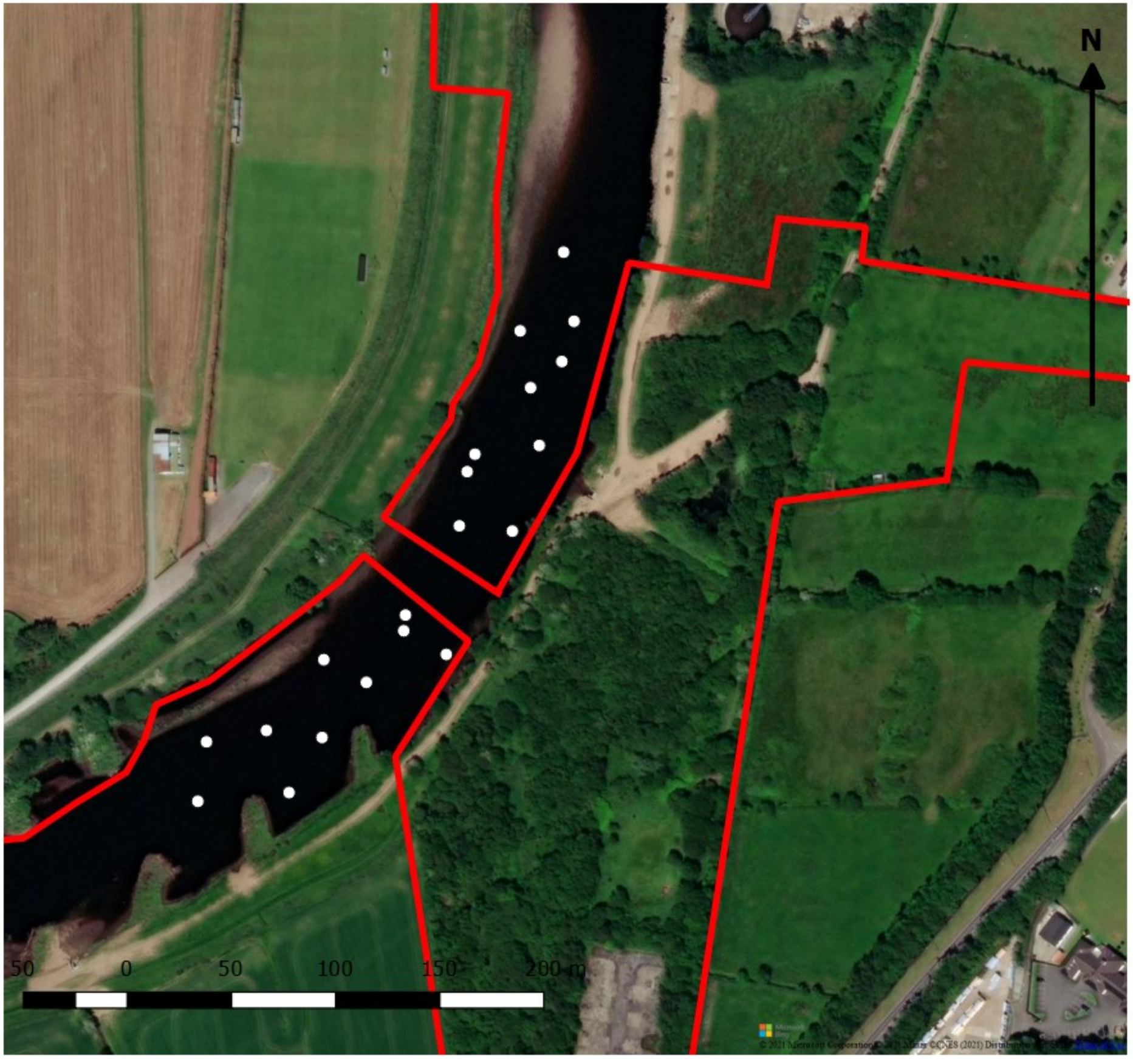
BT3 9BJ
Tel: 02890747766



Legend

- Salmon Jumps 15/07/2021
- Red Lined Boundary

Appendix VI: Salmon Jumps 15.07.2021

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:2576 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

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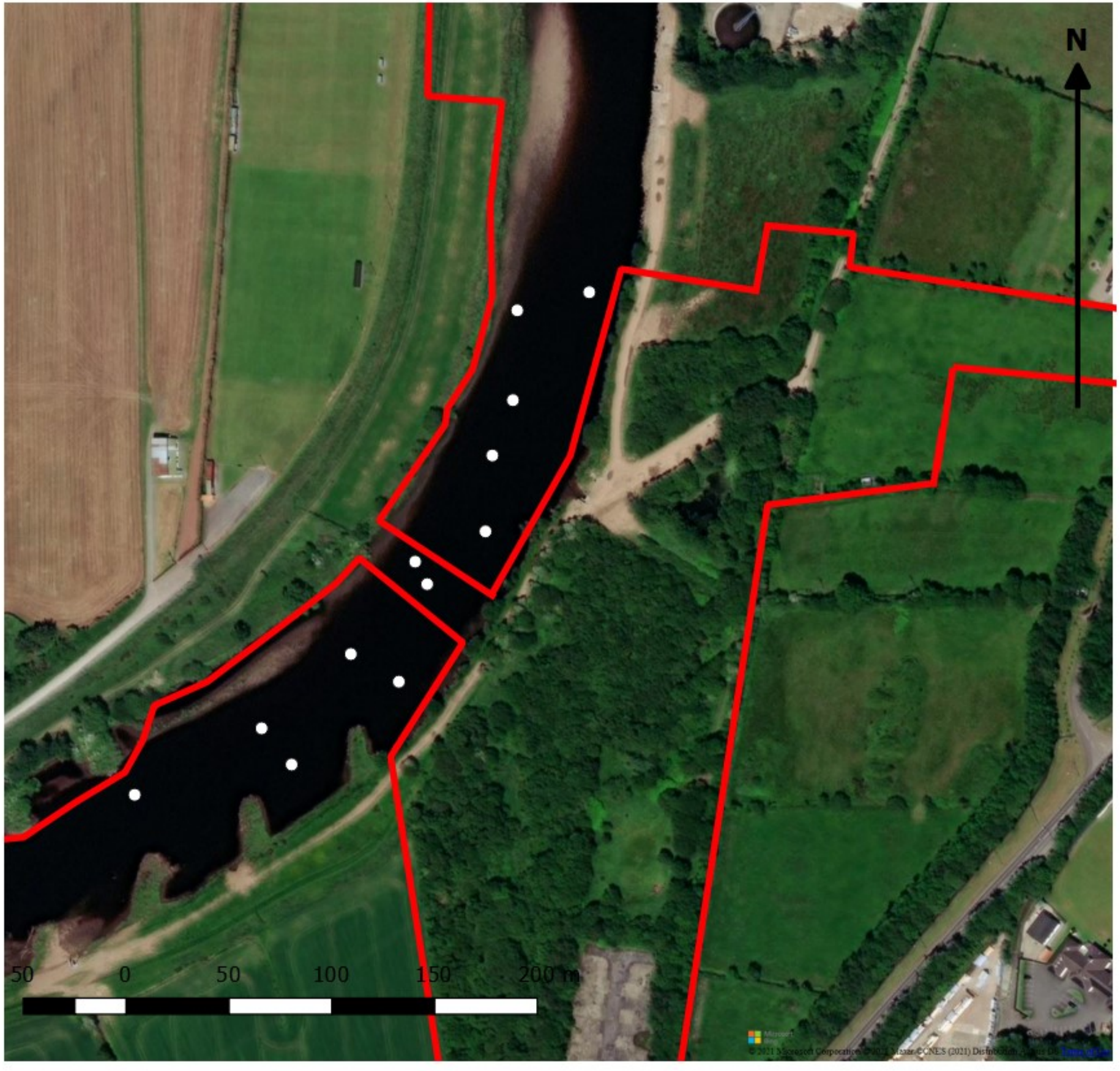
Belfast
BT3 9BJ
Tel: 02890747766



Legend

- Salmon Jumps 20/07/2021
- Red Lined Boundary

Appendix VII: Salmon Jumps 20.07.2021

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:2576 @ A3

Date: 08/08/2021

Multidisciplinary Environmental Consultants
MCL CONSULTING

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Tel: 02890747766

Appendix VIII: A5 Freshwater Fish Electrofishing and Netting Survey Results

River	Aquatic site number	Species recorded (composition and abundance)
Burn Dennet	6	Atlantic salmon: 2 Brown trout: 2 European eel: 4 Lamprey sp.: 34 Flounder: 1 3-spined stickleback: 2 Minnow: 63
Glenmornan River	7	Atlantic salmon: 21 Brown trout: 3 European eel: 4 Flounder: 30 3-spined stickleback: 1
Mourne River	8	Atlantic salmon: 4 Brown trout: 5 Flounder: 60 Stone loach: 1 Minnow: 183 3-spined stickleback: 498
River Finn	9	Atlantic salmon: 2 Lamprey: 1 Flounder: 1 Stone loach: 1 Minnow: 103 3-spined stickleback: 414
Mourne River	10	Brown trout: 2 European eel: 2 Lamprey: 32 Flounder: 10 Stone loach: 10 Gudgeon: 1 Minnow: 65 3-spined stickleback: 3

River	Aquatic site number	Species recorded (composition and abundance)
River Derg	14	Atlantic salmon: 31 Brown trout: 3 European eel: 4 Stone loach: 15 Roach: 1 Minnow: 51
River Strule	18	Atlantic salmon: 25 Brown trout: 15 Lamprey: 2 Minnow: 61 3-spined stickleback: 28
River Strule	20	Atlantic salmon: 1 Stone loach: 6 Roach: 3 Minnow: 416 3-spined stickleback: 22
Fairy Water	28	Brown trout: 1 Pike: 1 Roach: 39 Gudgeon: 90 Perch: 3
Drumragh River	32	Atlantic salmon: 3 Lamprey: 1 Stone loach: 12 Minnow: 61 3-spined stickleback: 1
Camowen River	34	Atlantic salmon: 31 Brown trout: 3 Lamprey: 6 Stone loach: 33 innow: 6
Ranelly Drain	36	Atlantic salmon: 11 Brown trout: 1 Stone loach: 83

River	Aquatic site number	Species recorded (composition and abundance)
Routing Burn	38	Brown trout: 13 Lamprey: 7 Stone loach: 9 Minnow: 3 3-spined stickleback: 1
Roughan River	41	Brown trout: 7 Lamprey: 18 3-spined stickleback: 2
Ballygawley River	42	Brown trout: 3 Stone loach: 3 3-spined stickleback: 1
River Blackwater	47	Minnow: 5

Salmon 0+ Electrofishing Results 2018
Foyle Catchment

Salmon 0+

- None (0)
- Poor (1 - 4)
- Fair (5 - 14)
- Good (15 - 24)
- Excellent (25+)

- Major Towns

Limavady
Strabane
Ballybofey
Castlederg
Omagh

0 5 10 20 30 40 50 Km

N

Trout 0+ Electrofishing Results 2018
Foyle Catchment

Trout 0+

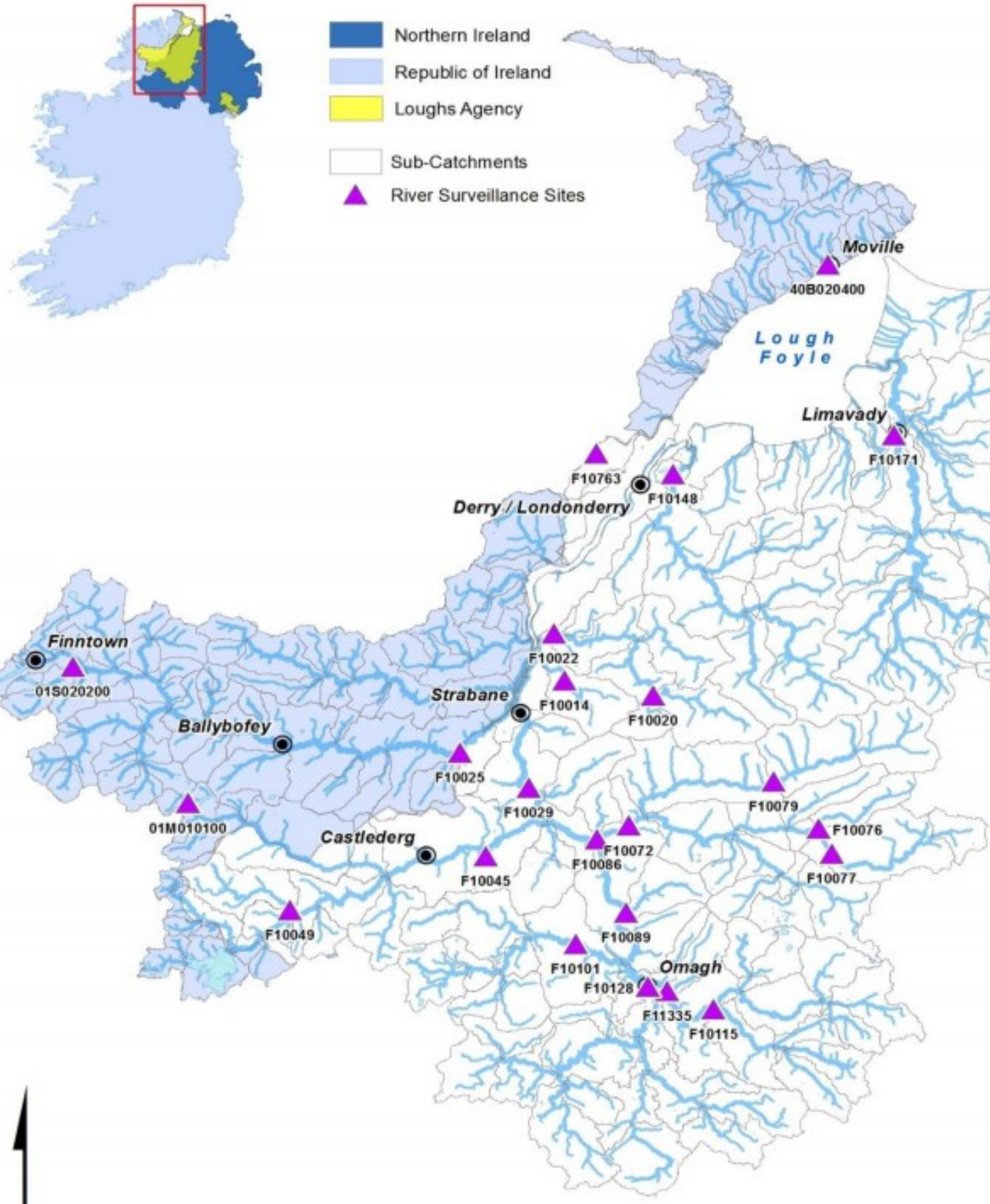
- Absent (0)
- Poor (0 - 1)
- Poor/Mod (2 - 3)
- Fair (4 - 8)
- Good (9 - 17)
- Excellent (18+)

- Major Towns

Limavady
Strabane
Ballybofey
Castlederg
Omagh

0 5 10 20 30 40 50 Km

N


Northern Ireland
Republic of Ireland
Loughs Agency
Sub-Catchments
River Surveillance Sites
Moville
40B020400
Lough Foyle
Limavady
F10171
F10763
F10148
Derry / Londonderry
Finntown
01S020200
F10022
Strabane
F10014
F10020
Ballybofey
F10025
F10029
F10079
01M010100
Castlederg
F10076
F10072
F10086
F10045
F10077
F10049
F10089
F10101
Omagh
F10128
F11335
F10115
N
0 2 4 8 12 16 20 Kilometers
0 2.5 5 10 15 Miles

Northern Ireland
Republic of Ireland
Loughs Agency
River Surveillance Sites
Sub-Catchments

Fish Classification 2018

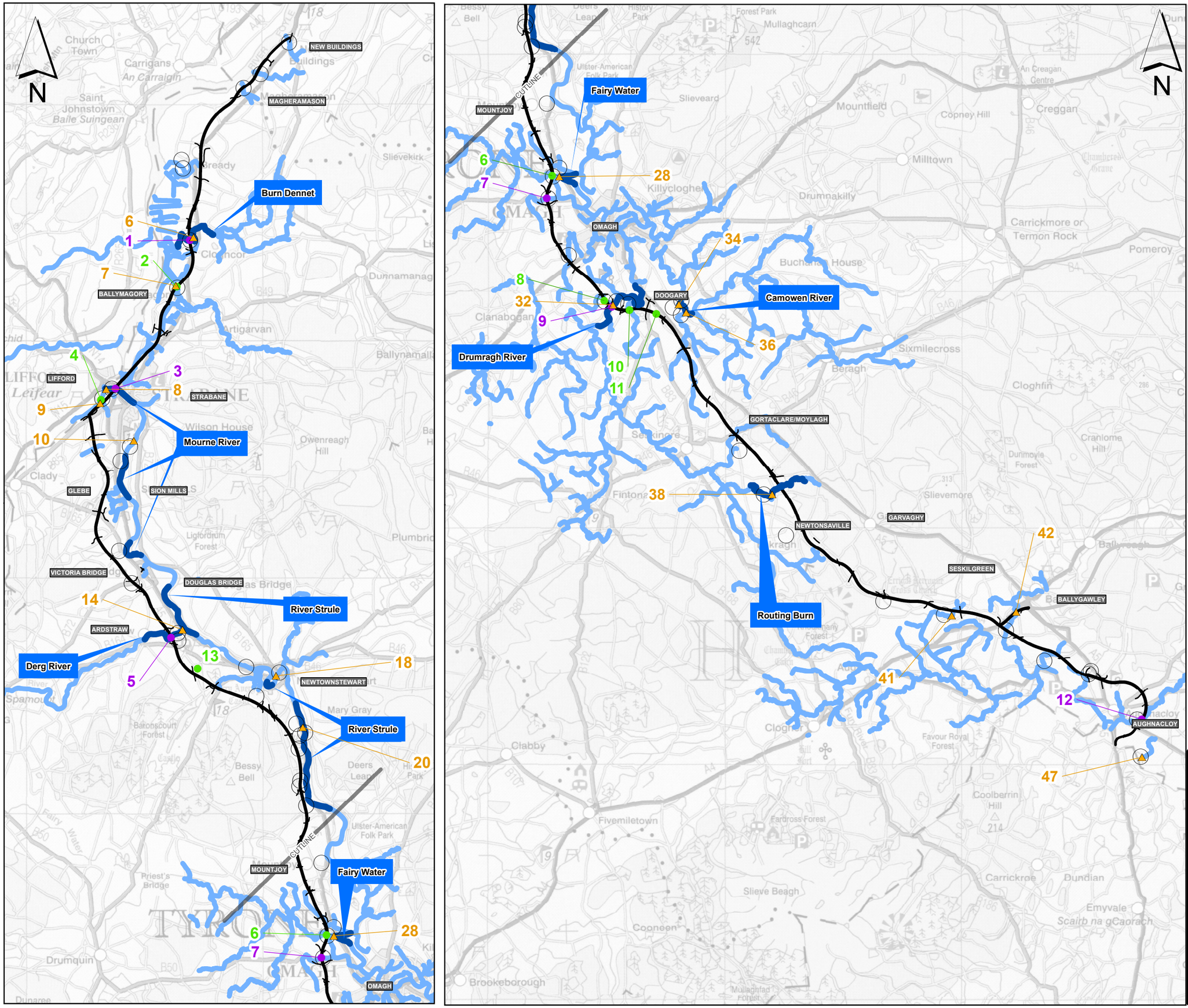
High
Good
Moderate
Poor

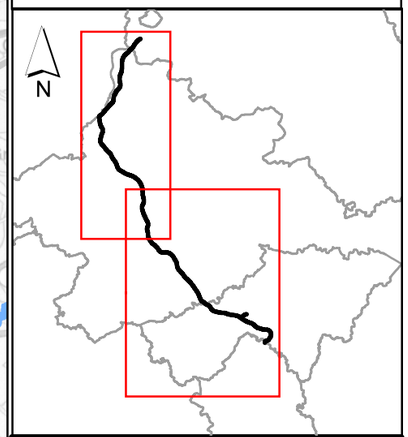
Moville
Lough Foyle
Limavady
F10763
Finntown
F10022
Strabane
F10014
F10020
Ballybofey
F10025
F10079
F10076
F10077
Castlederg
F10086
Omagh

N

0 2 4 8 12 16 20 Kilometers

0 2.5 5 10 15 Miles





Client
transportni

Project
A5 WTC Western Transport Corridor

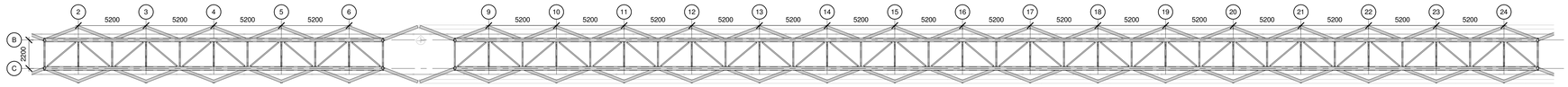
mouchel
building great relationships

Drawing Title
ENVIRONMENTAL STATEMENT

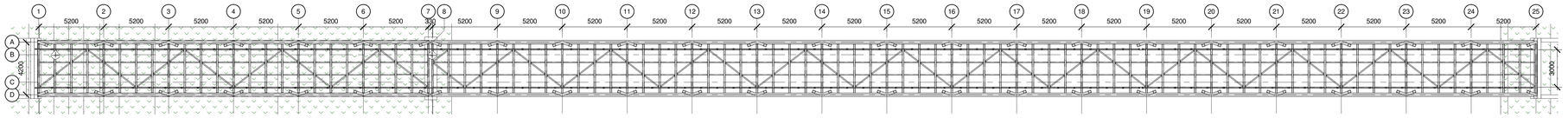
MACROPHYTES AND FRESHWATER FISH

Figure No
Figure 11.35

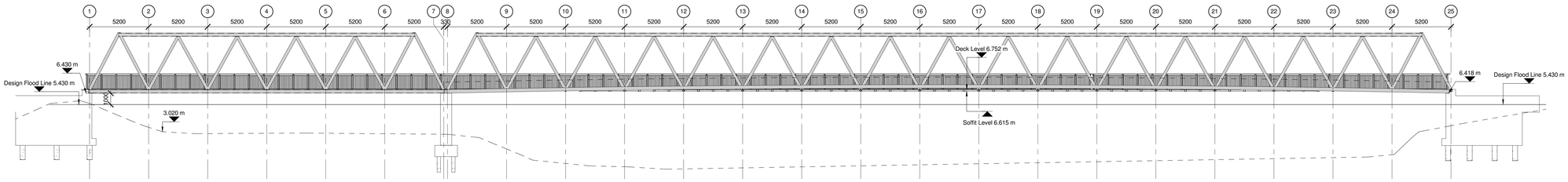
Version
A



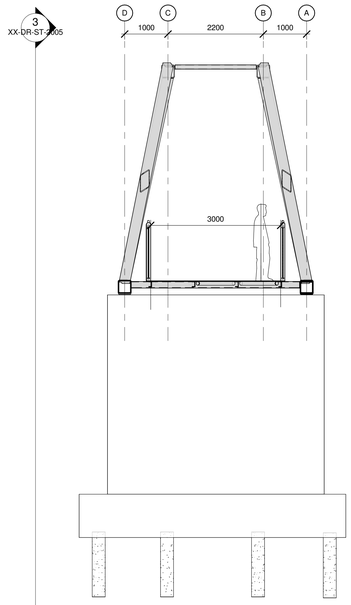
1 A-3001 **Plan View @ Top Rail**
Scale: 1 : 150



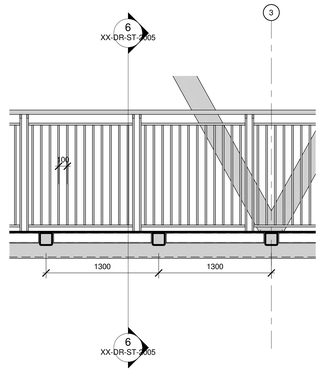
2 A-3001 **Plan View @ Deck Level**
Scale: 1 : 150



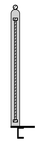
3 A-1101 **Typical Bridge Section**
Scale: 1 : 150



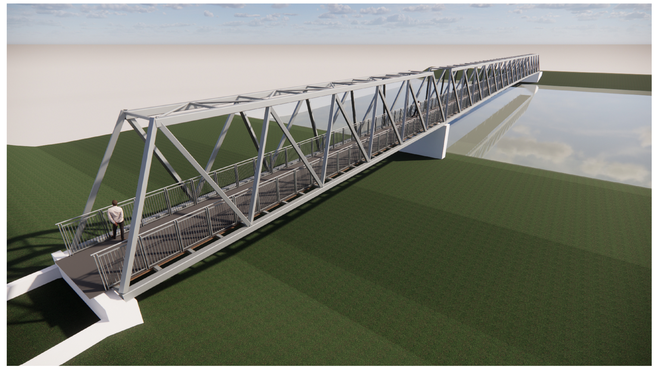
4 A-1101 **Typical Bridge Section**
Scale: 1 : 50

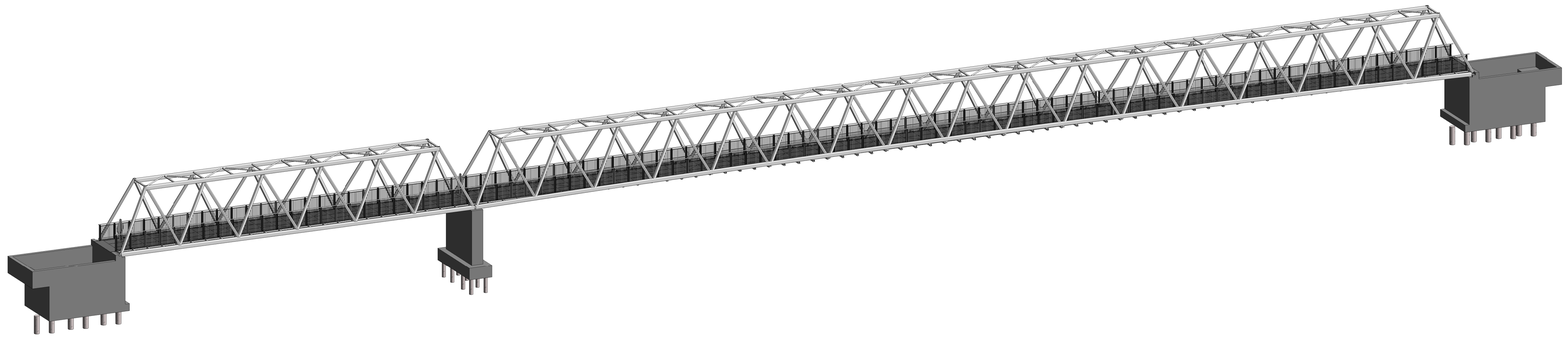


5 A-1101 **Parapet Detail**
Scale: 1 : 25



6 XX-DR-ST-2005 **Section 6**
Scale: 1 : 25





3D **3D View**
Scale:

Rev	Issue Date	Description	Issued By

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Founder
Peace Northern Ireland - Ireland
European Regional Development Fund

Client
Comhairle Contae Dhún na nGall
Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strabane Destrick Council

Project Status:
STAGE 1 - FEASIBILITY

Project
RIVERINE
COMMUNITY PARK

Drawing
Proposed Bridge Layout

Scale: @ A0
As indicated
0.5 0 0.5 1 1.5 2 2.5
SCALE 1:50
m

Drawn	Author	Checked	Checker	Approved	Approver
Date		Date		Date	

Drawing No.
RVCP-MCD-Z4-XX-DR-ST-2005
Rev.

Project Number:
E2256
Status Code & Description
S2

Plot Date: 11-Jun-21 11:36:49 AM

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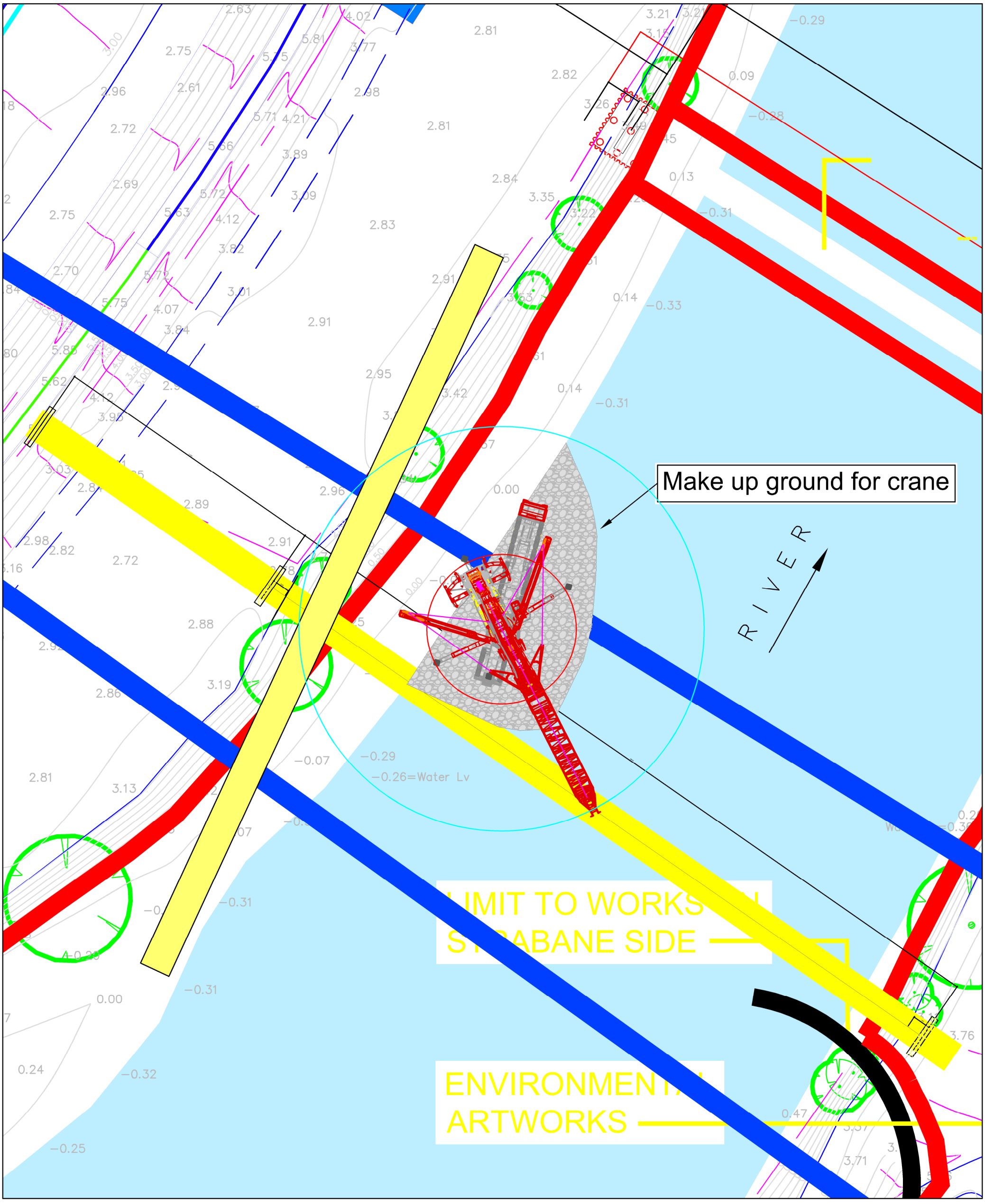
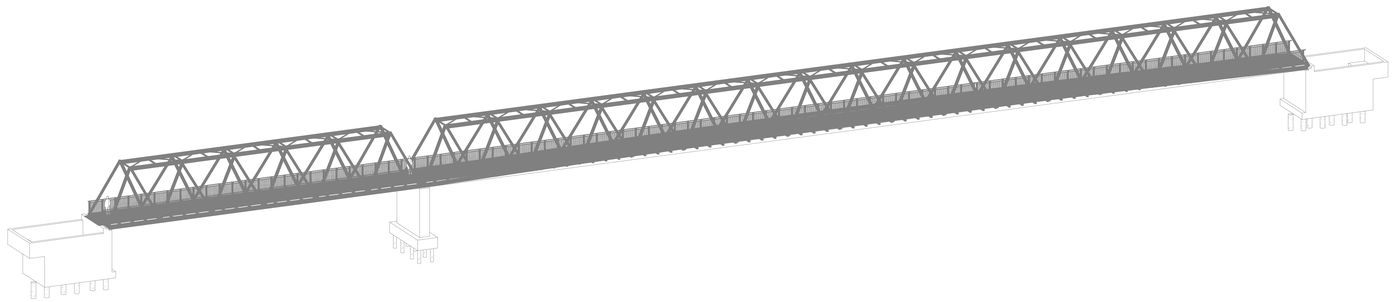
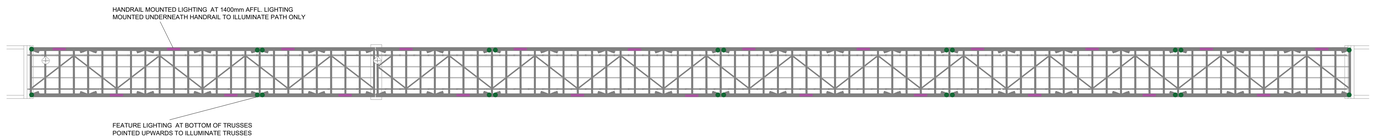
CASTLEVIEW BUSINESS PARK, LITTLE ISLAND, CORK
TEL: +353 21 603 0611



PROJECT: Strabane Lifford Bridge Install - LTM1750-9.1		**CLIENT:** McAdam Design
LOAD: 100 tons net.	**RADIUS:** 22 metres	**SWL:** 104.3 tons
CONFIGURATION: TYVEN	**DRAWN BY:** TOL	**DATE:** 02-02-2021





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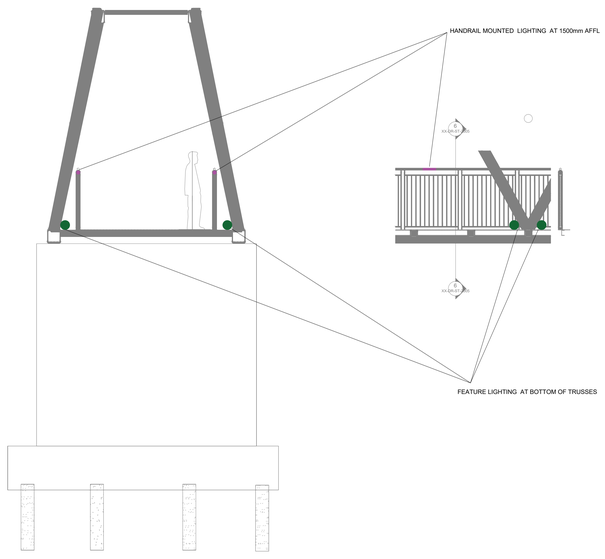

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BRIDGE LIGHTING LEGEND

6	Handrail Mounted lighting - final number to be confirmed
6	Handrail Mounted Lighting cross section view
7	Feature lighting - final number to be confirmed

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

Rev	Issue Date	Description	App
-	-	-	-

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Peace
Northern Ireland - Ireland
European Regional Development Fund

Client

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Donegal County Council

Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Bán
Derry Cittie & Strabane Destrict Council

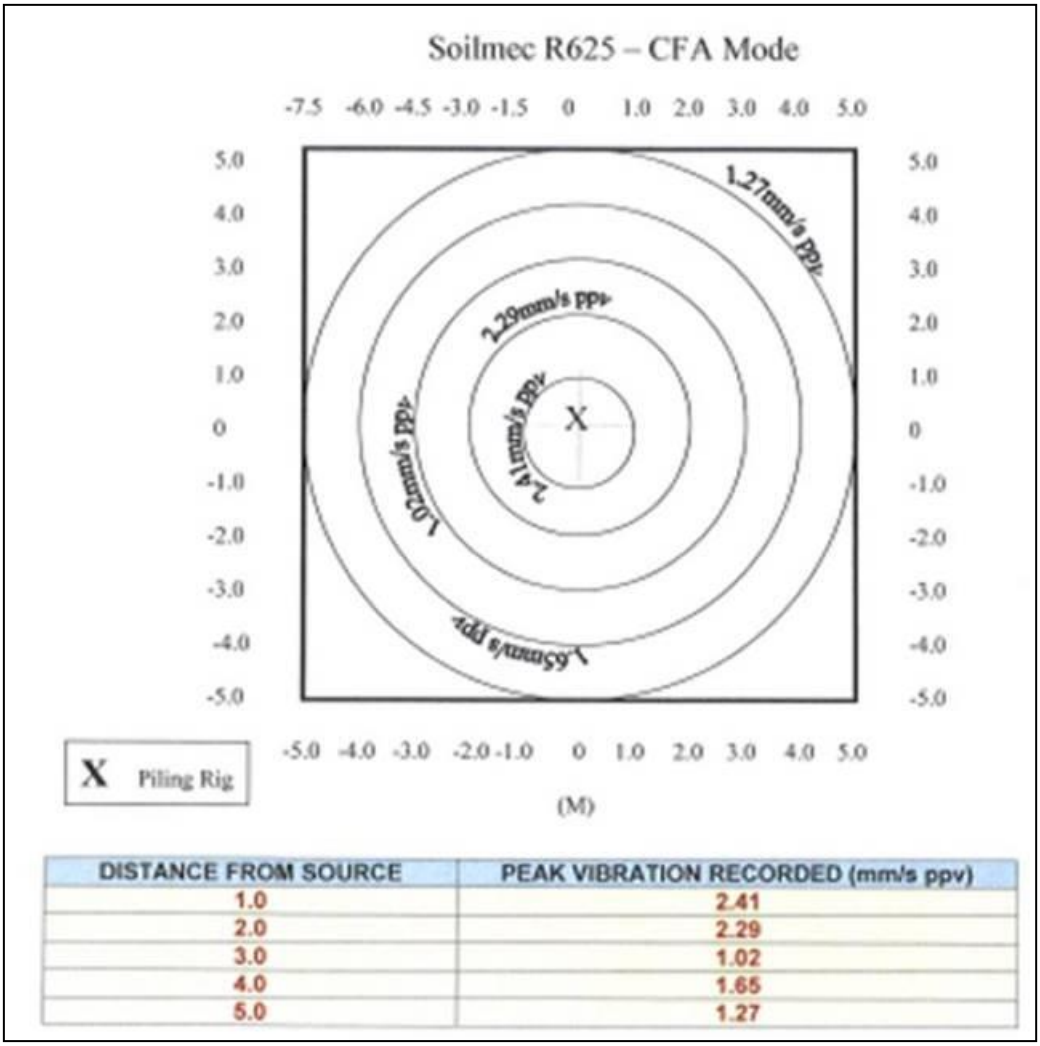
Project Status	Draft for comment
Project	RIVERINE COMMUNITY PARK
Drawing	Riverine Bridge Lighting Indicative Design
Scale	As Shown

Drawn	PQ	Checked	AS	Approved	GMcC
Date	JUNE 21	Date	JUNE 21	Date	JUNE 21

Project	Revision
RVCP - WW - ZZ - XX - PL - MEP-0004	

Project Number	Status code & Description
E2256	

Appendix XVII: Diagram illustrating a vibration contour graph for a 70t CFA piling rig



DISTANCE FROM SOURCE	PEAK VIBRATION RECORDED (mm/s ppv)
1.0	2.41
2.0	2.29
3.0	1.02
4.0	1.65
5.0	1.27

Appendix 8-13

Invasive Species Assessment (Plants) and Invasive Management Plan

APPENDIX 8-13

Invasive Species Assessment (Plants) and Invasive Species Management Plan

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: August 2021

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CONTENTS

1.0 INTRODUCTION

1.1 REPORT INTRODUCTION

MCL Consulting Ltd (MCL) was appointed by McAdam to undertake an invasive Species Assessment and prepare an Invasive Species Management Plan for the Construction Phase and Operational Phase for the Riverine Community Park Development Scheme. The site straddles the River Foyle between the eastern side of Lifford Town, County Donegal, Republic of Ireland and the western side of the town of Strabane in County Tyrone, Northern Ireland. This assessment applies only to invasive plants. For an assessment of invasive bivalves (Asian Clam) refer to the Aquatic Ecology Assessment (Chapter 9, **Appendix 8-12**).

The project will comprise the creation of new community park infrastructure in excess of twenty-three hectares either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities.

1.2 INVASIVE PLANT SPECIES OVERVIEW

1.2.1 INVASIVE SPECIES LEGISLATION

Northern Ireland

Japanese knotweed, Giant Hogweed and Himalayan Balsam are listed on Schedule 9 of the Wildlife (Northern Ireland) Order 1985 as amended by the WANE Act in 2010. The Wildlife and Countryside Act 1981 / Wildlife (Northern Ireland) Order 1985 controls the spread of these invasive plants into wild habitats. Part I (WILDLIFE – Miscellaneous), Section 14, Clause 2 of the Act states:

> *"if any person plants or otherwise causes to grow in the wild any plant which is included in "Part II of Schedule 9, he shall be guilty of an offence."*

Under the Environmental Protection Act 1990, Duty of Care Regulations 1991, Invasive species material and soil containing rhizomes and seeds must be removed to an appropriate licensed landfill site for disposal, accompanied by appropriate Waste Transfer documentation.

N.B. The Responsibility for dealing with invasive weeds rests with individual landowners. Strategic, widespread control is currently not the sole responsibility of any statutory organisation.

The current Northern Ireland Environment Agency policy on disposal of Japanese knotweed, Giant Hogweed, and Himalayan Balsam material and contaminated soils follows the Environment Agency guidelines and thereby places a duty of care on all waste producers to ensure Japanese knotweed is disposed of at a suitable licensed landfill site and that the site operator is notified in advance.

Republic of Ireland

Japanese Himalayan, Giant Hogweed, and Himalayan balsam are all listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011.

Under the European Communities (Birds and Natural Habitats) Regulations 2011, Regulation 49 places restrictions on the introduction of any plant species listed in Part 1 of the Third Schedule. A person shall be guilty of an offence if they: plant, disperse, allow or cause to disperse, spread or cause to grow the plant in the Republic of Ireland.

To move soil in the Republic of Ireland that contains Japanese knotweed, Giant Hogweed and Himalayan Balsam material, rhizomes or seeds will require a license from National Parks and Wildlife Service (NPWS).47

1.3 JAPANESE KNOTWEED OVERVIEW

Japanese Knotweed (Fallopia japonica), is a non-native highly invasive plant species originally from Japan and was distributed throughout Europe in the 1800s as an ornamental

plant. After being naturalised in the UK in the late 1800s, the species soon spread through the UK due to its invasive properties.

Reproduction is primarily by vegetative regeneration of rhizomes and fresh stems. The rhizome system may extend from a parent plant up to 7 metres laterally and to a depth of 2 - 3 metres. Very small fragments of rhizome (as little as 0.7 grams – about the size of a fingernail) can give rise to new plants.

Established Japanese knotweed with large reserves of stored energy contained within the rhizome system can be vigorous enough to penetrate hard surfaces such as bitumen, concrete and even foundations. The threat from Japanese Knotweed to buildings and property is real, making sites containing Japanese Knotweed difficult to sell as banks and lenders can often refuse mortgages.

1.3.1 JAPANESE KNOTWEED GROWING SEASON

Japanese knotweed will begin to shoot in spring (March- April) through the appearance of reddish, purple fleshy shoots that emerge from crimson buds at ground level.

These grow rapidly through the summer (May -July) and produce dense stands of tall bamboo like canes (up to 7ft), with heart shaped leaves up to 15cm in length.

Flowering occurs in late summer towards the end of the growing season (August-October), producing clusters of small, creamy-white flowers at the points where the leaves join the stem.

Towards the end of autumn, (November) leaves begin to turn a yellowy-brown and eventually drop. The hollow canes will turn brown and die off. The cycle will commence again in spring through new shoots.

JAPANESE KNOTWEED	J	F	M	A	M	J	J	A	S	O	N	D

GROWING SEASON												

	Appearance of shoots
	Summer Growth Period
	Onset of Flowering
	Winter dieback (visible canes)

1.3.2 JAPANESE KNOTWEED TREATMENT

Japanese knotweed can be controlled using both physical, or chemical methods or a plan may include a hybrid technique of both.

Physical methods include the excavation (dig & dump, onsite burial, root barrier or soil screening.

Dig and Dump

The "dig and dump" method involves the excavation of Japanese Knotweed material and infected soils until the rhizomes are longer present which could be as deep as 3m.

All the contaminated material and soils are then transported to a licenced landfill via licenced haulage for disposal.

This is often the most expensive way of eradication and is only recommended if other options are not viable.

Onsite burial

Onsite burial method involves the excavation of Japanese Knotweed and infected soils until the rhizomes are longer present this could be as deep as 3m.

The contaminated material can then be buried onsite in which a depth of 5m cover is required, however this depth can be reduced if the contaminated soils and material are encapsulated with a cell membrane.

This is only viable in certain ground conditions where the required depths are achievable.

Root Barrier

A root barrier is a physical membrane that protects structures, hardstanding etc and stops encroachment of Japanese knotweed. It's often used along with other methods like herbicidal treatments, excavation, screening and sifting, helping to prevent the plant's spread. It is effectively a preventative measure not to be used as a standalone measure.

Soil Screening

The soil screening method involves the excavation of Japanese Knotweed material and infected soils. The soil is processed via an allu bucket or similar where Japanese Knotweed rhizome material is separated from the soil material.

The contaminated Japanese Knotweed material can then be removed from site at a vastly reduced amount with the "clean" soils being re-engineered into the site.

Although more cost effective than dig & dump, there are still sizeable costs involved.

The physical control of Japanese Knotweed can occur at any time of the year, after an initial survey detailing the location of the stands and possible spread of rhizomes.

Chemical control is through the application of herbicide (usually Glyphosate), this can be applied through foliar application by spraying or weed wiping. Herbicide can also be applied by stem injection, or by cut and filling the stems. Herbicide treatment can take up to three years treatment followed by two years monitoring for regrowth.

Glyphosate Treatment	J	F	M	A	M	J	J	A*	S*	O*	N	D

	Suitable for Use
*	Preferred period of Use

1.4 HIMALAYAN BALSAM OVERVIEW

Himalayan Balsam *(Impatiens glanduliferais*) a non-native invasive terrestrial plant species. Since it was introduced, it has spread to most parts of Ireland, and is listed on Schedule 9 of the Wildlife (Northern Ireland) Order 1985. The species frequently grows along the banks of watercourses. It can also establish itself in damp woodland, flushes, mires and similar damp semi-shaded ground conditions. In Ireland It is the tallest annual species of plant (completes its life cycle in one year) due to its rapid growth, it shades out most of the native flora species. Individual plants can reach 2m in height, the plant have translucent fleshy stems, pink-purple slipper-shaped flowers and large oval pointed leaves with obvious teeth around their edges. Each tooth carries a small globular 'gland' and produces large numbers of flowers which are followed by 'seed pods' about 25mm long. When mature and dry, the fruits split open explosively if touched, flinging the seeds a considerable distance (>7m) from the parent plant.

1.4.1 HIMALAYAN BALSAM SPREAD

Himalayan Balsam is spread via seed, each plant produces about 2,500 seeds which fall to the ground, and with several parent plants close together, seeds can occur at a density of between 5000-6000 seeds per square metre. The seeds float, making watercourses a prime route for dispersal of the species. Seeds can also begin to germinate in water on their way to new sites. Seeds may also be transported unintentionally by wildlife, machinery, grazing livestock and people using sites for recreation. Plants may still be grown for aesthetic purposes and can be easily spread in garden waste and soil.

1.4.2 HIMALAYAN BALSAM CONTROL METHODS

Himalayan Balsam can be controlled by using Physical or chemical methods, both treatment methods should aim to control flowering before seeds have developed and have had the chance to spread and are most effective before June.

TREATMENT	J	F	M	A	M	J	J	A	S	O	N	D
Glyphosate												
Mechanical												

	Optimal Treatment Time
	Suboptimal

1.4.3 HIMALAYAN BALSAM CHEMICAL CONTROL METHODS

Himalayan Balsam can be chemically controlled using a Glyphosate based herbicide. This can be through foliar spray or weed wiping in areas of mixed growth.

Herbicide treatment should be carried out in the springtime before flowering but late enough to ensure that germinating seedlings have grown up sufficiently to be adequately covered by the spray. Only recommended approved Glyphosate can be used working near a watercourse.

1.4.4 HIMALAYAN BALSAM PHYSICAL CONTROL METHODS

Physical or mechanical control methods for Himalayan Balsam include repeated cutting or mowing, and regular grazing. Access to the sides of riverbanks can be difficult and inaccessible stands can quickly recolonise accessible cleared areas, so vigilance is needed if an area is to be effectively cleared.

Small infestation can easily be controlled by hand-pulling as the species is shallow rooted. Padded gloves should be worn to avoid risk of injury to hands. Seeds are not very robust and only survive for up to 18 months so a two-year control programme can be successful in eradicating this plant if there is not further infestation from upstream or adjacent sites.

To avoid additional spread do not disturb plants if seeds pods are visible (usually sometime after May). Programmes should be undertaken in April or early May. If hand pulling after this time, bag plant tops to prevent seed spread.

1.5 GIANT HOGWEED OVERVIEW

Giant hogweed *(Heracleum mantegazzianum),* is a non-native invasive terrestrial plant which is listed on Schedule 9 of the Wildlife (Northern Ireland) Order 1985. The species is a tall, cow parsley-like plant with thick bristly stems that are often purple-blotched.

The flowers are white and held in umbels, (flat-topped clusters, like those of carrots or cow parsley), with all the flowers in the umbel facing upwards. The flower heads can be as large as 60cm (2ft) across. It can reach a height of 3.5m (11.5ft) or more and has a spread of about 1-2m (3.5-7ft).

Giant hogweed is usually biennial, forming a rosette of jagged, lobed leaves in the first year before sending up a flower spike in the second year and then setting seed. True biennials only live for two years, dying after flowering, but giant hogweed does not always behave as a true biennial and in fact some are perennial, coming up year after year.

1.5.1 GIANT HOGWEED SPREAD

Giant Hogweed spread depends entirely on seed dispersal to spread. The majority of seeds fall within 4m of a parent plant (60-90%) resulting in densely populated localised and prolific patches. Seed dispersal is often exacerbated by other natural and human mechanisms: -

- Wetlands: Flowing water can spread Giant Hogweed seed, where it colonises bare and
- floodplain sediments downstream of the parent plant. Distance of dispersal can be increased by flood events. Some Sewage Treatment Works have also been the source of Hogweed seed.
- Transport Margins: Seeds produced by populations growing alongside roadside margins can be transported long distances by vehicle tyres
- Public site or grazing land: Seeds can be unintentionally transported by livestock / humans or when flowers are taken for aesthetic value. Some are planted deliberately in exotic gardens.
- Wind: Localised dispersal is frequently aided by wind, especially during the winter months.

1.5.2 GIANT HOGWEED CONTROL METHODS

Giant Hogweed can be controlled by using Physical or chemical methods.

Physical control may be preferred for small stands because chemical control creates open sites for the establishment of other invasive species, involves risks of contamination of nearby waters and can cause unwanted plant community changes. Treatment with chemicals can be regarded as a first step, followed by sowing grass mixtures and the use of manual methods or combined chemical and manual methods to re-establish a dense vegetation cover. Unfortunately, giant hogweed plants have a high regeneration ability which allows them to survive some manual control measures.

TREATMENT		F	M	A	M	J	J	A	S	O	N	D
Glyphosate												
Mechanical												

	Optimal Treatment Time
	Suboptimal

1.5.3 GIANT HOGWEED PHYSICAL CONTROL METHODS

Manual and mechanical control methods include root cutting, cutting the plant, covering the soil, mowing, ploughing and removing the umbels (flower heads). Except for root cutting, manual control will not cause immediate death of the plant. All other methods will need two to three treatments per year for several years to deplete the root reserves and kill the plants. All methods will need to occur for multiple years until no new plants grow from the seed bank. Monitor the site for at least three more years to make sure no new seedlings appear.

1.5.4 GIANT HOGWEED CHEMICAL CONTROL METHODS

Giant hogweed is susceptible to systemic herbicides, such as glyphosate and triclopyr, and the application of these herbicides is considered effective and cost efficient. Herbicide application can be used for controlling a single plant or large stands of giant hogweed. These systemic herbicides will be absorbed by the leaves and will move into the root to prevent regrowth. Triclopyr is a selective herbicide that acts only on broadleaf plants and

will not harm grasses in the area. Glyphosate is non-persistent in the soil but is also a non-selective herbicide. Areas sprayed with triclopyr can recolonize with grasses and other herbaceous species within the same growing season, this can help suppress Giant Hogweed recolonization.

Spray Giant Hogweed leaves with an herbicide containing triclopyr or glyphosate as the active ingredient. Use the recommended manufacturer's dose and follow label instructions. Apply the herbicide between late April and early June when hogweed leaves are green and actively growing. A follow-up treatment, in July or August, may be needed for the plants that did not die from the first herbicide application (e.g. seedlings, now leaf rosettes, which were once covered by leaves of the plants originally sprayed). During this follow-up treatment it is strongly recommended to remove any flower heads present to decrease next year's seed source. Giant hogweed plants can be sprayed through mid-October as long as they are still green and not dying back. It is easiest to spray before the plants grow overly tall. Options for dealing with tall plants are: spray them as they are, cut them down to ground level and spray the re-growth, or carefully cut the plants above waist height and spray remaining leaves. To be successful in eradicating giant hogweed, herbicide treatments (or another control method) will have to be repeated for multiple years, in order to kill the plants missed the prior year as well as the plants emerging from the seedbank.

Spray during dry and calm weather. Cover leaf surfaces thoroughly with spray droplets, but do not spray to the point that liquid is dripping off the leaves. Dye added to the herbicide can help see where has been already sprayed. Do not apply herbicide to non-target organisms as you want the other plants to live and revegetate the area. Do not cut or dig up the plant until the top growth has died back. If the leaves remain green several weeks or a month after the initial treatment, spray them with herbicide again.

1.5.5 GIANT HOGWEED DANGERS

Giant Hogweed can be dangerous to human health, wildlife, pets and livestock causing severe burns and blisters.

The sap of Giant Hogweed contains toxic chemicals known as furanocoumarins. When the sap comes into contact with the skin, and in the presence of sunlight, they cause a condition called Phyto-photodermatitis: a reddening of the skin, often followed by severe burns and blistering. The burns can last for several months and even once they have died down the skin can remain sensitive to light for many years.

2.0 SURVEY DESCRIPTION

For the purpose of this report the findings will record Lifford and Strabane in separate sections (Lifford in Section 3 and Strabane in Section 4).

2.1 SURVEY LIMITATIONS

The findings from this survey are the result of a visual inspection only and should not be taken as a guarantee that invasive plant species are not present on the property or neighbouring properties.

Invasive plants can sometimes be concealed by landowners or occupants deliberately or by accident. This includes the physical removal of the plants stems and crowns, mowing lawns or covering the suspect area with turf, hard standing, landscape fabric, ornamental gravel, bark mulch etc.

Invasive species which have undergone herbicide treatment may not be visible at the time of survey.

During winter, some invasive plant species like Japanese Knotweed can lay temporary dormant, which leaves no viable material above ground. Larger, more mature stands, dead canes can remain in place and provide a clear visual marker of the plant's location. However, on young or disturbed growth, canes can fall over and be blown away, leaving no indication of knotweed whatsoever. For these reasons, we recommend conducting surveys during the growing season of Invasive plant species (wherever possible), where plant growth presence is much more evident.

Some highly invasive species like Himalayan Balsam may also encroach to a significantly larger area from the beginning to the end of the season so may look quite different from when it was originally surveyed.

The survey conducted at Riverine has taken place at an optimal time during the growing season.

2.2 SITE LOCATION / DESCRIPTION LIFFORD & STRABANE

The subject site (**Figure 1**) straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns. The site measures approximately 11.69 hectares in total, with approximately 5.73 acres on the Lifford side and 5.96 acres on the Strabane side.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused car park, with the rest of the site consisting of woodland with a laneway through the site along the Eastern Boundary.

There is a clearing just North of the dissused carpark which consists of grassland.

An access lane towards the river through the woodland is in the Northern Portion of the Site.

There is an aggricultural field in the North East of the site which is used for grazing live stock.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

Figure 1. Site red line boundary

2.3 SURVEY METHOD LIFFORD & STRABANE

A comprehensive site walkover / survey was undertaken was on the 21st June 2021 to establish the presence, location and extent of any Invasive Plant Species.

The survey was undertaken by an Ecologist & Invasive species PCA qualified from MCL Consulting. The survey included checking all borders, boundaries, hedgerows, overgrown areas, woodland, lane ways, pathways, riverbanks, watercourses, fields and associated lands for Invasive plant species.

The location and extent of the Invasive species was photographed, a description recorded, and location was mapped out with GNNS survey equipment.

The walkover and approximate extent of the survey of all lands is shown in the blue boundary in **Figure 2**.

Figure 2. Site Survey area

There were invasive plant species observed during an extensive site walkover. This includes Japanese Knotweed, Giant Hogweed, and Himalayan Balsam which were all observed on both Lifford and Strabane sites.

The locations and extents of all invasives plants as surveyed are presented in site drawings as DWG.2 (Lifford) and DWG.3 (Strabane) at the back of the report.

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3.0 LIFFORD SURVEY FINDINGS

The locations and extents of all invasives plants as surveyed are presented in site drawing DWG.2 (Lifford) at the back of the report. Invasive Species was observed to be present on the Lifford side this include:

- Japanese Knotweed at 3 No. locations (JK14, JK15, JK16)
- Giant Hogweed at 1 No. locations (GH2)
- Himalayan Balsam at 3 No. locations (HB8, HB9, HB10)

3.1 JAPANESE KNOTWEED

Knotweed occurrences in the Lifford site are described in the text within this section and summarised in **Table 1**.

JK 14 was observed on the southern side of the existing riverside path. The approximate area of the stand was 30m^2 which was in a linear formation along the path. The stand had undergone some herbicide treatment as the Japanese Knotweed was experiencing die back. The canes of JK14 had dried and were brown/ black in colour, no leaves were apparent in the stand not exceeding heights 1.5m.Likely rhizome spread of the stand would cover an area of approximately 195m^2.

JK 15 was observed on the Northern side of the existing riverside path approximately 15m North East of JK14. The approximate area of the stand was 35m^2. The stand had undergone herbicide treatment as the Japanese Knotweed was experiencing die back. At the time of the survey the canes of JK15 had dried and were brown/ black in colour, no leaves were apparent in the stand. Likely rhizome spread of the stand would cover an area of approximately 225m^2.

Jk16 was observed on the bank of the River Foyle east of the riverside path close to the proposed bridge landing site. The stand covered an area of approximately 12m^2. The stand had under herbicide treatment with the stand experiencing dieback. There was regrowth noted closer to the water's edge the growth was stunted and leaves were discoloured and disfigured. Likely rhizome spread of the Jk16 could cover as much as 80m^2.

Table 1 Japanese Knotweed, Lifford

JK	PROXIMITY TO WATER (>12m)	PLANT HEIGHT (m)	VISABLE AREA (m^2)	PLANT VISIBLE ONSITE	DISTANCE FROM BOUNDARY >7M
14	NO	1.5-2.0m	$30m^2$	YES	NO
15	NO	1.5-2.0m	$35m^2$	YES	NO
16	YES	1.5-2.0m	$12m^2$	YES	NO

3.2 GIANT HOGWEED

Giant Hogweed was located at No.1 location GH2 along the bank of the River Foyle at the proposed slipway site. The plants were spread out over an area of approximately $40m^2$. At the time of the survey it was apparent that the Giant Hogweed GH2 had been treated with herbicide as there were signs of dead plant material.

3.3 HIMALAYAN BALSAM

Himalayan Balsam was noted in 3 locations at the time of the survey HB8, HB9, HB10.

HB8 was noted along the banks of the River Foyle it covered an area of approximately $1300m^2$. The Himalayan Balsam had reached heights of approximately 1m and was in good health. Some plants had begun to flower but seeding had not occurred at this stage.

HB9 is located just south of JK16 was along the banks of the River Foyle at the proposed bridge landing site it covered an area of approximately $270m^2$. The Himalayan Balsam had reached heights of approximately 1m and was in good health. Some plants had begun to flower but seeding had not occurred at this stage.

HB10 is located just to the North of JK16 along the banks of the River Foyle it covered an area of approximately $100m^2$. The Himalayan Balsam had reached heights of approximately 1m and was in good health. Some plants had begun to flower but seeding had not occurred at this stage.

4.0 STRABANE SURVEY FINDINGS

The locations and extents of all invasives plants as surveyed are presented in site drawing DWG.3 (Strabane) at the back of the report. Invasive Species was observed to be present on the Strabane side this include:

- Japanese Knotweed at 13 No. locations (JK1-JK13)
- Giant Hogweed at 1 No. location (GH1)
- Himalayan Balsam at 7 No. locations (HB8, HB1-HB7)

4.1 JAPANESE KNOTWEED

Knotweed occurrences are described in the text within this section and summarised in **Table 2**.

JK 1 was observed on the southern side along the western side of the concrete hardstanding area.This was the most significant infestation noted on site with an approximate area of 425m^2 which was in a linear formation along the edge of the carpark.

The dimensions of the stand JK1 is approximately 55m long by 9m depth the stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. Total rhizome spread of JK1 could cover as much as 900m^2. JK 2 was located north of the concrete hardstanding area with an approximate area of 35m^2.

The dimensions of the stand JK1 is approximately 8m long by 5m depth the stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant It is likely that total rhizome spread of the infestation could cover approximately 150m^2.

JK 3 was observed in a wooded area north of the concrete hardstanding area with an approximate area of 80m^2. The dimensions of the stand JK1 is approximately 25m long by 7.5m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour.

Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 340m^2.

JK 4 was observed growing within a clay bund next to the path/lane way with an approximate area of 35m^2. The dimensions of the stand JK 4 is approximately 7.5 long by 6m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant.
It is likely that total rhizome spread of the infestation could cover approximately 170m^2.

JK 5 was observed growing north west of the clearing beside a utilities pole on the edge of the main wetland which covers an area of approximately 85m^2. The dimensions of the stand JK 4 is approximately 7.5 long by 6m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m with an average thickness of stems around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 280m^2.

JK 6 was observed growing north west of the clearing next to the lane way covering an area of approximately 75m^2 in close proximity to JK7. The dimensions of the stand JK 6 is approximately 16m long by 5m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 270m^2.

JK 7 was observed growing north west of the clearing next to the lane way covering an area of approximately 105m^2 near JK6. The dimensions of the stand JK 7 is approximately 14m long by 14m wide at the widest points. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 310m^2.

JK 8 was observed growing along the southern side the Nancy burn just of the lane way approximately 100m^2. The dimensions of the stand JK 6 is approximately 13m long by 8.5m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 290m^2.

JK 9 was observed growing along the northern side of the Nancy burn across from JK8 just of the lane way covering approximately 75m^2. The dimensions of the stand JK 9 is approximately 20m long by 4m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 270m^2.

JK 10 was observed growing where the eastern path meets the old railway embankment covering an area of approximately 10m^2. The dimensions of the stand JK 9 is approximately 5m long by 2m wide. The stand had experienced die back, canes had dried and were discoloured with no leaves, this is most likely from herbicide treatment but there was some minimal regrowth that had occurred. It is likely that total rhizome spread of the infestation could cover approximately 70m^2.

JK 11 was observed along the lane way just North East from JK10 in the proposed carpark covering approximately 45m^2. The dimensions of the stand JK 11 is approximately 7m long by 7m wide. The stand had experienced die back, canes had dried and discoloured with no leaves, this is It is likely that total rhizome spread of the infestation could cover approximately 200m^2.

JK 12 was observed along the lane way just North from JK11 (outside red line boundary) covering an area of approximately 120m^2. The stand had experienced some die back in patches, these canes had dried and discoloured with no leaves. There was a mixture of regrowth throughout the stand which had achieved Heights of 1m, at the time of the survey. It is likely that total rhizome spread of the infestation could cover approximately 400m^2.

JK 13 was observed along the lane way just North from JK12 (outside the red line boundary) covering an area of approximately 40m^2. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 1m-1.5m and

average thickness of the stems were around 2cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 200m^2.

JKO1 was observed along the path next to the river at the North of the site as an outlaying plant. This was a single plant which cover an area of >1m. The plant was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 1m-1.5m and average thickness of the stems were around 2cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant.

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Table 2, Japanese Knotweed Strabane

JK	PROXIMITY TO WATER (>12m)	PLANT HEIGHT (m)	VISABLE AREA (m²)	PLANT VISIBLE ONSITE	DISTANCE FROM BOUNDARY >7M
1	NO	2.5-3.0m	425	YES	NO
2	NO	2.5-3.0m	35	YES	NO
3	NO	2.5-3.0m	80	YES	NO
4	NO	2.5-3.0m	35	YES	NO
5	YES	2.5-3.0m	85	YES	NO
6	No	2.5-3.0m	75	YES	NO
7	YES	2.5-3.0m	105	YES	NO
8	YES	2.5-3.0m	100	YES	NO
9	YES	2.5-3.0m	70	YES	NO
10	NO	1m	10	YES	NO
11	NO	1m	45	YES	YES
12	NO	1m	120	YES	YES
13	NO	1.5m-2m	40	YES	YES
JKO1	YES	1.5-2m	>1m	YES	YES

4.2 GIANT HOGWEED

Giant Hogweed was located at No.1 location (GH1) along the bank of the River Foyle under a tree. The Giant Hogweed plants were spread out over an area of approximately 40m^2. At the time of the survey The Giant Hogweed had reach heights in excess of 2m, with some small plants towards the

edge of the infestation. The plants were observed in good health and of typical colour flowering had begun in some plants, but seed dispersal had not yet occurred.

4.3 HIMALAYAN BALSAM

Himalayan Balsam was noted at No.7 locations at the time of the survey HB1- HB7. HB1 was noted along the banks of the River Foyle and down along the east side of the old railway embankment, the infestation also extended along the railway embankment around to where the badger setts were located. The plants were generally 1m -1.5m at the but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.
The footprint of the infestation was in excess of 1500m^2.

HB2 was observed along the lane way which continues North along the old railway embankment. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred. The footprint of the infestation was in excess of 3000m^2.

HB3 was observed along the lane way which accesses the river. The infestation surrounds JK10 with an area of around 150m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.

HB4 was observed along the lane way just North of HB3 and covers an area of around 200m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.

HB5 was observed along the lane way just opposite HB4in the proposed car park and covers an area of around 70m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.

HB6 was observed along the lane way just to the North of Jk11 and covers an area of around 70m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.

HB7 was observed the edge of the concrete hardstanding area and covers an area of around 2000m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.

5.0 REMEDIATION

5.1 INVASIVE SPECIES MANAGEMENT PLAN / RECOMMENDATIONS

From the findings in Section 2. and Section 3 the following Invasive Management plan was developed to control / eradicate Japanese Knotweed, Giant Hogweed, and Himalayan Balsam for the lands on the Lifford Side Section 5.2 and Strabane.

The location of and extent of the Invasive species, with potential rhizome spread are shown in DWG1.

6.0 INVASIVE SPECIES MANAGEMENT PLAN LIFFORD

6.1 JAPANESE KNOTWEED

The proposed plan is to feature two main objectives to deal with the Japanese Knotweed (JK14, JK15 & JK16):

- The in-situ herbicide treatment of the Japanese Knotweed. (JK16).
- The excavation of Japanese Knotweed contaminated material which lies in areas critical to the development and relocated to a set aside containment area for continued herbicide treatment. (JK14 & JK15).

Table 3 summarises the management plan approach for each stand of Japanese Knotweed for the construction and operational phases.

Table 3 Management Measures, Japanese Knotweed, Lifford

JK	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE	OPERATIONAL PHASE
14	YES	Excavate & Relocate to CA1	Monitored
15	YES	Excavate & Relocate to CA1	Herbicide applied & monitored
16	NO	Fenced off & Herbicide applied	Herbicide applied & monitored

6.1.1 JAPANESE KNOTWEED INSITU HERBCIDE TREATMENT

In situ Herbicide treatment of JK16

It is recommended to treat the Japanese Knotweed stand JK16 in situ as it is situated in an area that is not critical to the development which will not be disturbed during construction.

The herbicide treatment can be applied through various methods depending on the size of plants at the time of treatment. This would be through foliar application via Knapsack spot spraying or weed wiping and stem injection if the plants stems are large enough.

It is likely that application via Knapsack spot spraying would be used in this instance. The herbicide applied will be Glyphosate based (Round up Proactive or similar) as it is approved for use in both forestry and aquatic environments, the product is also rain safe in 1hr. The herbicide will be applied in accordance with the manufacturer's instructions, at the recommended dosage during suitable conditions by fully certified Technician/s (PCA accredited and PA 6 and PA 6W certified).

Any treatment will be recorded in accordance with the Control of Pesticides Regulations 1986. It is proposed to treat the Japanese Knotweed when it is actively growing, twice per season for a minimum of three years, with the treatment beginning August of Year 1 with a follow up treatment applied in late August – October Year 1. The treatment will recommence the following season Year 2 with an herbicide application in June- August in Year 2 with a follow up application treatment later in the season August -October of Year 2.

The treatment will follow the same pattern for the following season in Year 3 with an herbicide application in June-August of Year 3 with a follow up application treatment later in the season August -October of Year 3.
After the scheduled treatment plan has finished (End of Year 3) the area will be continued to be monitored for any sign of regrowth for a period of at least two further years (Years 4 & 5).

If any regrowth appears it will be re-treated using the same method as before via herbicide application.

6.1.2 JAPANESE KNOTWEED TO BE RELOCATED

Japanese Knotweed stands of JK 14 & JK15

The areas affected by Japanese Knotweed JK14 JK15 will be along with the infected soils will be excavated and relocated to a set aside area CA1 for continued treated shown in DWG.4. The areas are within an area which are going to be developed therefore it is recommended to relocate the stands and subsequent infected materials. The infected areas will be excavated out until there is no more visible signs of the rhizome which could be as deep as 3m, but most likely around 2m.

This material will be selected by the onsite supervisor who will decide the extent of the excavation footprint and depth based on visual inspections. This material selected by the onsite supervisor will then be moved either by excavator or dump truck to the containment area for on-going treatment. It is recommended that the onsite supervisor is adequately trained (PCA) or similar.

6.1.3 MATERIAL TO BE RELOCATED

The potential Rhizome spread is most likely to be around 3m-3.5m from the edge of the visible growing plant base on the size and maturity of the stand. This has been assumed at 3.5m to base the potential Rhizome spread.

There would be 2 significant areas that would contain Japanese Knotweed Rhizomes JK14 and JK15 for relocation.

JK14 with a potential Rhizome spread of 200m2 X 2m Depth = 400m^3.
JK15 with a potential Rhizome spread of 200m2 X 2m Depth = 400m^3.

Total amount to be relocated to treatment area 800m^3.

6.1.4 CONTAINMENT TREATMENT AREA, LIFFORD

A containment area, comprising a fenced off area with exclusion signage, is to be created to hold ex-situ invasive species for on-going ex-situ treatment. This is to be located outside the SAC and within the confines of the site for the construction and operational phases of the site for as long as treatment is necessary.

The set aside treatment area (suggested location CA1, DWG 4) needs to be large enough to hold around 950m^3 of infected material (800m^3 of Japanese Knotweed infected material & 150m^3 Himalayan Balsam of Infected Material), the location is shown in DWG.4 with dimensions of 30m X 15m covering a footprint of approximately 450m^2. The height of the treatment area will be approximately 2.1m in height.

The containment area (suggested location CA1, DWG 4) is based on what is excavated from the No.2 Japanese Knotweed Stands JK14 & JK15 and the stripped Himalayan Balsam infected soils, therefore the size and scale of the containment area will be reduced if there is significantly less contaminated material which has been excavated.

6.1.5 THE RELOCATION OF JAPANESE KNOTWEED INFECTED SOILS

The soils and material that have been selected for relocation can then be placed in the containment area (CA1) via dump truck or by excavator. There will be a designated haul route to and from the containment area to ensure greater biosecurity, by reducing the chance of further spread to other areas. This haul route will be monitored via visual inspections to ensure no infected material is has fell on to the haul route during transportation.

Site management of the relocation to the containment area includes making sure the dump trucks are not overfilled, while transporting infected material.

During excavation adequate membrane will be laid beside the excavation while excavators are loading infected material on to dump trucks. So that any material falling from the excavators' bucket can be caught in the membrane and reduce spread.

6.2 HIMALYAN BALSAM

The proposed plan is to feature two main objectives to eradicate/control the Himalayan Balsam (HB8-HB10):

- The in-situ herbicide treatment of the Himalayan Balsam. (HB8 Partial, HB10).

- The stripping of lands that contain Himalayan Balsam which lie in areas critical to the development are to be relocated to a set aside containment area for continued herbicide treatment and monitoring. (H8 Partial, HB9).

It is necessary to strip the lands in development critical areas that contain Himalayan Balsam as this is best suited to timescale of the project. In situ herbicide application is not a viable option in the development critical areas as this requires a two-year treatment plan, therefore the stripping of these lands and relocation of material is the preferred treatment option. **Table 4** summarises the management plan approach for each area of the Himalayan Balsam for the construction and operational phases.

Table 4 Management Measures, Himalyan Balsam, Lifford

HB	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE	OPERATIONAL PHASE
HB8	PARTIAL	Strip & Relocate to CA1/ Apply herbicide what remains in situ	Herbicide applied & monitored
HB9	YES	Excavate & Relocate to CA1	Herbicide applied & monitored
HB10	NO	Fenced off & Herbicide applied	Herbicide applied & monitored

6.2.1 HERBIDE TREAMENT

It is proposed to treat the Himalayan Balsam infestations HB8, HB9, and HB10 in situ via herbicide application during periods of active growth. The herbicide treatment process, the most efficient way is via foliar application through Knap sack spot spraying by certified technicians. A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.

The herbicide will be applied in accordance to the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species. Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying.

Spraying will only be carried out only in suitable weather conditions, to reduce spray drift. The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard. Long lance sprayers may be used in areas that are hard to reach or inaccessible.

6.2.2 TIMING

Herbicide application should be carried out during periods of active growth, before flowering but late enough to ensure that germinating seedlings have grown up sufficiently to be adequately covered by the herbicide (50+ cm would be suitable).

The initial application should ideally be carried out in May/June with subsequent treatments/monitoring likely being required in July/August. (via the treatment process in 6.2.1).
The 2nd season would follow the same course followed by two years of monitoring.

6.2.3 MONITORING

The site will be continued to be monitored for a minimum of two years for any signs of regrowth upon completion of two years herbicide treatment. Any regrowth will be treated with herbicide using the same techniques used previously on site.

Due to the location of the site on the banks of the River Foyle, further recolonisation may occur from seed dispersal from the river especially on the riverbank.

6.2.4 STRIPPING OF HIMALYAN BALSAM

This involves the stripping of ground critical to the development and moved to a set aside non-critical part of the site for continued herbicide treatment. A midi or standard excavator with a wide grading/ Ditching bucket will be used to scrip the infected soils from the site and transport the material to a bunded treatment area via dumper. The areas will be stripped to a depth of 150mm, the extent of the areas will be confirmed by the supervisor during excavation. Based on the survey estimated that approximately an area of as much as 5000m^2 would need to be stripped as part of this process.

This would result in (1000m^2 x 150mm =150$m^{3)}$ 150m^3 of material being moved from critical development area to the set aside treatment area (CA1).

The removal of the infected soil will be supervised by a suitable qualified Invasive species technician/surveyor who will designate the area and extent for removal to the required depth.

This will be inspected visually so that no there are no visible signs of invasive species plant material or seeds in areas that are to be developed. The Invasive species in the treatment area will be treated for at least 2 seasons and will be continued to be monitored for regrowth.

The remaining infestations of Invasive Species which are not proposed to be stripped will be fenced off and treated in situ via herbicide application also for at least two seasons and monitored for regrowth.

6.3 GIANT HOGWEED

6.3.1 HERBIDE TREAMENT

The Giant Hogweed on located on site has already undergone herbicide treatment it is proposed to continue this process and treat the Giant Hogweed (GH2) in situ. The herbicide treatment process, the most efficient way is via foliar application through Knap sack spot spraying by certified technicians.

A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.The herbicide will be applied in accordance to the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species.

Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying. Spraying will only be carried out only in suitable weather conditions, to reduce spray drift. The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard.

6.3.2 TIMING

It is recommended to treat the Giant Hogweed twice per season for a period of at least two years. The 1st foliar spraying for Giant Hogweed commencing between late April and June (if possible) before seeding and flowering, also Giant Hogweed can become less accessible later in the season due to increasing heights.

A follow up treatment later in the season should be applied for any late germinating plants before seed set. The 2nd season would follow the same course followed by two years of monitoring.

6.3.3 MONITORING

The site will be continued to be monitored for a minimum of two years for any signs of regrowth upon completion of two years herbicide treatment. Any regrowth will be treated with herbicide using the same techniques used previously on site.

Due to the location of the site on the banks of the River Foyle, further recolonisation may occur from seed dispersal from the river especially on the riverbank.

6.4 BIOSECURITY

To ensure biosecurity on site and reduce the spread of the invasive species throughout the site and on to other sites the following measures are to be implemented:

- Erect fencing around the invasive species (Japanese Knotweed & Giant Hogweed) and place relevant signage
- Erect Fencing around Containment Treatment Area and relevant signage.

The general Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invertebrate species is as follows:-

Invasive Species (Plants and Bivalves) Construction Phase

- Before any piece of construction 'machinery' including crane or mobile machinery / plant, (excavators, rollers, dumpers, tele-handlers etc.) is delivered to the site, the invasive species Clerk of Works shall be provided documentation providing details of all sites close to or involving works in water that the machinery has been working on or stored on in the last 60 days.
- The invasive species Clerk of Works may consider the need for additional biosecurity measures, such as quarantining or pre-delivery disinfection, for any high risk machinery that has recently involved in in-river works.
- Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invasive bivalve species is as follows:-

    - On arrival at or departure from the site, **ALL** construction machinery, and delivery vehicles travelling beyond the Construction Compound / delivery bays

should be visually inspected and disinfected in the self-contained biosecurity washing area of the Construction Compounds.

- The disinfection process shall involve dosing of the exterior of the machinery with a diluted solution of 1% Vircon Aquatic solution or an approved alternative.
- The machinery should then be power-hosed with water of 60 ^{o}C + to remove disinfection solutions and any invasive species debris and any residual treated clams / eggs which may be present, followed by a final off-site visual inspection.
- The treatment and inspection of machinery shall be overseen and approved by a qualified ecological Clerk of Works, including verification records to confirm completion of the disinfection for each piece of machinery, including any replacement / standby units intended to be used on the project. Records shall be retained for inspection by the client's representatives.
- Sludge from the self-contained biosecurity facility shall be routinely (on at least a weekly basis) removed from the washing area and transferred to a water-tight covered skip for storage, awaiting off-site disposal to an appropriately licensed landfill site for deep burial. This is necessary, rather than on-site treatment at the proposed invasive species treatment areas due to the potential for the machinery washings to contain other residual contaminants such as oils.

Mitigation Measures Invasive Species (Plants only) Construction Phase

- The Invasive Species Clerk of Works and Ecological Clerk or Works shall be jointly responsible for the monitoring of biosecurity onsite. These responsibilities include site management, restrict personal and movement to designated areas, restrict access to site, clean maintain PPE, equipment and plant machinery.
- Plant Machinery are to restrict to in movement around the site, and within given work areas and haul routes to from containment areas.
- Plant machinery will remain on site in restricted area until excavation, and replacement to the containment area have been completed.
- Recommend the use of rubber tyre plant wherever possible rather than tracked plant.

- Plant machinery to be thoroughly cleaned down upon completion of works including tracks, tyres, buckets, trailers etc and material place in the containment area.
- PPE especially boots to be deep clean and any material placed in containment area.
- Cleaning of Plant Machinery and PPE will be overseen and undertaken by onsite Invasive Species supervisor who will instruct if the plant and personal are safe to leave.
- Installation of a root barrier membrane under the footpath: where the Japanese Knotweed remains in close proximity to the path or where required excavated is not achievable.

6.5 UPDATE SURVEY

It is recommended before that before any of the excavation or stripping elements of the treatment strategies to update the Invasive Species survey and management plan if required.

This is due to the nature of site along situated along the river Foyle which the lands are at risk from further spread of invasive species.

7.0 INVASIVE SPECIES MANAGEMENT PLAN STRABANE

7.1 JAPANESE KNOTWEED

The proposed plan is to feature 2 main objectives to eradicate/control with the Japanese Knotweed (JK14, JK15 & JK16):

- The in-situ herbicide treatment of the Japanese Knotweed. (JK1, JK2, JK3, JK5 JK01)
- The excavation of Japanese Knotweed contaminated material which lies in areas critical to the development and relocated to a set aside containment area for continued herbicide treatment. (JK4, JK5, JK6, JK8, JK9, JK10, JK11,)

Table 5 summarises the management plan approach for each stand of Japanese Knotweed for the construction and operational phases.

Table 5 Management Measures, Japanese Knotweed, Strabane

JK	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE	OPERATIONAL PHASE
JK1	NO	Fenced off & Herbicide applied	Herbicide applied & monitored
JK2	NO	Fenced off & Herbicide applied	Herbicide applied & monitored
JK3	NO	Fenced off & Herbicide applied	Herbicide applied & monitored
JK4	YES	Excavate & Relocate to CA2	Monitored
JK5	NO	Fenced off & Herbicide applied	Herbicide applied & monitored
JK6	YES	Excavate & Relocate to CA2	Monitored
JK7	YES	Excavate & Relocate to CA2	Monitored
JK8	PARTIAL	Excavate & Relocate to CA2	Herbicide applied & Monitored
JK9	YES	Excavate & Relocate to CA2	Monitored
JK10	YES	Excavate & Relocate to CA2	Monitored
JK11	YES	Excavate & Relocate to CA2	Monitored

7.1.1 JAPANESE KNOTWEED INSITU HERBCIDE TREATMENT

In situ Herbicide treatment of JK1, JK2, JK3, JK5 & JKO1

It is recommended to treat the Japanese Knotweed stands JK1, JK2, JK3, JK4, JK5 in situ as they are located areas that are not critical to the development which will not be disturbed during construction.

The herbicide treatment can be applied through various methods depending on the size of plants at the time of treatment. This would be through foliar application via Knapsack spot spraying, weed wiping and also stem injection if the plants stems are large enough. It is likely that application via Knapsack spot spraying would be used in this instance.

The herbicide applied will be Glyphosate based (Round up Proactive or similar) as it is approved for use in both forestry and aquatic environments, the product is also rain safe in 1hr. The herbicide will be applied in accordance with the manufacturer's instructions, at the recommended dosage during suitable conditions by fully certified Technician/s (PCA accredited and PA 6 and PA 6W certified).

Any treatment will be recorded in accordance with the Control of Pesticides Regulations 1986. It is proposed to treat the Japanese Knotweed when it is actively growing, twice per season for a minimum of three years, with the treatment beginning in August of Year 1 with a follow up treatment applied August – October of Year 1.

The treatment will recommence the following season Year 2 with an herbicide application in June-August of Year 2 with a follow up application treatment later in the season August -October of Year 2. The treatment will follow the same pattern for the following season in Year 3 with an herbicide application in June- August of Year 3 with a follow up application treatment later in the season August -October of Year 3.

After the scheduled treatment plan has finished (End of Year 3) the area will be continued to be monitored for any sign of regrowth for a period of at least two further years (Years 4 & 5).

If any regrowth appears it will be re-treated using the same method as before via herbicide application.

7.1.2 JAPANESE KNOTWEED TO BE RELOCATED

Japanese Knotweed stands of JK 4, JK6, JK7, JK8, JK9, JK10, JK11

The areas affected by Japanese Knotweed JK14 JK15 along with the infected soils will be excavated and relocated to a set aside area CA2 for continued treated shown in DWG.3. The areas are within an area which are going to be developed therefore it is recommended to relocate the stands and subsequent infected materials. The infected areas will be excavated out until there is no more visible signs of the rhizome which could be as deep as 3m, but most likely around 2m.

This material will be selected by the onsite supervisor who will decide the extent of the excavation footprint and depth based on visual inspections. This material selected by the onsite supervisor will

then be moved either by excavator or dump truck to the containment area for burial. It is recommended that the onsite supervisor is adequately trained (PCA) or similar.

7.1.3 MATERIAL TO BE RELOCATED

The potential Rhizome spread is most likely to be around 3m-3.5m from the edge of the visible growing plant base on the size and maturity of the stand. This has been assumed at 3.5m to base the potential Rhizome spread.

There are 7 stands of Japanese Knotweed and infected material JK4, JK6, JK7, JK8, JK9, JK10, JK11 for relocation:-

- JK4 with a potential Rhizome spread of 170m^2 X 2m Depth = 340m^3.
- JK6 & JK7 with a potential Rhizome spread of 500m^2 X 2m Depth = 1000m^3.
- JK8 & JK9 (Partial Removal) with a potential Rhizome spread of 170m^2 X 2m Depth = 340m^3.
- JK10 with a potential Rhizome spread of 50m^2 X 2m Depth = 100m^3.
- Jk11 with a potential Rhizome spread of 120m^2 X 2m Depth = 240m^3

Total amount to be relocated to treatment area 2020m^3.

7.1.4 CONTAINMENT TREATMENT AREA

The set aside treatment area (suggested location CA2, DWG. 4) needs to be large enough to hold around 2750m^3 of infected material (2020m3 of Japanese Knotweed infected material & 750m^3 Himalayan Balsam of Infected Material), the location is shown in DWG.4 with an irregular shape and dimensions of 80m X 20m covering a footprint of approximately 1250m^2. The height of the treatment area will be approximately 2.2m in height.

The containment area (suggested location CA2, DWG. 4) is based on what is excavated from the No.7 Japanese Knotweed Stands JK4 & JK6-JK11 and the stripped Himalayan Balsam infected soils, therefore the size and scale of the containment area will be reduced if there is significantly less contaminated material which has been excavated.

7.1.5 THE RELOCATION OF JAPANESE KNOTWEED INFECTED SOILS

The soils and material that have been selected for onsite burial can then be placed in the constructed lined containment cell via dump truck or by excavator. There will be a designated haul route to and

from the containment area to ensure greater biosecurity, by reducing the chance of further spread to other areas. This haul route will be monitored via visual inspections to ensure no infected material is has fell on to the haul route during transportation.

Site management of the relocation to the containment cell includes making sure the dump trucks are not overfilled, while transporting infected material.

During excavation adequate membrane will be laid beside the excavation while excavators are loading infected material on to dump trucks. So that any material falling from the excavators' bucket can be caught in the membrane and reduce spread.

7.2 HIMALYAN BALSAM

The proposed plan is to feature 2 main objectives to eradicate/control the Himalayan Balsam (HB1-HB7):

- The in-situ herbicide treatment of the Himalayan Balsam. (HB1 Partial, HB7).
- The stripping of lands that contain Himalayan Balsam which lie in areas critical to the development are to be relocated to a set aside containment area for continued herbicide treatment and monitoring. (HB2,HB3,HB4, HB5, HB6)

It is necessary to strip the lands in development critical areas that contain Himalayan Balsam as this is best suited to timescale of the project.

In situ herbicide application is not a viable option in the development critical areas as this requires a two-year treatment plan, therefore the stripping of these lands and relocation of material is the preferred treatment option.

Table 6 summarises the management plan approach for each area of the Himalayan Balsam for the construction and operational phases.

Table 6 Management Measures, Himalayan Balsam, Strabane

HB	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE	OPERATIONAL PHASE
HB1	PARTIAL	Strip & Relocate/ Apply herbicide what remains in situ	Herbicide applied & monitored
HB2	YES	Strip & Relocate	Herbicide applied & monitored
HB3	NO	Fenced off & Herbicide applied	Herbicide applied & monitored
HB4	YES	Strip & Relocate	Herbicide applied & monitored
HB5	YES	Strip & Relocate	Herbicide applied & monitored
HB6	YES	Strip & Relocate	Herbicide applied & monitored
HB7	NO	Fenced off & Herbicide applied	Herbicide applied & monitored

7.2.1 HERBIDE TREAMENT

It is proposed to treat the Himalayan Balsam infestations HB1-HB7 in situ via herbicide application during periods of active growth. The herbicide treatment process, the most efficient way is via foliar application through Knap sack spot spraying by certified technicians. A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.

The herbicide will be applied in accordance to the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species. Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying. Spraying will only be carried out only in suitable weather conditions, to reduce spray drift. The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard. Long lance sprayers may be used in areas that are hard to reach or inaccessible.

7.2.2 TIMING

Herbicide application should be carried out during periods of active growth, before flowering but late enough to ensure that germinating seedlings have grown up sufficiently to be adequately covered by the herbicide (50+ cm would be suitable).

The initial application should ideally be carried out in May/June with subsequent treatments/monitoring likely being required in July/August. (via the treatment process in 6.21).
The 2nd season would follow the same course followed by two years of monitoring.

7.2.3 MONITORING

The site will be continued to be monitored for a minimum of two years for any signs of regrowth upon completion of two years herbicide treatment. Any regrowth will be treated with herbicide using the same techniques used previously on site.

Due to the location of the site on the banks of the River Foyle, further recolonisation may occur from seed dispersal from the river especially on the riverbank.

7.2.4 STRIPPING OF HIMALAYAN BALSAM

This involves the stripping of ground critical to the development and moved to a set aside non-critical part of the site for continued herbicide treatment. A midi or standard excavator with a wide grading/ Ditching bucket will be used to scrip the infected soils from the site and transport the material to a bunded treatment area via dumper.

The areas will be stripped to a depth of 150mm, the extent of the areas will be confirmed by the supervisor during excavation. Based on the survey estimated that approximately an area of as much as 5000m^2 would need to be stripped as part of this process. This would result in (5000m^2 x 150mm =750$m^{3)}$ 750m^3 of material being moved from critical development areas to the set aside treatment area (CA2).

The removal of the infected soil will be supervised by a suitable qualified Invasive species technician/surveyor who will designate the area and extent for removal to the required depth. This will be inspected visually so that no there are no visible signs of invasive species plant material or seeds in areas that are to be developed.

The Invasive species in the treatment area will be treated for at least 2 seasons and will be continued to be monitored for regrowth.

The remaining infestations of Invasive Species which are not proposed to be scrapped will be fenced off and treated in situ via herbicide application also for at least 2 seasons and monitored for regrowth.

7.3 GIANT HOGWEED

7.3.1 HERBIDE TREAMENT

It is proposed to treat the Giant Hogweed (GH1) in situ via herbicide application. The herbicide treatment process, the most efficient way is via foliar application through Knap sack spot spraying by certified technicians. A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.

The herbicide will be applied in accordance to the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species. Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying. Spraying will only be carried out only in suitable weather conditions, to reduce spray drift. The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard.

7.3.2 TIMING

It is recommended to treat the Giant Hogweed twice per season for a period of at least two years. The 1st foliar spraying for Giant Hogweed commencing between late April and June (if possible) before seeding and flowering, also Giant Hogweed can become less accessible later in the season due to increasing heights.

A follow up treatment later in the season should be applied for any late germinating plants before seed set. The 2nd season would follow the same course followed by two years of monitoring.

7.3.3 MONITORING

The site will be continued to be monitored for a minimum of two years for any signs of regrowth upon completion of two years herbicide treatment. Any regrowth will be treated with herbicide using the same techniques used previously on site.

Due to the location of the site on the banks of the River Foyle, further recolonisation may occur from seed dispersal from the river especially on the riverbank.

7.4 BIOSECURITY

To ensure biosecurity on site and reduce the spread of the invasive species throughout the site and on to other sites the following measures are to be implemented:

- Erect fencing around the invasive species (Japanese Knotweed & Giant Hogweed) and place relevant signage
- Erect Fencing around Containment Treatment Area and relevant signage.

Invasive Species (Plants and Bivalves) Construction Phase

- Before any piece of construction 'machinery' including crane or mobile machinery / plant, (excavators, rollers, dumpers, tele-handlers etc.) is delivered to the site, the invasive species Clerk of Works shall be provided documentation providing details of all sites close to or involving works in water that the machinery has been working on or stored on in the last 60 days.
- The invasive species Clerk of Works may consider the need for additional biosecurity measures, such as quarantining or pre-delivery disinfection, for any high risk machinery that has recently involved in in-river works.
- Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invasive bivalve species is as follows:-

    - On arrival at or departure from the site, **ALL** construction machinery should be visually inspected and disinfected in the self-contained biosecurity washing area of the Construction Compounds.

- The disinfection process shall involve dosing of the exterior of the machinery with a diluted solution of 1% Vircon Aquatic solution or an approved alternative.
- The machinery should then be power-hosed with water of 60 ^{o}C + to remove disinfection solutions and any invasive species debris and any residual treated clams / eggs which may be present, followed by a final off-site visual inspection.
- The treatment and inspection of machinery shall be overseen and approved by a qualified ecological Clerk of Works, including verification records to confirm completion of the disinfection for each piece of machinery, including any replacement / standby units intended to be used on the project. Records shall be retained for inspection by the client's representatives.
- Sludge from the self-contained biosecurity facility shall be routinely (on at least a weekly basis) removed from the washing area and transferred to a water-tight covered skip for storage, awaiting off-site disposal to an appropriately licensed landfill site for deep burial. This is necessary, rather than on-site treatment at the proposed invasive species treatment areas due to the potential for the machinery washings to contain other residual contaminants such as oils.

Mitigation Measures Invasive Species (Plants only) Construction Phase

- The Invasive Species Clerk of Works and Ecological Clerk or Works shall be jointly responsible for the monitoring of biosecurity onsite. These responsibilities include site management, restrict personal and movement to designated areas, restrict access to site, clean maintain PPE, equipment and plant machinery.
- Plant Machinery are to restrict to in movement around the site, and within given work areas and haul routes to from containment areas.
- Plant machinery will remain on site in restricted area until excavation, and replacement to the containment area have been completed.
- Recommend the use of rubber tyre plant wherever possible rather than tracked plant.
- Plant machinery to be thoroughly cleaned down upon completion of works including tracks, tyres, buckets, trailers etc and material place in the containment area.

- PPE especially boots to be deep clean and any material placed in containment area.
- Cleaning of Plant Machinery and PPE will be overseen and undertaken by onsite Invasive Species supervisor who will instruct if the plant and personal are safe to leave.
- Installation of a root barrier membrane under the footpath: where the Japanese Knotweed remains in close proximity to the path, or where required excavated is not achievable.

The following seasonality restrictions will apply to the development, and this details the periods for invasive species treatment:-

Seasonal Constraints for Construction and Associated Works

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
In-River Piling, Bridge Construction, In-river works, riverbank Works and piling within SAC												
Tree and Shrub Clearance, works within 150m of owl nest												
JK Treatment								Opt	Opt	Opt		
Balsam Treatment				Opt	Opt							
Hogweed Treatment				Opt	Opt	Opt						

Opt : Optimal Period **Red: Exclusion Period** **Green: Approved Period**

7.5 UPDATE SURVEY

It is recommended before that before any of the excavation or stripping elements of the treatment strategies to update the Invasive Species survey and management plan if required. This is due to the nature of site along situated along the river Foyle which the lands are at risk from further spread of invasive species.

8.0 APPENDICES

DWG

Key:

JK1 — Japanese Knotweed ID & Location

Potential Rhizome Spread (3.5m)

HB1 — Himalayan Balsam ID & Location

GH1 — Giant Hogweed ID & Location

Riverine Lifford & Strabane

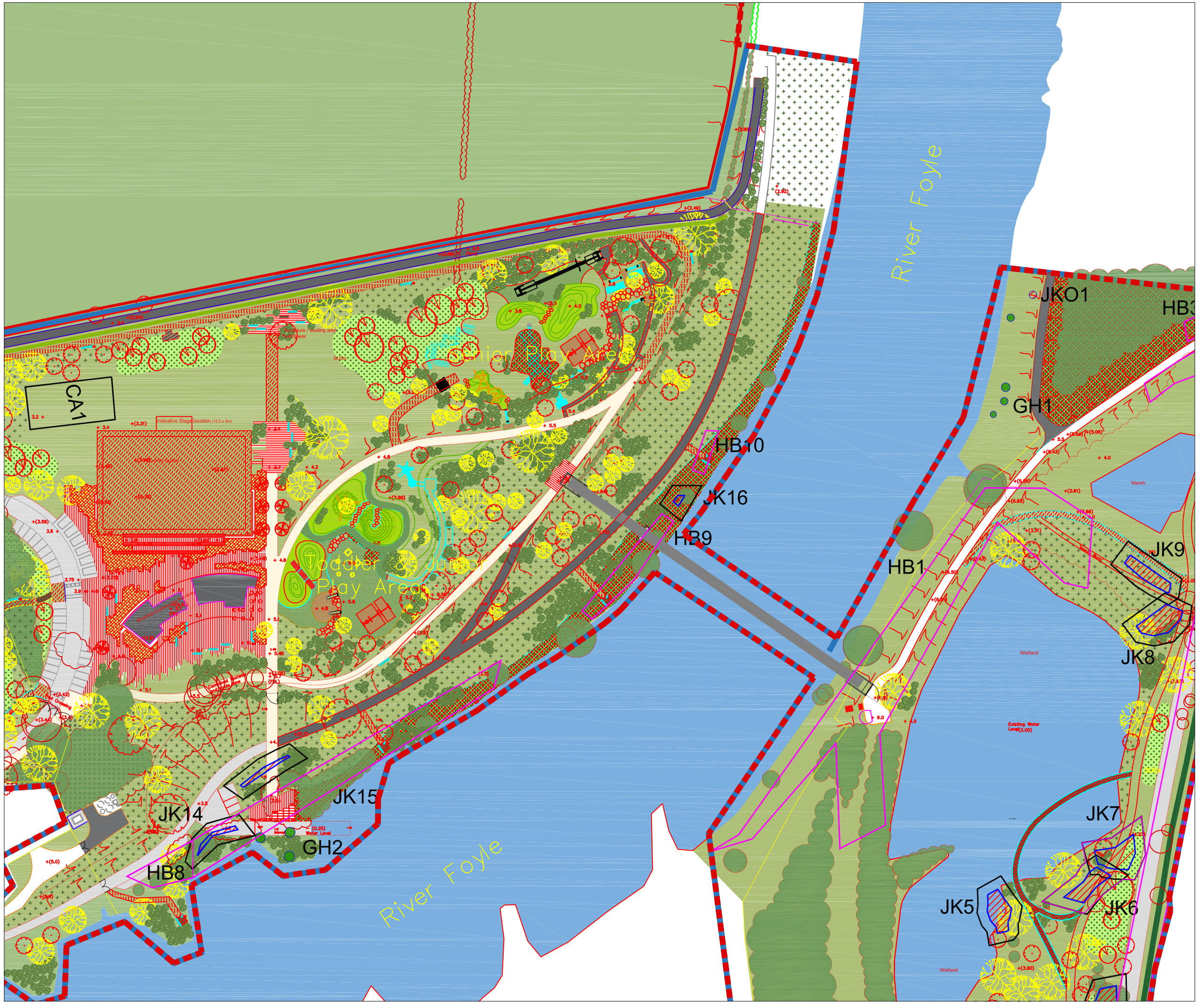
DWG.1

Invasive Species Location
(JUNE 2021)

Scale		Date
1;2500		20/06/21

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street, Belfast
BT3 9BJ
Tel: 028 9074 7766



Key:

- JK1 — Japanese Knotweed ID & Location
- Potential Rhizome Spread (3.5m)
- HB1 — Himalayan Balsam ID & Location
- GH1 — Giant Hogweed ID & Location
- CA1 (15m × 30m) — Containment Treatment Area

Riverine Lifford & Strabane

DWG.2

Lifford
Invasive Species Location
with Containment Treatment Area
(JUNE 2021)

Scale		Date
1;1250		20/06/21

Multidisciplinary Environmental Consultants
MCL CONSULTING
Unit 5, Forty Eight North, Duncrue Street, Belfast
BT3 9BJ
Tel: 028 9074 7766

Key:

- JK1 — Japanese Knotweed ID & Location
- Potential Rhizome Spread (3.5m)
- HB1 — Himalayan Balsam ID & Location
- GH1 — Giant Hogweed ID & Location
- CA1 — Containment Treatment Area Lifford
- CA2 — Containment Treatment Area Strabane

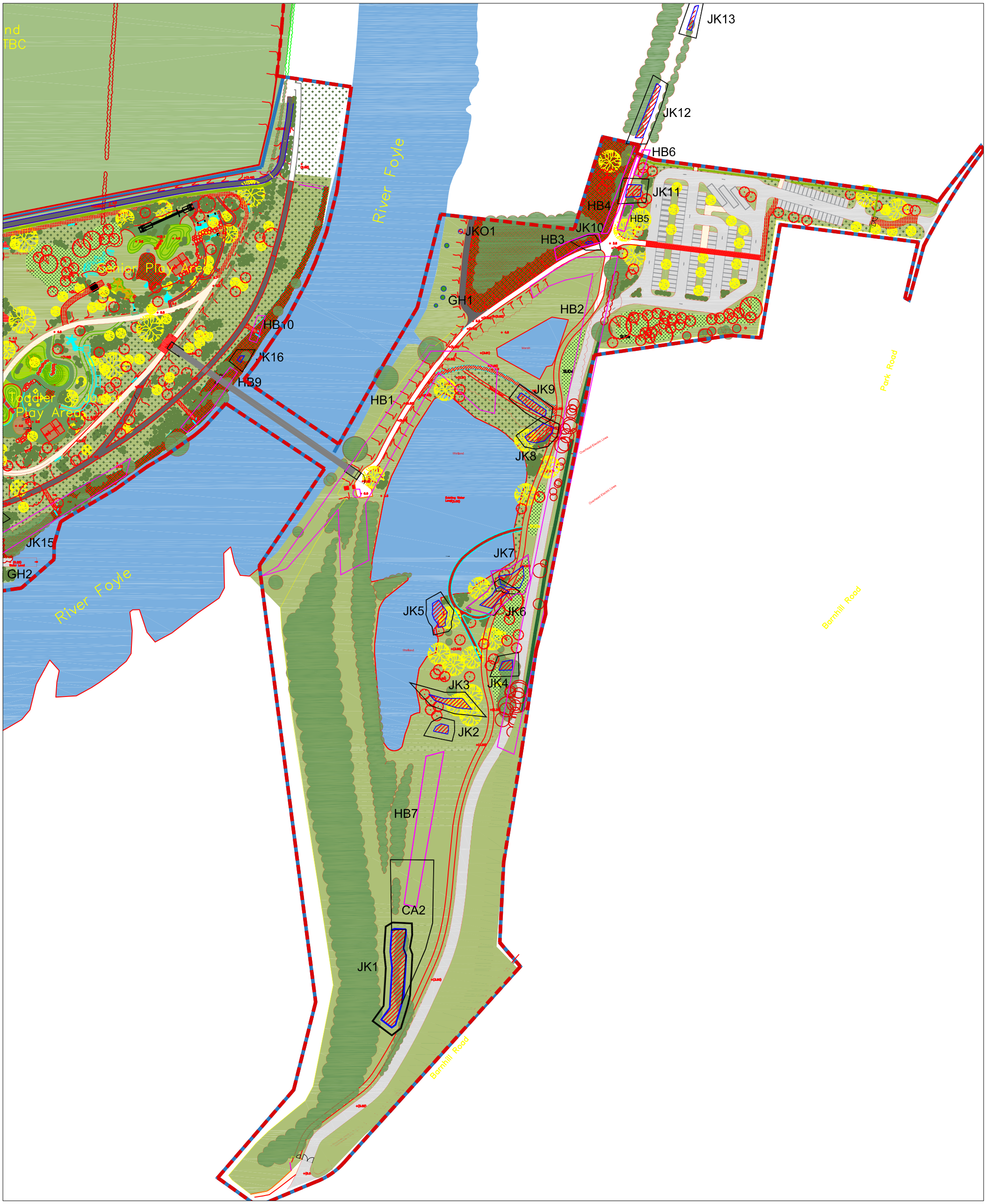
Riverine Lifford & Strabane

DWG.4

Proposed Site Layout
with Containment Treatment Area
(Post Relocation & Treatment)

Scale		Date
1;2500		20/06/21

Multidisciplinary Environmental Consultants
MCL CONSULTING
Unit 5, Forty Eight North, Duncrue Street, Belfast
BT3 9BJ
Tel: 028 9074 7766



Key:

JK1 — Japanese Knotweed ID & Location

Potential Rhizome Spread (3.5m)

GH1 — Giant Hogweed ID & Location

HB1 — Himalayan Balsam ID & Location

CA2 — Containment Treatment Area (1250m2)

DWG.3	Riverine Lifford & Strabane	
Scale 1;2000	Strabane Invasive Species Location with Containment Treatment Area (JUNE 2021)	
Date 20/06/21		

Multidisciplinary Environmental Consultants
MCL CONSULTING
Unit 5, Forty Eight North, Duncrue Street, Belfast
BT3 9BJ
Tel: 028 9074 7766

PHOTOS FROM SURVEY 22/06/21

Photos from survey 22nd June 2021- Lifford

Plate.1 JK14 growing along pathway

Plate.2 JK15 growing along pathway

Photos from survey 22nd June 2021- Lifford

Plate.3 JK16 growing along riverbank.

Plate.4 Himalayan Balsam along the River Bank. (HB8)

Photos from survey 22nd June 2021- Lifford

Plate.5 Himalayan Balsam along lane way (HB8)

Plate.6 Himalayan Balsam rivers edge (HB9)

Photos from survey 22nd June 2021- Lifford

Plate.7 Himalayan Balsam along lane way (HB8)

Photos from survey 22nd June 2021- Strabane

Plate.1 JK1 growing along disused carpark.

Plate.2 JK2 growing along the north edge of disused carpark.

Photos from survey 22nd June 2021- Strabane

Plate.3 JK3 growing in overgrown area North of the disused carpark.

Plate.4 JK5 growing near to pond next to utilities pole.

Photos from survey 22nd June 2021- Strabane

Plate.5 JK6 & JK7

Plate.6 JK8 & JK9 Growing along the drain

Photos from survey 22nd June 2021- Strabane

Plate.7 JK10 growing along the access lane

Plate.8 JK11 growing along the access lane

Photos from survey 22nd June 2021- Strabane

Plate.9 JK12 growing along the access lane

Plate.10 JK13 growing along the access lane

Photos from survey 22nd June 2021- Strabane

Plate.11 JKO1 growing along path along river side.

Plate.12 GH1 beside the path along river side.

Photos from survey 22nd June 2021- Strabane

Plate.13 GH1 along path along river side

Plate.12 HB1 near to the badger sets

Photos from survey 22nd June 2021- Strabane

Plate.13 HB2 along the lane way

Plate.14 HB3 along the access lane

Photos from survey 22nd June 2021- Strabane

Plate.15 HB along the laneway

Plate.15 HB5 along the laneway

Appendix 8-14

Kick Sample Survey

APPENDIX 8-14

Kick Sample Survey

Riverine Community Park
Lifford-Strabane

Client: McAdam

Issued: July 2021

MCL Consulting Ltd
Unit 5, Forty Eight North
Duncrue Street
Belfast
BT3 9BJ
028 9074 7766

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1.0 INTRODUCTION

In 2021 MCL Consulting were appointed by McAdam to provide a freshwater invertebrate survey as part of a water feature survey on behalf of their clients in order to form part of a requested EIAr for the proposed riverine scheme encompassing Strabane and Lifford.

1.1 Site Description

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a disused car park, with the rest of the site consisting of woodland.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

Figure 1: Site location

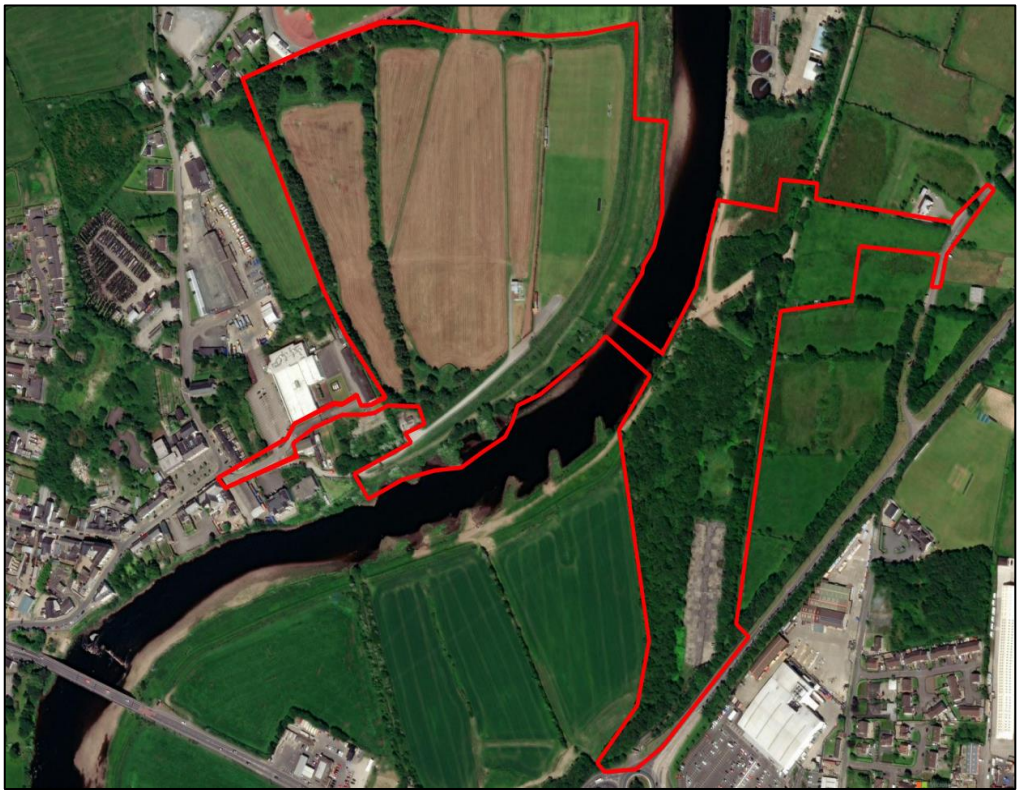

Figure 2: Site boundary

1.2 Development Proposal

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long-lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped greenspaces interlaced with a network of pathways, cycleways and retained wetlands. The development will be supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 11 hectares by utilising agricultural land and wetlands lying along either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The bridge will be a single span with the central, (in river), piering removed, with landing points on either side of the riverbanks. The Park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The proposed project, although not restricted to, comprises the following key components:

- Building providing indoor space for use on a shared basis for activities including music, drama, multi-media activities on the Lifford side of the proposed development.
- Outdoor flexible multi-functional space to accommodate a range of outdoor programmed & non-programmed activities both small & large scale. The space will have a maximum capacity of c.3,000 persons & will be dual facing for small or large events on the Lifford side of the proposed development.

- A new bridge connection that spans both sides of the River Foyle forming a strong, symbolic statement in terms of the unifying theme of bringing together all of the communities who will use the project.
- Wetland and park space to encourage participants to enjoy & learn key environmental assets of the area.
- River based recreational facilities for the increasing number of water sports groups in Lifford & Strabane will be made available on the Lifford side of the proposed development.
- Family Space incorporating unique play experience, designed to support children focused events & related programming.

1.3 Surveyors/Authors

MCL Consulting is a Northern Ireland based multidisciplinary environmental consultancy which provides expert advice for a wide range of ecological services in support of Environmental Impact Assessments (EIA).

Ryan Boyle BSc MSc – Consultant Ecologist

Fieldwork was carried out and assisted by Ryan Boyle a consultant ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queen's University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 7 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc – Graduate Ecological Consultant

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, a seasonal volunteer for the Bat Conservation Trust and a member of the Botanical Society of Britain and Ireland. She regularly takes part in newt, lizard and bat surveys, as well as botanical identification outings.

1.4 Survey Parameters

Table 1 below summarises the dates of surveys, timings and weather conditions experienced at the time of survey (temperature ˚C, Beaufort scale, cloud-cover Oktas and precipitation)

Table 1: Summary of weather conditions and survey periods

Surveyor	Date	Survey Start	Survey Finish	˚C	W/s	Oktas	Ppt
Ryan Boyle BSc (Hons), MSc Emily Taylor BSc (Hons)	27/06/21	13:00	15:00	16	9	8/8	75%

2.0 KICK SAMPLE SURVEY

2.1 Rationale of Kick Sample Survey

The aim of the kick sample survey and assessment was to:

- Determine if there is a difference in freshwater invertebrate species between the various water bodies throughout the site; and
- To help determine water quality based on species diversity or presence/absence through use of a qualitative technique

2.2 Desk Study

A previous water features survey had been carried out by MCL Consulting to identify water bodies located throughout the proposed site. this survey also assessed water quality of the water bodies located as well as assessed the risk to these water bodies from the proposed development plan. Based on this several locations were identified for further investigation by method of kick sampling, (see Appendix: I).

Table 2. Kick Sampling Survey Locations

Sample Location	Grid reference	Description
1	H 34184 98630	Small watercourse known as the Nancy Burn flowing east from Strabane towards the River Foyle along a deep-set shuck on the Strabane side
2	H 34182 98611	Park Road Drain running parallel the eastern boundary on the Strabane side
3	H 34125 98659	Nancy Burn drain entrance leading out to the River Foyle, set within a deep shuck with densely
4	H 33807 98959	Field drain culvert running through the northern area of the site on the Lifford side
5	H 33886 99026	Deep-set field drain located on the Lifford side's north-east corner
6	H 33843 98955	Field drain culvert running through the northern area of the site on the Lifford side
7	H 34099 98573	Flooded wet woodland area on the Strabane side
8	H 34066 98547	Flooded wet woodland area on the Strabane side
9	H 34083 98503	Flooded wet woodland area on the Strabane side
10	H 34070 98444	Flooded wet woodland area on the Strabane side

2.3 Field Study

2.3.1 Equipment

- A sampling tray - a pale coloured tray is best, as it contrasts with the brown/green invertebrates in the sample
- D frame net
- Hand lens, plastic spoon and/or pipette
- Chest height waders

2.3.2 Methodology

- Hold a fine-mesh net in the direction that you are facing. This should be downstream of where the surveyor is standing;
- Use one foot to kick the bottom of the stream, dislodging the substrate in the direction of the net;
- Animals dislodged from the substrate will be washed into the net;
- As sampling disturbs the substrate, always take the first sample at the lowest point upstream, then work back upstream.;
- Standardise time spent kicking each sample site, (e.g. 40 seconds);
- Standardise area of stream bed sampled, (e.g. 50x50cm quadrat);
- Identify invertebrates to the lowest taxonomic level as possible;
- Record the number of individuals of each species or estimate abundance if they are in large numbers, such as water fleas (Daphnia sp);
- 10-30 samples for each area.

2.3.3 Survey Constraints

Selected sites for Kick sampling were located throughout the site. several of these locations posed issues with access due to being at the bottom of steep sided, deep field drains. Treacherous terrain was difficult to observed and navigate due to densely overgrown banks as well as operating in water the depth can be undetermined until the surveyor is in the water. However, no constraints prevented the survey from being carried out.

2.4 Results

2.4.1 Field Study

Kick sampling surveys were carried out at 10 locations through the proposed Riverine Scheme site in order to help assess the aquatic habitats on site and to assess potential risks to the quality of these habitats.

2.4.2 Kick Sample Survey Results

Kick sample surveying was undertaken on the 21/06/2021 to ascertain freshwater invertebrate diversity and abundance at specific locations throughout the proposed Riverine Scheme site to help assess the quality of the aquatic habitats and assess the risks to these habitats.

A walkover of the proposed site and previous water features survey was carried out to identify and map out all open water bodies, courses and drains on site, collect water samples and field chemistry from all identified water features.

Several key locations were identified for further ecological investigation to assess invertebrate diversity in order to inform the significance of these water features as well as the risk to these features from existing and proposed developments.

Table 3: Summary of Findings for Kick Sample Survey

Sample Location	Grid reference	Description	Species Present
1	H 34184 98630	Small watercourse known as the Nancy Burn flowing east from Strabane towards the River Foyle along a deep-set shuck on the Strabane side	Caddisfly larvae x 25 Hoglouse x 20 Non-biting midge larvae x 33 Pond snail x 41
2	H 34182 98611	Park Road Drain running parallel the eastern boundary on the Strabane side	Pond Snail x 4 Non-biting midge larvae x 13 Caddisfly larvae x 2 Hoglouse x 14 European fingernail clam x 13

3	H 34125 98659	Nancy Burn drain entrance leading out to the River Foyle, set within a deep shuck with densely	Caddisfly larave x 6 Hoglouse x 15 Non-biting midge larvae x 2
4	H 33807 98959	Field drain culvert running through the northern area of the site on the Lifford side	Pond Snail x 50 Hoglouse x 50
5	H 33886 99026	Deep-set field drain located on the Lifford side's north-east corner	Hoglouse x 18
6	H 33843 98955	Field drain culvert running through the northern area of the site on the Lifford side	Pond Snail x 15 Hoglouse x 32
7	H 34099 98573	Flooded wet woodland area on the Strabane side	Pond skaters x 45 Water beetles x 10 Waterboatman x 5
8	H 34066 98547	Flooded wet woodland area on the Strabane side	Pond skaters x 40 Water betles x 5 Waterboatman x 20
9	H 34083 98503	Flooded wet woodland area on the Strabane side	Pond skaters x 12 Water beetles x 9 Flatworms x 38 Waterboatman x 3
10	H 34070 98444	Flooded wet woodland area on the Strabane side	Water beetles x 11 Pond skaters x 19 Horse leeches x 8

2.4.3 Summary of Results

The site is considered to be suitable for aquatic life with various waterbodies and field drains throughout the site on both sides of the River Foyle. The site's location on the banks of the River Foyle hydrologically links it to the River Foyles extended tributaries providing unrestricted access and commuting passage for all aquatic life within the great area. Many of the water bodies surveyed had heavy silt or mud layers at the bottom with he wet woodland area having a dense layer of leaf litter on top of a deep layer of mud and silt. The most common species within the field drains and stream systems were caddisfly larvae, hoglosue and pond snails. However, the wet woodland area on the Strabane side exhibited a different species variety due to the nature of this water body being a large still waterbody which is prone to drying out. Most common species for the wet woodland water body were pond skaters as these were observed on the surface of the water throughout the area as well as getting caught in the net during sampling. Flat worms and leeches were the least common and only found in selected areas during sampling, however, it is possible they are wider spread throughout the wet woodland region.

3.0 ASSESSMENT AND RECOMMENDATIONS

Survey locations 1-6 are considered to exhibit a relatively low diversity of invertebrate species with the dominant species being pond snails suggesting water quality is poor with low nutrient content. While the presence of hoglouse is often associated with more alkaline pond or stream systems suggesting the water bodies are more alkaline in nature at these locations. The presence of European fingernail clams at location 3 suggestions a slightly more eutrophic water habitat.

Survey locations 7-10 are more reminiscent of a standing water body such as a pond exhibiting a different species list, however, the diversity observed at these locations was reduced. The presence of leeches at location 10 suggests the habitat is suitable due to its seasonal presence and susceptibility to drying out during summer months. While a lower species diversity may suggest poorer water quality it is assumed the water quality of the wet woodland area is higher than the locations 1-6. Tadpoles and developing frog larvae were also observed near locations 7-10 while species such as pond skaters and water beetles are capable of travelling between water bodies for better foraging they are not good indicators

of water quality. However, the wet woodland area is considered an important habitat for these species due to its shallow depth, seasonal nature and location within a woodland it would provide sufficient foraging and sheltered habitat for these species.

Report prepared By:-	**Reviewed By:-**
Ryan Boyle	**Emily Taylor**
Consultant Ecologist	**Graduate Ecologist**

4.0 REFERENCES

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FIGURES

Figure 3. Pond Snail

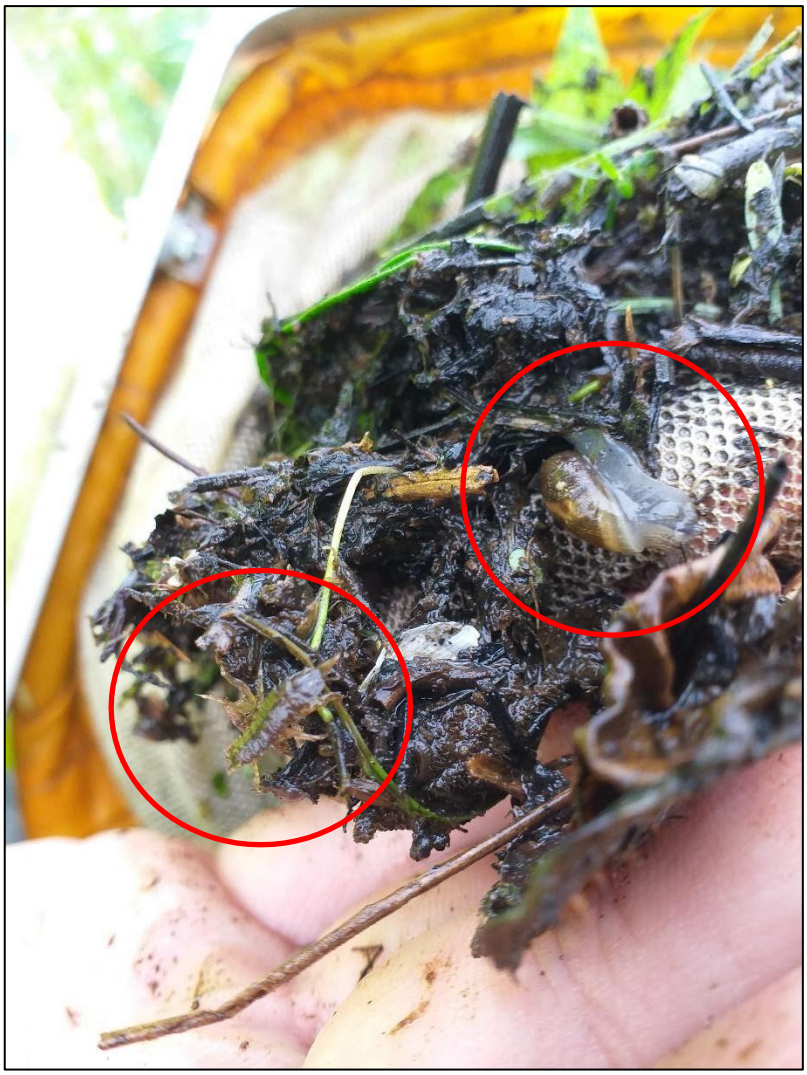
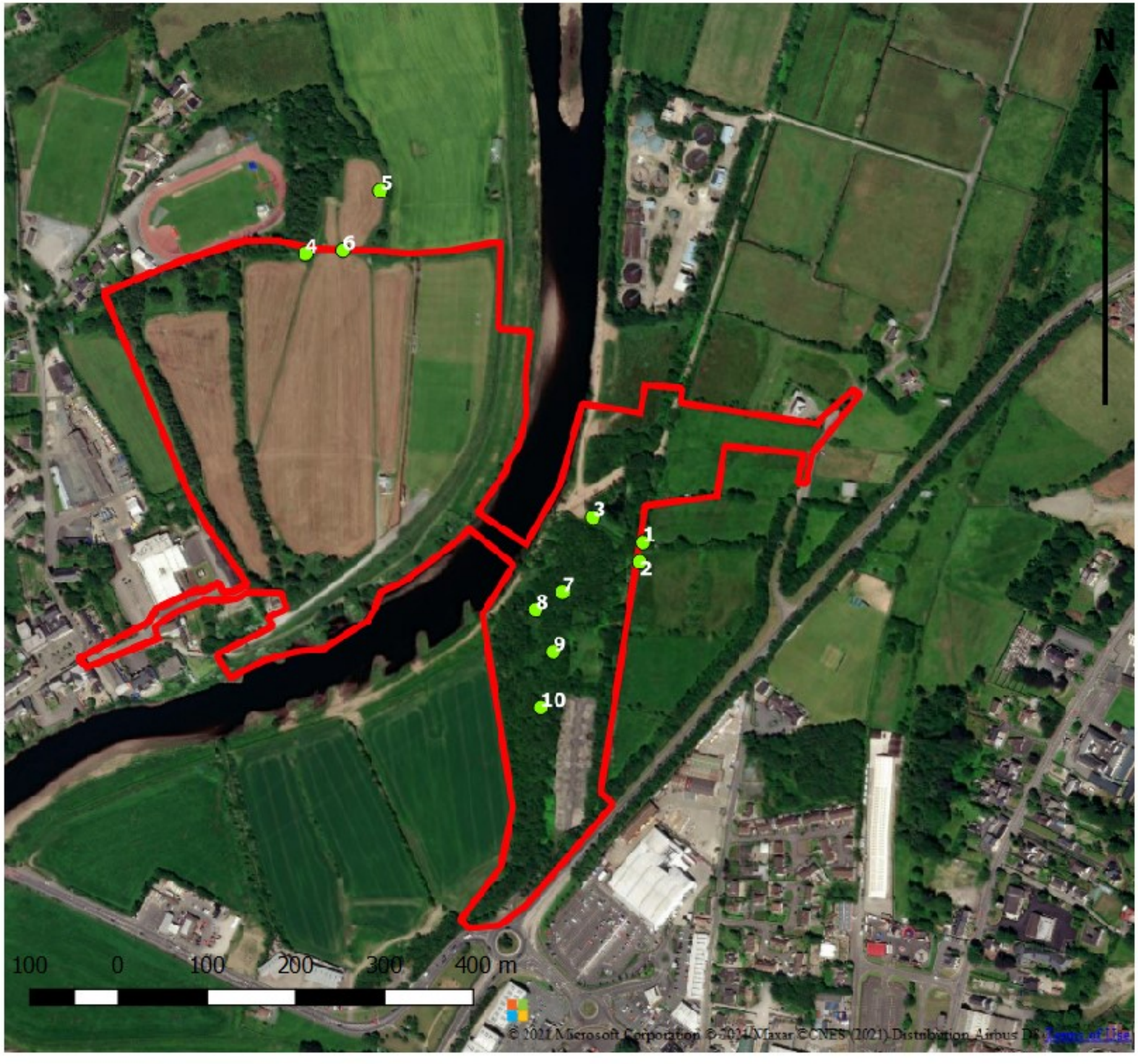


Figure 4. Hoglouse and Pond snail

Figure 6. Caddisfly Larvae

Figure 7. Non-biting Midge Larvae

APPENDICIES



Legend

- Kick Sample Locations
- Red Lined Boundary

Appendix I: Sample Locations

Created by: Ryan Boyle

Reviewed by: Emily Taylor

Client: McAdam Design

Scale: 1:6000 @ A3

Date: 03/08/2021

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