

ECOLOGICAL IMPACT ASSESSMENT

Magheralin Solar Farm



Magheralin Solar Farm
Ecology
EclA
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REPORT

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Prepared by:

Prepared for:

RPS Ireland Ltd (NI)

Joseph Baird
Ecologist

Renewable Energy Systems LTD (RES)

Rachel Buchanan
Senior Development Project Manager

Elmwood House, 74 Boucher Road
Belfast, Co. Antrim BT12 6RZ

T 028 9066 7914
E suzanne.lowry@rpsgroup.com

T +44 (0)1923 299200
E rachel.buchanan@res-group.com

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SUMMARY

RPS was commissioned by Renewable Energy Systems (RES) Ltd (the applicant) to undertake an Ecological Impact Assessment (EclA) to support a planning application for a proposed solar farm located south of Magheralin and southeast of Dollingstown. The EclA forms part of a planning application pack which seeks permission for the:

“Installation and operation of a 29.9MW solar farm including photovoltaic panels, mounting frames, transformer / inverter units, and on-site substation with associated ancillary development including security fencing, pole mounted CCTV, associated landscaping, internal access tracks, new site access, internal cabling and associated site works.” (The Proposed Development)

The EclA includes the results of consultation, a desk-study and an Extended Phase 1 Habitat Survey in order to identify potential impacts associated with the Proposed Development; to evaluate the likely significance of effects; to implement the mitigation hierarchy; and to highlight potential opportunities for ecological enhancement.

The site of the Proposed Development is approximately 64.43ha in size, the majority of which consists of improved grassland alongside broadleaved woodland and hedgerows.

The site of the Proposed Development is not located within the boundary of any statutory or non-statutory designated sites of international, national or local nature conservation importance. The site however is hydrologically linked to Belfast Lough SPA, Belfast Lough Open Water SPA and Belfast Lough Ramsar site, which are designated sites of international importance and Belfast Lough Area of Special Scientific Interest, which is a designated site of national importance.

The Proposed Development has been designed to avoid the loss of priority habitat, hedgerows and trees where possible, all of which will be retained on site. The Proposed Development will have No Significant Effect on the ecological features identified within the site due to project design and the implementation of mitigation measures.

It is anticipated there will be a Significant Positive Effect for biodiversity at a site level with a net gain in species rich hedgerow habitat.

1 INTRODUCTION

1.1 Introduction

RPS was commissioned by RES to undertake an Ecological Impact Assessment (EclA) on a site located south of Magheralin and southeast of Dollingstown.

The landholding within which the development is proposed measures approximately 64.4 ha as illustrated in

Figure 1.1.

For ease of reference the site is described as being made up of four land parcels which from north to south comprise:

- Parcel 1 – Lands accessing onto Springhill Road, immediately northwest of No.22 Springhill Road, Lurgan and immediately to the rear and northeast of 66, 68 and 70-90 Inn Road, Dollingstown (c. 9.3 ha);
- Parcel 2 – Lands c.300m southeast of 15 Springhill Road, Lurgan, c.240m northwest of 117 New Forge Road, Magheralin, Lurgan, and c.400m east of 64 Dromore Road, Lurgan (c.33.3ha);
- Parcel 3 – Lands c 80m northeast of 102 Dromore Road, Waringstown, and immediately adjacent to and west of 108 Dromore Road (c.9.4ha); and

- Parcel 4 – Lands c.660m southeast of 105 Dromore Road, Donaghcloney and extending south/southeast to c.80m north/northeast of 67 Drumlin Road, Craigavon and c.70m to the rear and southwest of 119 Dromore Road, Donaghcloney. (c. 11.5 ha).

Parcels 2 and 3 will be connected via underground cables which will pass through agricultural fields utilising existing agricultural lanes where available. The northernmost land-parcel (Parcel 1) will be connected via an interconnection cable across Springhill Road and intervening agricultural lands and the second interconnection route proceeds northwards from the southern-most land parcel (Parcel 4) across Drumlin Road and through intervening agricultural lands. It is proposed to traverse the River Lagan via horizontal directional drill before crossing Dromore Road to the north, and entering Parcel 3 of the site. The purpose of the interconnecting cables is to transfer energy created from inverter stations to the on-site substation which is located in the centre of the site (Parcel 3). The interconnection cable areas comprise 0.93ha.

Individual field parcel referencing is illustrated in Appendix IV: Field Numbers Map.

1.2 Ecological Impact Assessment

EclA is the process of identifying, quantifying and evaluating the potential effects of a proposed project on ecological features based on objective assessment of the best information available (CIEEM, 2018). An ecological feature is defined as a species, habitat or ecosystem that has the potential to be affected by a proposed project.

The aim of the EclA is therefore to describe the existing ecological environment within and surrounding the proposed project; to identify potential ecological features; to identify the potential impacts associated with the proposed project during construction, operation and decommissioning; to evaluate the likely significance of effects on the ecological features; to apply the mitigation hierarchy to avoid, mitigate and compensate for ecological impacts; and to highlight potential opportunities for ecological enhancement (CIEEM 2018).

The EclA has been written in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM 2018).

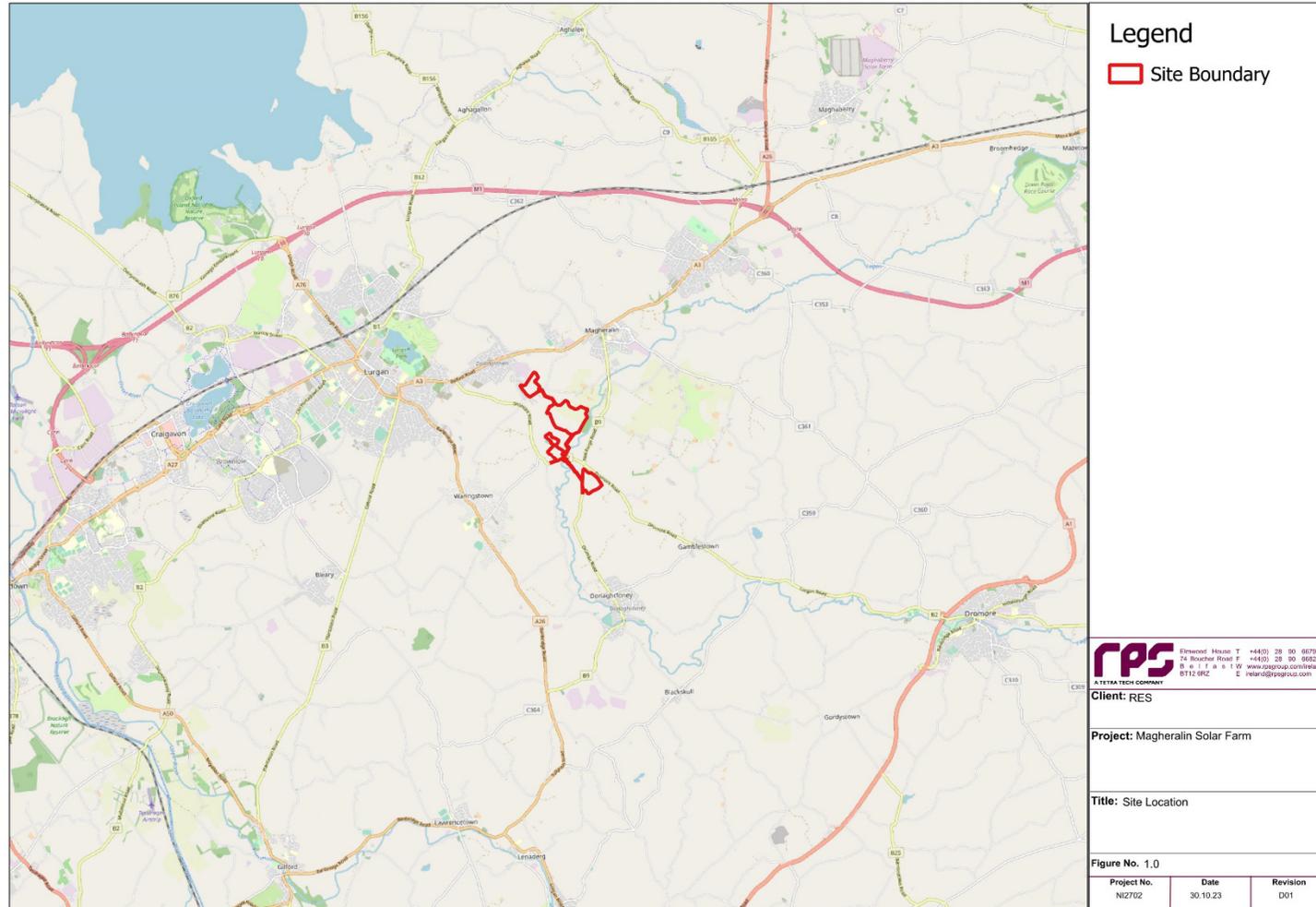


Figure 1.1: Site of Proposed Development

1.3 Site Location

The site is approximately 64.4 ha in area and is made up of four main parcels comprising several agricultural fields which will be connected by proposed underground cabling.

The lands are all located outside any limit of development although at their northernmost extents (Parcel 1) sit adjacent to the development limits of Magheralin and Dollingstown. Surrounding land-uses include residential, industrial, agricultural and recreational. Notable development in the area includes:

- Huhtamaki Fibre Packaging Plant – immediately north of Parcel 1;
- Dollingstown FC Facilities – immediately west of Parcel 2; and
- Polypipe – 80m south east of Parcel 3 and east of the Dromore Road and c. 90m northwest of Parcel 4.

Three access points are included as part of the Proposed Development opening onto Springhill Road, Dromore Road and Drumlin Road all of which are situated adjacent to the site boundary. As its nearest, the M1 is less than 4.5 km north of the site.

1.4 Project Description

This EclA is submitted as part of a planning application pack which seeks permission for the:

“Installation and operation of a 29.9MW solar farm including photovoltaic panels, mounting frames, transformer / inverter units, and on-site substation with associated ancillary development including security fencing, pole mounted CCTV, associated landscaping, internal access tracks, new site access, internal cabling and associated site works.” (The Proposed Development)

Project components are listed in the bullet points below. A full description of the Proposed Development can be reviewed within the Planning Statement which forms part of the planning application pack.

- Photovoltaic (PV) Solar Panels erected on steel/aluminium frames set out in south facing arrays;
- 1 Primary 33kV Sub-station typically measuring 10.34m x 5.7m x 6.45m high and a solar control building 8.3m x 3.45m x 4m high;
- 9 No. Inverter Substations typically comprising of inverter measuring 5m x 3m x 2.5m high and a transformer typically measuring 4m x 3m x 2.5m high to be located across the site;
- Perimeter post and wire security fencing with in-built mammal gates to facilitate unimpeded access for mammals (2.4m high);
- A number of strategically located CCTV security cameras (3.5m high);
- New or upgraded access points onto Dromore Road (Centre), Drumlin Road (South), and Springhill Road (North);
- Associated internal service tracks (permeable stone);
- Internal and interconnecting underground cabling. Connecting cables run along the back of each panel to the end of every row where they connect to the main cables which in turn connect to inverter stations and primary on-site substation located in land-parcel 3. Main cables will be undergrounded.

- There are also two interconnection routes the purpose of which is to transfer the energy created from the on-site inverter stations to the on-site substation which is proposed in the centre of the site – Parcel 3.

One interconnection route extends from the northernmost land-parcel (Parcel 1) across Springhill Road and intervening agricultural lands, then along internal tracks within the Proposed Development until it reaches the substation.

The second interconnection route proceeds northwards from the southern-most land parcel (Parcel 4) across Drumlin Road and through intervening agricultural lands. It is proposed to traverse the River Lagan via horizontal directional drill before crossing Dromore Road to the north, and entering Parcel 3 of the site; and

- Temporary construction compounds.

The proposal will have an operational lifespan of 40 years after which it will be fully decommissioned. Proposed planting which would be established within the landscape at that time will be left untouched.

When operational the site will support a dual renewable/farming use and the overwhelming land area will remain agricultural. Sheep grazing will take place across the entire area and will not be impeded by the proposed infrastructure.

2 LEGISLATION & PLANNING POLICY

2.1 Introduction

The principal legislation and planning policy in Northern Ireland relating to natural heritage and relevant to the Proposed Development are set out below. The context and application of the legislation and planning policy are further explained in the relevant sections of the report.

2.2 International Conventions

Ramsar Convention on Wetlands of International Importance (1971)

The principal aims of the Convention are to halt the worldwide loss of wetlands and to provide a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The provisions of the Convention underlie the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 (as amended).

Bern Convention on Conservation of European Wildlife and Natural Habitats (1979)

The principal aims of the Convention are to ensure the conservation and protection of wild plants and animal species, with particular emphasis on endangered and vulnerable species and their natural habitats. The provisions of the Convention underlie the Wildlife (Northern Ireland) Order 1985, the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended).

Bonn Convention on Conservation of Migratory Species of Wild Animals (1979)

The principal aims of the Convention are to conserve migratory species and their habitats by providing strict protection for endangered migratory species. The provisions of the Convention underlie the Wildlife (Northern Ireland) Order 1985 (as amended) and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 (as amended).

Convention on Biological Diversity (1992)

The principal aims of the Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising from the use of genetic resources. The provisions of the Convention underlie the Wildlife and Natural Environment Act (Northern Ireland) 2011 which introduced new provisions and amendments to the Wildlife (Northern Ireland) Order 1985 (as amended).

2.3 Northern Ireland Legislation

The Wildlife (Northern Ireland) Order 1985 (as amended)

The Order prohibits the intentional killing, taking or injuring of certain wild birds or wild animals; or the intentional destruction, uprooting or picking of certain wild plants. It also allows for the establishment of Wildlife Refuges (akin to Nature Reserves) for the special protection of certain species of rare plants or animals.

Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 (as amended)

The Order provides for the establishment of National Nature Reserves (NNRs), Nature Reserves (NRs) and Marine Nature Reserves (MNRs). It also provides for the designation and formulation of proposals for National Parks and Areas of Outstanding Natural Beauty (AONBs).

Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended)

The Regulations give effect to requirements relating to the designation of protected sites under the Birds Directive and Habitats Directive. The Regulations provide for the protection and management of European Sites and place obligations on all competent authorities to have regard to the requirements of the Habitats Directive. The Regulations also provide for the protection of species of European importance.

Environment (Northern Ireland) Order 2002

The Order provides for the designation, management and protection of Areas of Special Scientific Interest (ASSIs). ASSIs may be designated for important geology and land forms as well as for wildlife and habitats. The legislation repeals Part VI of the Nature Conservation and Amenity (Northern Ireland) Order 1985.

Wildlife and Natural Environment Act (Northern Ireland) 2011

The Act makes provision about biodiversity; amends the Wildlife (Northern Ireland) Order 1985 and Part 4 of the Environment (Northern Ireland) Order 2002; abolishes game licences and game dealers' licences; prohibits hare coursing events and amends the Game Preservation Act (Northern Ireland) 1928.

Marine Act (Northern Ireland) 2013 (The Marine Act)

The Marine Act provides a new framework for the seas of Northern Ireland and applies to the inshore region comprising of the territorial sea out to twelve nautical miles, which includes all the tidal rivers and sea loughs (including Lough Foyle and Carlingford Lough). It is based on a system of marine planning that will balance conservation, energy and resource needs; improved management for marine nature conservation and streamline marine licensing for some electricity projects. The implementation of the Marine Act will assist Northern Ireland in contributing to the overall aim of having clean, healthy, safe, productive and biologically diverse oceans and seas.

Invasive Alien Species (Enforcement and Permitting) Order (Northern Ireland) 2019 (as amended)

The Order imposes strict restrictions on a list of species known as ‘species of special concern’. Species whose potential adverse impacts are such that concerted action is required. Restrictions mean that (subject to certain defences or exemptions) species of special concern cannot be imported into the United Kingdom, kept, bred, transported, placed on the market, used or exchanged, allowed to reproduce, grown or cultivated, or released into the environment.

2.4 Northern Ireland Planning Policy

Strategic Planning Policy Statement for Northern Ireland (SPPS) 2015

The SPPS consolidates all planning policy in Northern Ireland and sets out strategic planning policy. The regional strategic objectives for natural heritage are delivered through regional strategic policies that must be taken into account in the determination of planning applications. **Table 2.1** provides a summary of regional strategic policies for natural heritage.

Table 2.1: Northern Ireland Strategic Policy for Natural Heritage

Feature	Policy
International Designations	<p>Planning permission will only be granted for a project proposal that, either individually or in combination with existing and/or proposed plans or projects, is not likely to have a significant effect on a European Site or Ramsar site.</p> <p>A project proposal which could adversely affect the integrity of a European or Ramsar site may only be permitted in exceptional circumstances as laid down in the relevant statutory provisions.</p>
National Designations	<p>Planning permission will only be granted for a project proposal that is not likely to have an adverse effect on the integrity, including the value of the site to the habitat network, or special interest of an ASSIs, NRs, NNRs or MCZs.</p> <p>A project proposal which could adversely affect any of the above-mentioned sites of national importance may only be permitted where the benefits of the proposed project clearly outweigh the value of the site. In such cases, appropriate mitigation and/or compensatory measures will be required.</p>
Local Designations	<p>A project proposal which could have a significant adverse impact on a site of local importance should only be permitted where the benefits of the proposed project outweigh the value of the site. In such cases, appropriate mitigation and/or compensatory measures shall be required.</p>
Protected Species	<p>Planning permission will only be granted for a project proposal that is not likely to harm a European Protected Species. In exceptional circumstances a project proposal that is likely to harm these species may only be permitted where:</p> <ul style="list-style-type: none"> • there are no alternative solutions; and • it is required for imperative reasons of overriding public interest; and • there is no detriment to the maintenance of the population of the species at a favourable conservation status; and • compensatory measures are agreed and fully secured. <p>Planning permission will only be granted for a project proposal that is not likely to harm any other statutorily protected species (including National Protected Species) and which can be adequately mitigated or compensated against.</p>

Feature	Policy
<p>Other Habitats, Species or Features of Natural Heritage Importance</p>	<p>Planning permission should only be granted for a project proposal which is not likely to result in the unacceptable adverse impact on, or damage to known:</p> <ul style="list-style-type: none"> • priority habitats; • priority species; • active peatland; • ancient and long-established woodland; • features of earth science conservation importance; • features of the landscape which are of major importance for wild flora and fauna; • rare or threatened native species; • wetlands (includes river corridors); or • other natural heritage features worthy of protection, including trees and woodland. <p>A project proposal which is likely to result in an unacceptable adverse impact on, or damage to, habitats, species or features listed above may only be permitted where the benefits of the proposed project outweigh the value of the habitat, species or feature. In such cases, appropriate mitigation and/or compensatory measures will be required.</p>

3 METHODOLOGY

3.1 Statement of Authority

The author and surveyor, Joseph Baird, is a Graduate Ecologist with RPS and holds a BSc (Hons) in Environmental Biology with over four years of experience in environmental and ecological consultancy. Joseph has experience of ecological field survey including habitat and mammal survey and is a protected species licence holder.

The assistant surveyor, Samuel O'Hara, is an Associate Ecologist with RPS and holds a BSc (Hons) in Ecology and has over eight years of experience in the field of ecology. Samuel has experience of ecological field survey including habitat, mammal and bird survey and is a protected species license holder. Samuel is a full member of the CIEEM.

The reviewer, Suzanne Lowry, is a Senior Associate of Ecology within RPS and holds a BSc (Hons) in Biological Sciences, a MSc in Environmental Management and has almost 20 years of experience in the field of ecology and environmental consultancy. Suzanne has extensive experience of ecological field survey including habitat, mammal, amphibian, reptile and invertebrate survey and is a protected species license holder. Suzanne is an Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

The report has been approved for issue by James McCrory, Technical Director of Ecology with RPS. James holds a BA (Hons) in Natural Sciences (Mod) Botany and a MSc in Habitat Creation and Management. James is a Chartered Environmentalist (CEnv), a Chartered Ecologist (CEcol), a Chartered Biologist (CBiol) and a full member of CIEEM and the Royal Society of Biology (MRSB). He is a former member of the CIEEM Irish Section Committee and CIEEM Policy Review Group in Ireland. He was also a member of the CIEEM technical working group updating the Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland. He currently sits on the CIEEM technical working group for EclA accreditation across the Institute's practitioner network.

We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists. The information prepared and provided is accurate at the time of issue of this report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM 2022).

3.2 Consultation & Desk Study

Consultation was undertaken with the Centre for Environmental Data and Recording (CEDaR) in order to identify the existence of historical records of protected species or species of natural heritage importance within 1 km of the site of the Proposed Development. The Northern Ireland Bat Group (NIBG) was also consulted in order to identify historical bat records within 5 km of the site of the Proposed Development. The information gathered during consultation is third party controlled data purchased for the purposes of this report only. RPS cannot guarantee its accuracy and cannot be held liable for any inaccuracies.

A desk study was undertaken to gather existing information relevant to the site of the Proposed Development. The Northern Ireland Environment Agency (NIEA) Natural Environment Map Viewer (DAERA 2019¹) was used to identify the location of designated sites of nature conservation importance; priority habitats, priority species and other features of natural heritage importance that have the potential to be affected by the Proposed Development.

3.3 Extended Phase 1 Habitat Survey

An Extended Phase 1 Habitat Survey was conducted in March and September 2023 within the site of the Proposed Development. Phase 1 Habitat Survey (JNCC 2010) is the standard system used to rapidly record, categorise and map habitats over large areas of countryside. Habitats are mapped using standard colour codes and target notes are used to describe any features of ecological or natural heritage importance. The survey was extended to include further information on the potential of the habitats identified to support species protected by law or of natural heritage importance. Aerial photographs were used as an aid to mapping habitats. The habitat survey will remain valid for a period of one year of being carried out in accordance with NIEA survey specifications (DAERA 2019²).

It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no survey can consist of a complete characterisation and prediction of the ecological environment.

3.4 Preliminary Ecological Appraisal for Bats

A Preliminary Ecological Appraisal for Bats (PEAB) has been completed for the Proposed Development. The aim of the PEAB is to observe, assess and record the potential suitability of the habitats within the boundary of the Proposed Development to support bat roosting habitat, commuting habitat and/or foraging habitat. Habitat features were classified as negligible, low, moderate or high in accordance with Bat Conservation Trust (BCT) Good Practice Guidelines (Collins 2016).

3.5 Preliminary Roost Assessment of Trees

A Preliminary Roost Assessment (PRA) of Trees within the site was carried out in March 2023 and September 2023. An external inspection of trees was carried out from ground level to identify Potential Roost Features (PRFs) that could be used by roosting bats. Bats rely on the presence of disease and decay; damage; and associations in trees to provide suitable roosting habitat. These three PRF forms result in a variety of different features that can provide preferred roost sites for bat species (Andrews 2018 and Collins 2016):

- Disease and decay PRFs include woodpecker holes, squirrel holes, knot holes, pruning cuts, tear outs, wounds, cankers, compression forks and butt rots.
- Damage PRFs include lightning strikes, hazard beams, subsidence cracks, shearing cracks, transverse snaps, welds, lifting bark, desiccation fissures and frost cracks.
- Association PRFs include fluting and ivy with stem diameters in excess of 50 mm.

Trees were classified as having negligible, low, moderate or high suitability for roosting bats in accordance with the Bat Conservation Trust, Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition) (Collins 2016). The aim of the PRA is to determine if further Tree Climbing PRF Inspection Surveys are required.

3.6 Tree Climbing PRF Inspection Survey

A Tree Climbing PRF Inspection Survey was carried out by two suitability qualified bat surveyors using tree-climbing equipment, ladders, a torch and endoscope. The survey was carried out under licence BDL17-23 in May 2023. The survey aimed to look for evidence of bats including live or dead bats, droppings, staining, odour and/or other physical characteristics and where necessary to reclassify PRFs in accordance with

Collins (2016). Survey results were compared with information and records from the *Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals* (Andrews 2018) to aid in the classification and identification of PRFs.

3.7 Ecological Survey for Badger

An Ecological Survey for Badger was carried out to supplement and inform the EclA. Badger is a species considered vulnerable to persecution and in accordance with published advice from the NIEA badger survey information must not be made publicly available. The results of the badger survey can be found in a Confidential Annex accompanying this report and will be submitted directly to the Department of Agriculture, Environment and Rural Affairs (DAERA).

3.8 Ecological Survey for Birds

An Ecological Survey for Birds was carried out to supplement and inform the EclA. Full details of the breeding bird survey methods, results and an interpretation of the results can be found in **Appendix V**. A summary of the results can be found below in Section 4.3.5 Birds.

3.9 Ecological Impact Assessment

The information gathered from consultation, desk study and ecological surveys was used to produce an EclA for the Proposed Development. The EclA has been undertaken in accordance with the British Standard (BS) 42020:2013; guidelines produce by the CIEEM (CIEEM 2018); experience of 'best practice' in ecological assessment; and criteria set out below in **Table 3.1** and **Table 3.2**.

The ecological value of a feature was determined using a geographic frame of reference (**Table 3.1**). Professional judgement was used to define the geographic framework based on available guidance, existing criteria, historical trends and information on the distribution, abundance and status of the ecological feature.

The assessment takes into account the source-pathway-receptor model. The source is defined as the individual elements of the Proposed Development that have the potential to affect identified ecological features. The pathway is defined as the means or route by which a source can affect the ecological feature. The receptor is defined as the ecological feature (species, habitat or ecosystem) of natural heritage importance. Each element can exist independently however an effect is created where there is a linkage between the source, pathway and receptor.

For the purposes of this assessment, an impact is defined as an action that results in changes to an ecological feature. An effect is defined as the outcome to an ecological feature from an impact. The likely significance of effects is the combined function of the value of the ecological feature; the type, magnitude and duration of the impact and/or effect; the extent to which the impact and/or effect occurs; the timing and frequency of the impact and the reversibility of impacts and/or effects (IEEM 2016). The geographic level at which the ecological feature is considered important needs to be considered when assessing the likely significance of effects.

The CIEEM (2018) defines a significant effect as *"...an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to authorise a project: it can influence whether permission is*

given or refused and, if given, whether the effect is important enough to warrant conditions, restrictions or further requirements such as monitoring”.

BS 42020:2013 states “...if an effect is sufficiently important to be given weight in the planning balance or to warrant the imposition of a planning condition, e.g. to provide or guarantee necessary mitigation measures, it is likely to be “significant” in that context at the level under consideration. The converse is also true: insignificant effects would not warrant a refusal of permission or the imposition of conditions”.

3.10 Habitats Regulations Assessment

A Habitats Regulations Assessment (HRA) has been prepared by RPS on behalf of RES to assist the competent authority in fulfilling its duties in accordance with Regulation 43(1) of the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended), which transposes certain aspects of Article 6(3) of Habitats Directive 92/43/EEC. The HRA can be found in Appendix VI of this EclA Report.

Table 3.1: Geographic Frame of Reference for Value of Ecological Features

Ecological Criteria Value	
International	<ul style="list-style-type: none"> • ‘European Sites’ including Special Areas of Conservation (SAC) & Special Protection Areas (SPA). <ul style="list-style-type: none"> • Sites that satisfy 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. • Sites 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: <ul style="list-style-type: none"> – 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 Sites (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Sites (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Sites hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). • Sites hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
National	<ul style="list-style-type: none"> • Areas of Special Scientific Interest (ASSI). • National Nature Reserves (NNR). • Marine Nature Reserves (MNR). • Area of Outstanding Natural Beauty (AONB). • Refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended). • Undesignated sites fulfilling the criteria for designation as an ASSI; NNR; MNR; and/or refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended). • Resident or regularly occurring populations (assessed to be important at the national level) of the following: <ul style="list-style-type: none"> – Species protected under Wildlife (Northern Ireland) Order 1985 (as amended); and/or – Species listed on the relevant Red Data list. • Sites containing ‘viable areas’ of the habitat types listed in Annex I of the Habitats Directive.
Regional	<ul style="list-style-type: none"> • Sites of Local Nature Conservation Importance (SLNCI).

Ecological Value	Criteria
	<ul style="list-style-type: none"> • Areas subject to a Tree Preservation Order. • Resident or regularly occurring populations (assessed to be important at the Regional level) of the following: <ul style="list-style-type: none"> – 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 (Northern Ireland) Order 1985 (as amended); and/or – Species listed on the relevant Red Data list. – Sites containing areas of the habitat types listed in Annex I of the Habitats Directive that do not satisfy the criteria for valuation as of International or National importance. • Regionally important populations of species or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP), if this has been prepared. • Sites containing semi-natural habitat types with high biodiversity in a regional context and a high degree of naturalness, or populations of species that are uncommon within the region. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local	<ul style="list-style-type: none"> • Locally important populations of priority species or habitats or features of natural heritage importance 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: <ul style="list-style-type: none"> – 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 (Northern Ireland) Order 1985 (as amended); 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
Site	<ul style="list-style-type: none"> • 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.

Table 3.2: Criteria for Assessment of Likely Significant Effects

Impact Significance	Criteria
Significant Negative Effect	<ul style="list-style-type: none"> • Loss of, permanent damage to or adverse impact on any part of a site of international or national importance; • Loss of a substantial part or key feature of a site of regional importance; • Loss of favourable conservation status (FCS) of a legally protected species; • Loss of or moderate damage to a population of nationally rare or scarce species.
	<ul style="list-style-type: none"> • Temporary disturbance to a site of international or national importance, but no permanent damage; • Loss of or permanent damage to any part of a site of regional importance; • Loss of a key feature of local importance;

Impact Significance	Criteria
	<ul style="list-style-type: none"> A substantial reduction in the numbers of legally protected species such that there is no loss of FCS but the population is significantly more vulnerable; Reduction in the amount of habitat available for a nationally rare or scarce species, or species that are notable at a regional or county level.
	<p style="text-align: center;">Minor Adverse</p> <ul style="list-style-type: none"> Temporary disturbance to a site of regional value, but no permanent damage; Loss of, or permanent damage to, a feature with some ecological value in a local context but that has no nature conservation designation; A minor impact on legally protected species but no significant habitat loss or reduction in FCS; A minor impact on populations of nationally rare or scarce species or species that are notable at a regional or county level.
<p>No Significant Effect</p>	<p style="text-align: center;">Negligible</p> <ul style="list-style-type: none"> No impacts on sites of international, national or county importance; Temporary disturbance or damage to a small part of a feature of local importance; Loss of or damage to land of negligible nature conservation value; No reduction in the population of legally protected, nationally rare, nationally scarce or notable (regional level) species on the site or its immediate vicinity. Beneficial and adverse impacts balance such that resulting impact has no overall affect upon feature.
<p>Significant Positive Effect</p>	<p style="text-align: center;">Minor Beneficial</p> <ul style="list-style-type: none"> A small but clear and measurable gain in general wildlife interest, e.g. small-scale new habitats of wildlife value created where none existed before or where the new habitats exceeds in area that habitats lost.
	<p style="text-align: center;">Moderate Beneficial</p> <ul style="list-style-type: none"> Larger new scale habitats (e.g. net gains over 1 ha in area) created leading to significant measurable gains in relation to the objectives of biodiversity action plans.
	<p style="text-align: center;">Major Beneficial</p> <ul style="list-style-type: none"> Major gains in new habitats (net gains of at least 10 ha) of high significance for biodiversity being those habitats, or habitats supporting viable species populations, of national or international importance cited in Annexes I and II of the habitats Directive or Annex I of the Birds Directive.

4 BASELINE ECOLOGICAL CONDITIONS

4.1 Designated Sites & Features of Natural Heritage Importance

The site of the Proposed Development is not located within the boundary of any statutory or non-statutory designated sites of international, national or local nature conservation importance. There are however a number of designated sites within the Zone of Influence (Zol) of the Proposed Development. The Zol is the area around the site that may be affected by the proposed changes within the site. In addition, there are also a number of features of natural heritage importance including long established woodland within the Zol of the project.

From a terrestrial biodiversity perspective, the Zol was defined as the footprint of the Proposed Development plus a 1km radius surrounding the Proposed Development boundary. Terrestrial habitats occurring within and in close proximity to the Proposed Development boundary could clearly be adversely influenced by activities associated with the Proposed Development, but they are not highly groundwater dependant habitat types. There is no possibility of activities associated with the Proposed Development adversely influencing terrestrial habitats occurring more than 1km from the Proposed Project boundary. A change in terrestrial species behaviour is triggered by noise or visual stimuli. Species occurring within and in close proximity to the Proposed Development boundary can be adversely influenced by activities associated with the Proposed Development, but as the distance from the Proposed Development increases, the likelihood of terrestrial species being adversely affected decreases. Noise and visual stimuli that is more than 1km away from the Proposed Development boundary and that significantly affects species behaviour is unlikely to be associated with the Proposed Development. At this distance, noise or visual stimuli resulting from activities associated with the Proposed Development will not exist, being replaced by stimuli occurring much nearer to the species. On this basis, it is the view of the authors that beyond this distance, no terrestrial biodiversity receptor could be influenced by the Construction Phase or the Operational Phase of the Proposed Development beyond 1km.

From an aquatic biodiversity perspective, the Zol includes the downstream catchment in which the Proposed Development lies including downstream receptors in the marine environment and designated sites. The relevant sub-basin catchment is the River Lagan (Code GBNI0503) within the North Eastern River Basin District. The Proposed Development boundary is wholly contained within this sub-basin catchment. Relevant downstream estuarine and marine receptors are located in Belfast Lough. The Zol is 45km from the site of Proposed Development downstream to Belfast Lough.

Table 4.1 below provides descriptive details of designated sites and features of natural heritage importance located within the site of the project; within immediate proximity to the site of the Proposed Development; or outside the site of the Proposed Development but connected it through an identifiable impact pathway. The boundary of each of these designated sites in relation the Proposed Development is illustrated in **Figure 2.0 Designated Sites & Features of Natural Heritage Importance**.

Table 4.1: Designated Sites & Features of Natural Heritage Importance

Designated Site	Distance from Site (km)	Designation Features
Belfast Lough SPA	33km NE straight line 45km Hydrological link	<ul style="list-style-type: none"> Redshank <i>Tringa totanus</i> Common tern <i>Sterna hirundo</i> Arctic tern <i>Sterna paradisaea</i> Bar-tailed godwit <i>Limosa lapponica</i> Black-tailed godwit <i>Limosa limosa</i>
Belfast Lough Open Water SPA	33km NE straight line 45km Hydrological link	<ul style="list-style-type: none"> Great crested grebe <i>Podiceps cristatus</i>
Belfast Lough Ramsar site	33km NE straight line 45km Hydrological link	<ul style="list-style-type: none"> Redshank <i>Tringa totanus</i>
Inner Belfast Lough ASSI	33km NE straight line 45km Hydrological link	<ul style="list-style-type: none"> Invertebrate assemblage Black-tailed godwit <i>Limosa limosa</i> Great cormorant <i>Phalacrocorax carbo</i> Curlew <i>Numenius arquata</i> Dunlin <i>Calidris alpina</i> Eider <i>Somateria mollissima</i> Goldeneye <i>Bucephala clangula</i> Great crested grebe Knot <i>Calidris canutus</i> Lapwing <i>Vanellus vanellus</i> Oystercatcher <i>Haematopus ostralegus</i> Red-breasted Merganser <i>Mergus serrator</i> Redshank <i>Tringa totanus</i> Ringed plover <i>Charadrius hiaticula</i> Scaup <i>Aythya marila</i> Shelduck <i>Tadorna tadorna</i> Turnstone <i>Arenaria interpres</i>
Long Established Woodland	800m NE straight line	<ul style="list-style-type: none"> Kircassock Woodland

4.2 Habitats

A map illustrating the site boundary and the existing habitats on the site can be found in **Figure 3.1 to 3.4 Extended Phase 1 Habitat Maps**. For the ease of reference, the site has been allocated field numbers as shown in **Appendix IV**.

4.2.1 Semi-Natural Woodland

One area of semi-natural woodland lies just outside the site boundary west of fields no. 6 & 7 and east of the River Lagan (Plate 1). The woodland consists of a mixture of mature established trees including ash *Fraxinus excelsior*, alder *Alnus glutinosa*, willow *salix sp.* and sycamore *Acer pseudoplatanus* as well as broadleaved plantation woodland consisting of downy birch *Betula pubescens*, rowan *Sorbus aucuparia* and ash.

Broadleaved woodland is a feature of natural heritage importance and is considered of ecological value at a local level.

4.2.2 Scattered Broadleaved Trees

There are large number of mature scattered broadleaved trees throughout the site including ash, oak *Quercus sp.*, lime *Tilia sp.*, beech *Fagus sylvatica* and sycamore (Plate 2). These are generally located within existing hedgerows around the periphery of fields.

Broadleaved trees are considered of ecological value at a local level.

4.2.3 Improved Grassland

The majority of the Proposed Development is located within improved grassland fields (Plate 3). The habitat is primarily grazed by livestock (sheep or cattle) or managed by mechanised cutting which has kept the grass sward short. Plant species identified included abundant cover of perennial ryegrass *Lolium perenne*, Yorkshire fog *Holcus lanatus*, creeping buttercup *Ranunculus repens* and soft rush *Juncus effusus*. Other frequently occurring species included common chickweed *Stellaria media*, common sorrel *Rumex acetosa*, ragwort *Senecio jacobaea*, ribwort plantain *Plantago lanceolata*, red clover *Trifolium pratense*, white cover *Trifolium repens* and dandelion *Taraxacum officinale agg.* Occasionally occurring meadow buttercup *Ranunculus acris* and common daisy *Bellis perennis*.

Improved grassland is considered of ecological value at a site level only.

4.2.4 Hedgerow

Field boundaries are mostly intact species poor hedgerows in some cases with trees (Plate 4). Hedgerows across the site are all species poor and dominated by hawthorn *Crataegys monogyna* with frequent ivy *Hedera helix* and bramble *Rubus fruticosus* along with occasional dog rose *Rosa Canina*, gorse *Ulex europaeus*, sycamore, bracken *Pteridium aquilinum*, and nettle *urtica dioica*.

All the hedgerows on site are considered Northern Ireland Priority Habitat and are of ecological value at a regional level.

4.2.5 Running Water

The site boundary borders the River Lagan (Plate 5). There is a hydrological link to the Belfast Lough designated sites; Belfast Lough SPA, Belfast Lough Open Water SPA, Belfast Lough Ramsar and Inner Belfast Lough ASSI.

Watercourses are features of natural heritage importance and the River Lagan is considered to be of ecological value at a local level.

4.2.6 Hardstanding / Bare Ground

Limited areas of the site, including a number of access lanes are comprised of areas of hardstanding / bare ground (Plate 6), with some limited recolonising vegetation including a limited range of improved grassland species.

This habitat is considered to be of negligible ecological value.

4.3 Species

A data request was submitted to CEDaR in order to identify the existence of historical records of protected species or species of natural heritage importance within 1 km of the route of the Proposed Development. A total of 20 historical records were returned. CEDaR results are detailed in Table A1.1 in **Appendix I**.

4.3.1 Badger

Consultation with CEDaR identified no historical record of badger within 1 km of the Proposed Development. A survey area out to 50m of the Proposed Development was surveyed for the presence of badger *Meles meles*.

Badger is a species considered vulnerable to persecution and in line with published advice from the NIEA badger survey information must not be made publicly available. The results of the badger survey can be found in a Confidential Annex accompanying this report and will be submitted directly to the planning authority and NIEA Natural Environment Division.

4.3.2 Otter

Consultation with CEDaR identified two historical records of otter within 1 km of the proposed site which were located 340 m west 760 m northeast of the site boundary. The Phase 1 Habitat Survey was extended to include further information on the potential for otter *Lutra lutra* along the route of the Proposed Development. There were no underground holts, above ground couches or any other evidence of otter recorded within the Proposed Development at the time of survey. The River Lagan is located within the survey boundary and is likely to provide suitable opportunities for breeding and foraging otters.

4.3.3 Bats

Consultation with the NIBG identified 82 historical records of bat within 5 km of the site of the Proposed Development. These records range from 1984 to 2018 and are comprised of the following species: pipistrelle sp., common pipistrelle *Pipistrellus pipistrellus*; soprano pipistrelle *Pipistrellus pygmaeus*; brown long-eared bat *Plecotus auritus*; Leisler's bat *Nyctalus leisleri* and Nathusius' pipistrelle *Pipistrellus nathusii*. No records of bats were returned within the proposed site boundary. The nearest records are of a pipistrelle sp. roost located approximately 0.2 km north from field 12 (1995); an unidentified bat roost consisting of 20 bats located approximately 0.95 km north of field 12 (1996); a pipistrelle sp. roost consisting of 14 bats located approximately 1.21 km southeast from field 1 (2005); a pipistrelle species bat roost consisting of 12 bats located approximately 1.64 km southwest from field 2 (1991); and a pipistrelle species bat roost consisting of approximately 10 bats located 1.84 km northeast from field 12 (2006). The largest roost records are of a pipistrelle sp. roost consisting of 975 bats located approximately 1.87 km south from field 1 (1995); a soprano pipistrelle roost consisting of 406 bats located approximately 2.39 km west from field 4 (1999); and a pipistrelle sp. roost consisting of 200 bats located approximately 3.94 km northeast from field 9 (1996).

The site of the Proposed Development is located within a rural setting and consists of trees, woodland hedgerows, watercourses and improved grassland which could be used by foraging and commuting bats. Foraging opportunities within 250 m consist of similar agricultural habitat to that found along the route of the Proposed Development. The watercourses along the route including the River Lagan have the potential to provide a suitable commuting routes linking the site of the Proposed Development to the wider landscape.

The habitats along the route of the Proposed Development are considered to provide moderate commuting and foraging habitat for bats as they provide “*continuous habitat connected to the wider landscape that could be used by bats for commuting such as trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water*” (Collins 2016).

4.3.3.1 Preliminary Roost Assessment of Trees

Trees within the site were subject to PRA to identify PRFs and determine the potential suitability of trees to provide roosting habitat for bat species. The site of the Proposed Development supports a number of trees which offer potential opportunities for roosting bats. A total of 33 trees were identified as having suitability to provide roosting habitat for bats. T1 - T33 were considered to have roosting potential for bats, 25 trees were considered to be of low roost suitability (T1-T7, T11, T16, T18-T33) and eight trees were considered to be of moderate roost suitability (T8-T10, T12-T15, T17). A map illustrating the location of trees with PRF's can be found in **Figure 3.1- 3.4 Extended Phase 1 Habitat Maps** and the results of the PRA for trees can be found in **Appendix II**.

4.3.3.2 Tree Climbing PRF Inspection Survey

Tree Climbing PRF Inspection Surveys were carried out on the eight trees (T8-T10, T12-T15, T17) categorised as having moderate suitability to provide roosting habitat for bats. One tree (T9) was downgraded to negligible, one tree (T8) was downgraded to low and the remaining six remained moderate bat roosting potential and two of low bat roosting potential after surveys were completed. Full detail results of PRF inspection can be found in **Appendix II Table A2.1**.

4.3.4 Smooth Newt

Consultation with CEDaR identified no historical record of smooth newt *Lissotriton vulgaris* with 1 km of the Proposed Development. The River Lagan has moderate to fast flow and so was not considered to have potential for newts.

An agricultural drainage channel (Plate 7) located along the edge of improved grassland field 6 to the north of the site was assessed for suitability to provide breeding habitat for smooth newt with the aid of the Habitat Suitability Index (HIS) (ARGUK 2010). The results can be found below in **Table 4.2**.

The drainage channel is approximately 1.5 m in width and 400 m in length. It is moderately 'choked' up with terrestrial grasses and vegetation in places and has a high abundance of common duckweed *Lemna minor*. Given its shallow depth and vegetation present, it is likely that the drainage channel occasionally dries up during severe drought conditions, and partially dries up during extended periods of time with low rainfall. No waterfowl or impacts of waterfowl were observed in the drainage channel. No fish were observed, however the duckweed and vegetation obscured visibility, and therefore the presence of stickleback cannot be ruled out. There are no ponds located within 1 km of the drainage channel, approximately 500 m north of the drainage channel, outside the boundary of the site. The drainage channel scored as below average indicating poor suitability to support breeding smooth newt. In any case, the modified bog habitat will be retained on site. Smooth newt has therefore been excluded from any further assessment.

Table 4.2: Newt Habitat Suitability Index

SI No	SI Description	SI Value
1	Geographic Location	0.5
2	Pond Area	1
3	Pond Permanence	0.5
4	Water Quality	0.33
5	Shade	1
6	Waterfowl Effect	1
7	Fish Presence	0.67
8	Pond Density	0.01
9	Terrestrial Habitat	0.33
10	Macrophyte Cover	0.7
HSI Score		0.41
Pond suitability		Poor

4.3.5 Birds

Consultation with CEDAR identified three historical records of birds within 1 km of the Proposed Development which included red kite *Milvus milvus* and tree sparrow *Passer montanus*.

The Phase 1 Habitat Survey was extended to include further information on the potential of the Proposed Development to support bird species. The boundary hedgerows and trees within the area of the Proposed Development have potential to provide nesting and foraging habitat for a range of passerine bird species.

Breeding bird surveys recorded a total of 43 bird species including 15 species of conservation concern. A total of 13 species of conservation concern observed where recorded as “Probable” or “Confirmed” breeding, namely: starling *Sturnus vulgaris*, buzzard *Buteo buteo*, goldcrest *Regulus regulus*, greenfinch *Chloris chloris*, grey heron *Ardea cinerea*, house martin *Delichon urbicum*, house sparrow *Passer domesticus*, linnet *Linaria cannabina*, mallard *Anas platyrhynchos*, song thrush *Turdus philomelos*, swallow *Hirundo rustica*, tree sparrow *Passer montanus* and yellowhammer *Emberiza citrinella*. The full results of surveys are contained in the **Appendix IV Ecological Survey for Birds**.

5 ECOLOGICAL IMPACT ASSESSMENT

5.1 Designated Sites

Legislation & Policy

The principle legislation in Northern Ireland relating to designated sites includes the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended), which provides for the designation on European Sites (SPAs and SACs); the Environment (Northern Ireland) Order 2002, which provides for the designation of ASSIs; and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985, which provides for the designation of NRs, NNRs and MNRs.

Designated sites are a material consideration in the determination of the planning application as set out in the SPPS (DOE 2015). The strategic policies state that; a project, either individually or in combination with existing and/or proposed plans or projects, must not have significant effect on a designated site of international importance; must not have an adverse effect on the integrity, including the value of the site to the habitat network, on a designated site of national importance; and must not have a significant adverse impact on a designated site of local importance.

Potential Impacts & Effects

International, National & Local Designated Sites

The site is hydrologically linked, via the River Lagan, to Belfast Lough SPA, Belfast Lough Open Water SPA and Belfast Lough Ramsar site which are a designated sites of international importance and Inner Belfast Lough ASSI which is a designated site of national importance. These designated sites are located approximately 45 km (hydrological distance) downstream of the Proposed Development.

It is proposed that an interconnection cable will be installed by HDD techniques under the River Lagan. No in-stream works are proposed within the River Lagan. There is no infrastructure proposed within a distance of 10 m of the River Lagan banks. The proposed development does not require any additional drainage works and there will be no discharge to any watercourse either during construction or operation. The proposed development will have **No Significant Effect** on to Belfast Lough SPA, Belfast Lough Open Water SPA, Belfast Lough Ramsar and Inner Belfast Lough ASSI a in the absence of mitigation measures.

Mitigation Measures

There are no mitigation measures required.

Significance of Residual Effects

The Proposed Development will have **No Significant Effect** on any designated sites.

5.2 Habitats

Legislation & Policy

Priority habitats include both those listed on Annex I of the Habitats Directive, which is transposed into national law by means of the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as Amended) and those identified under the Northern Ireland Biodiversity Strategy (NIBS). Priority habitats require conservation action due to their decline, rarity and importance.

The presence of priority habitat, active peatland and ancient and long-established woodland is a material consideration in the determination of the planning application as set out in the SPPS (DOE 2015). The strategic policies state that a project must not have an unacceptable adverse impact on, or damage to, these habitats.

Potential Impacts & Effects

The proposed development has been designed to avoid and/or reduce direct habitat loss within the site. It is proposed that an interconnection cable will be installed by HDD techniques under the River Lagan. No in-stream works are proposed within the River Lagan. There is no infrastructure proposed within a distance of 10 m of the River Lagan banks. The proposed access tracks to service the site will utilize existing access track through the site where possible. New tracks where necessary will be created using permeable materials. A sensitive design approach ensures there is a 5 m Ecological Exclusion Zone (EEZ) maintained between all infrastructure and the priority habitat hedgerows and also between broadleaved woodland and trees around the boundaries of the site except where forward sightlines are required for visibility splays. Vegetation will be trimmed or removed within visibility splays of site entrances to allow for the required forward sightlines..

Hedgerows to be removed total 41 linear metres. Hedgerows to be relocated total 485 linear metres. This is balanced against new planting listed in the next section.

The proposed development will therefore have **No Significant Effect** on priority habitats or watercourses in the absence of mitigation measures.

Construction works will result in the installation of solar panels within improved grassland habitat. The mounting system for the solar panels consists of aluminium and steel posts/frames that will be driven or screwed into the ground and the existing habitat will be retained beneath the solar panels. There will be a small permanent loss of grassland habitat under the footprint. There will also be temporary disturbance to grassland habitat to accommodate installation of the main cables. Turves will be removed and set aside, the trench will be excavated using traditional open trenching techniques, the cable laid, and the ground immediately reinstated using the turves. These grassland habitats are of ecological value at a site level only and are widespread throughout Northern Ireland. The Proposed Development will have a **No Significant Effect** with the loss of grassland habitat at a site level only.

Enhancement

The Proposed Development will provide enhancement measures with new landscape planning along the boundary of the site. The landscape planting comprises 950 linear metres of new hedgerows and 2632 m² of additional planted areas. The planting mix will comprise native species including alder *Alnus glutinosa*,

birch *Betula pendula*, hawthorn *Crataegus monogyna*, holly *Ilex aquifolium* and blackthorn *Prunus spinosa*. The landscaping will enhance the ecological connectivity of the site to the surrounding environment.

Significance of Residual Effects

The Proposed Development will have **No Significant Effect** on priority habitats or watercourses, **No Significant Effect** resulting from a small loss of grassland habitats at a site level only and a **Significant Positive Effect** for biodiversity at a site level with a net gain in species rich hedgerow habitat.

5.3 Species

5.3.1 Bats

Legislation & Policy

All species of bats are European Protected Species (EPS) listed on Annex IV of the Habitats Directive, which is transposed into national law by means of the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as Amended). Under the Regulations it is illegal to deliberately capture, injure or kill a EPS; deliberately disturb a EPS while it is occupying a structure or place it uses for shelter or protection; or deliberately disturb a EPS in such a way as is likely to affect its local distribution or abundance; impair its ability to survive, breed, reproduce or care for its young; impair its ability to hibernate or migrate; or deliberately obstruct access to or damage or destroy a resting or breeding site.

The presence of bat species is a material consideration in the determination of the planning application as set out in the SPPS and described above in Section 2.4, **Table 2.1**. The strategic policies state that the proposed development must not harm EPS; must be sensitive to all protected species; and must be sited and designed to protect EPS, their habitats and prevent deterioration and destruction of their breeding or resting sites.

Potential Impacts & Effects

The Proposed Development has been designed to avoid and/or reduce direct habitat loss within the site and all woodland, hedgerows and trees, including all trees categorised as having medium to low suitability to provide roosting habitat for bats, will be retained on site. There is no infrastructure proposed within 10 m of the River Lagan banks. A 5 m EEZ will be maintained between all infrastructure and woodland, hedgerows and trees, except where sightlines are required for visibility splays and at two internal locations where access tracks will punch through hedges. As per the drawing pack which is included as part of the planning submission, internal access lanes measure c.4m wide. The existing grassland habitat will be retained beneath the solar panels. There is no additional lighting required to accommodate the Proposed Development. The Proposed Development will have **No Significant Effect** on bat roosting, foraging or commuting habitat.

Enhancement

The Proposed Development will provide enhancement measures with new landscaping planting that will be incorporated into the site. Landscaping will prioritise the use of native species and enhance the ecological connectivity of the site to the surrounding environment. The proposed landscaping will provide additional foraging and commuting habitat for bats.

Significance of Residual Effects

The Proposed Development will have **No Significant Effect** on bats and a **Significant Positive Effect** for biodiversity at a site level with a net gain in species rich hedgerow habitat.

5.3.2 Otter

Legislation & Policy

Otter is a EPS and is subject to the same protection as bats as described above in Section 5.3.1. The presence of otter is a material consideration in the determination of the planning application as set out in the SPPS (DOE 2015). The strategic policies state that the project must not harm EPS; must be sensitive to all protected species; and must be sited and designed to protect EPS, their habitats and prevent deterioration and destruction of their breeding or resting sites.

Potential Impacts & Effects

There were no otter underground holts, above ground couches or evidence of otter recorded within the site or within 30 m of the boundary of the site. There is no infrastructure proposed within 10 m of the River Lagan banks. Construction works will be of relatively short duration lasting approximately 40 weeks and will result in physical changes to the site alongside temporary visual and noise disturbance during daylight hours for the duration of construction, as otters are mainly nocturnal and there will be no construction within 10 m of the River Lagan, it is not considered likely that construction works will have a significant negative effect on any otter activity. The proposed development will have **No Significant Effect** on otter.

Mitigation Measures

A pre-construction protected species survey for otter will be undertaken by an Ecological Clerk of Works (ECoW) to provide the most up to date information and to ensure the continued absence of the species immediately prior to construction works.

If any otter underground holts or above ground couches are found within 30 m of construction works or an otter natal den is found within 150 m of the construction works, work will stop immediately to avoid breaking the law and the ECoW will be contacted. Construction work within 30 m of an otter holt or couch and/or 150 m of an otter natal den will require a derogation licence from NIEA to permit otherwise illegal activities that could result in disturbance to an otter and/or damage or destruction of an otter holt. The licence will be issued to the ECoW who will supervise all licensed activities.

Significance of Residual Effects

The Proposed Development will have **No Significant Effect** on otter.

5.3.3 Badger

Legislation & Policy

Badger is protected under the Wildlife (Northern Ireland) Order 1985 (as amended). Under the Order is illegal to kill, injure or take a badger; damage, destroy or obstruct access to badger sett; damage or destroy

anything which conceals or protects a badger sett; or disturb a badger while it is occupying a sett. Badger setts are protected by law even when badgers are not presently occupying a sett.

The presence of badger is a material consideration in the determination of the planning application as set out in the SPPS and described above in Section 2.4, **Table 2.1**. The strategic policies state that the proposed development must not harm nationally protected species; must be sensitive to all protected species; and must be sited and designed to protect them, their habitats and prevent deterioration and destruction of their breeding or resting sites.

Potential Impacts & Effects

The proposed development has been designed to avoid damage and disturbance to badger setts. A 25 m EEZ will be maintained between all infrastructure and all badger setts located on the site. The existing grassland habitat will be retained beneath the solar panels allowing badgers to continue to forage within the site. Construction works will be of relatively short duration lasting approximately 40 weeks and will result in physical changes to the site alongside temporary visual and noise disturbance during daylight hours for the duration of construction, including an increase in traffic movements along the existing access track. The proposed development will have **Significant Negative Effect** on badger at a site level in the absence of mitigation measures.

Mitigation Measures

As stated, the design of the Proposed Development has taken account of the baseline environment and to ensure an appropriate minimum 25 m buffer between any proposed infrastructure and any badge location. Notwithstanding this, a pre-construction protected species survey for badger will be undertaken by an ECoW to provide the most up to date information and to update the status of badger setts recorded on site immediately prior to construction works.

An EEZ will be set up around each badger sett located on site immediately prior to the commencement of construction works under the supervision of an ECoW. Temporary hi-visibility fencing will be erected 25 m from the nearest sett entrance. The specification of the fence will keep Construction Contractors out of the EEZ while allowing free access/egress to the sett so that badgers can continue to move within their territorial boundaries. No vehicles, storage or stockpiling of materials will be allowed within the EEZ.

Construction works within the vicinity of the 25 m EEZ of all badger setts will cease two hours prior to sunset. Open excavations and/or trenches will either be covered to avoid access by mammals, or a means of escape installed to facilitate egress at the end of each working day.

Badger setts are protected by law even when badgers are not presently occupying a sett. If any additional badger setts are found during construction works or within 25m of construction works, work will stop immediately to avoid breaking the law and the ECoW will be contacted.

Significance of Residual Effects

The project will have a **No Significant Effect** on badger following the implementation of mitigation measures.

5.3.4 Birds

Legislation & Policy

Birds are protected under the Wildlife (Northern Ireland) Order 1985 (as Amended). Under Article 4 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 obstruct or prevent any wild bird from using its nest; or take or destroy an egg of any wild bird. Under Article 6 it is an offence to intentionally or recklessly disturb any wild bird other than one included in Part II of Schedule 2 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. Disturbance of birds included in Schedule 1 is liable to special penalties. It is also an offence if any person knowingly causes or permits an act which is made unlawful by any of the foregoing provisions of Article 6.

Potential Impacts & Effects

The proposed development has been designed to avoid and/or reduce direct habitat loss within the site and the vast majority of woodland, hedgerows and trees will be retained on site, except where vegetation must be trimmed or removed for access and to maintain sight lines and visibility splays. A 5 m EEZ will be maintained between all infrastructure and woodland, hedgerows and trees. A 10 m buffer will also be maintained between all infrastructure and the River Lagan bankside habitats. The existing grassland habitat will be retained beneath the solar panels. The proposed development will **No Significant Effect** on birds.

Enhancement

The Proposed Development will provide enhancement measures with new landscaping planting that will be incorporated into the site. Landscaping will prioritise the use of native species and enhance the ecological connectivity of the site to the surrounding environment. The proposed landscaping will provide additional roosting and foraging habitat for birds.

Significance of Residual Effects

The proposed development will have **No Significant Effect** on birds and a **Significant Positive Effect** for biodiversity at a site level with a net gain in species rich hedgerow habitat.

6 CONCLUSIONS

The proposed development will **No Significant Effect** on ecological features identified within the site due to the design of the Proposed Development and the implementation of mitigation measures.

There will be a minor beneficial effect on biodiversity at a site level with a net gain in species rich hedgerow habitat.

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PHOTOGRAPHIC PLATES



Plate 1 - showing semi natural woodland



Plate 2 - showing scattered broad leaved oak tree



Plate 3 - showing typical improved grassland on site



Plate 4 - showing typical species poor intact hedgerow on site



Plate 5 - showing River Lagan flowing along site boundaries



Plate 6 - showing hardstanding along access lanes on site



Plate 7 - showing field drain

FIGURES

Figure 2: Designated Sites & Features of Natural Heritage Importance

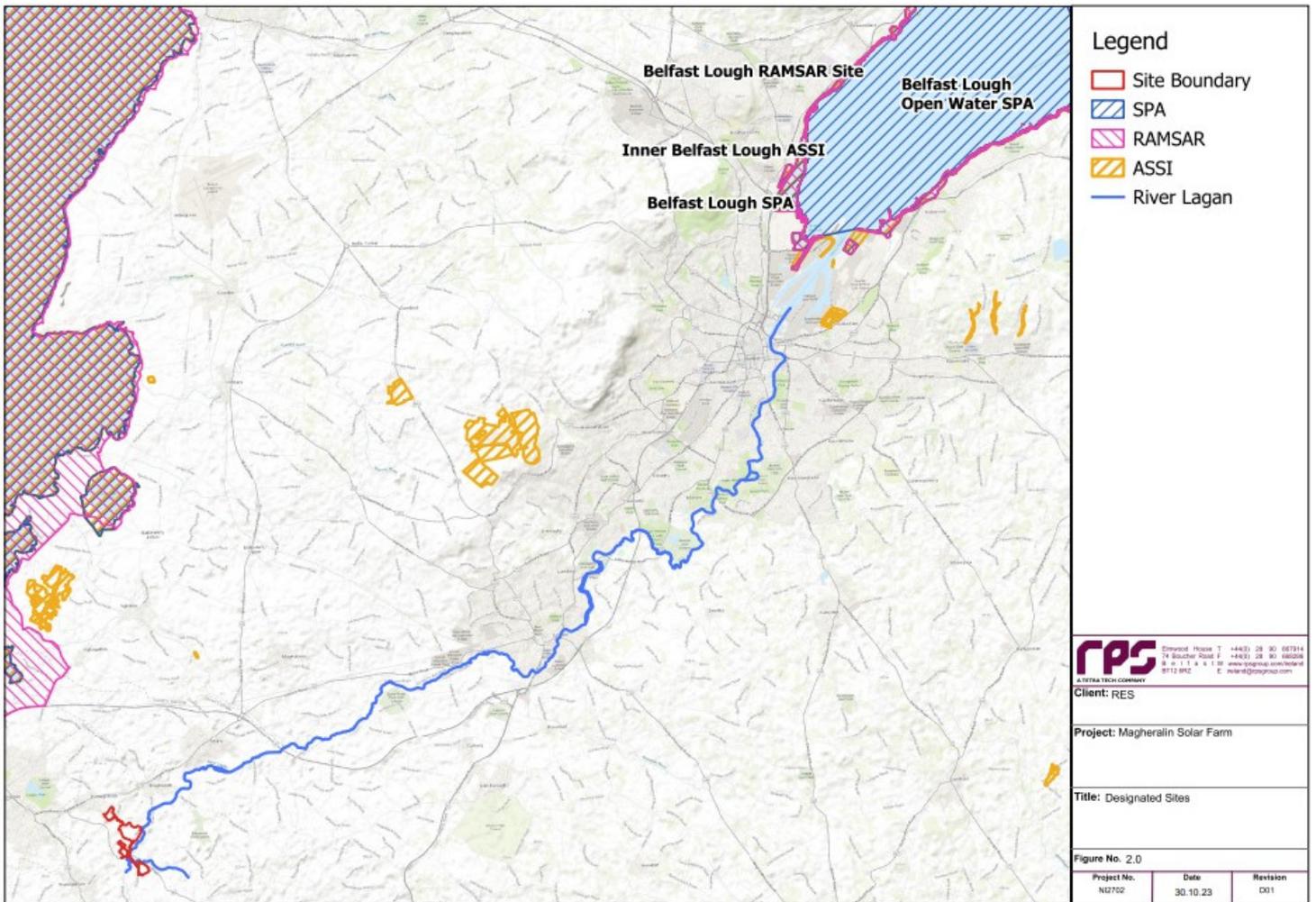
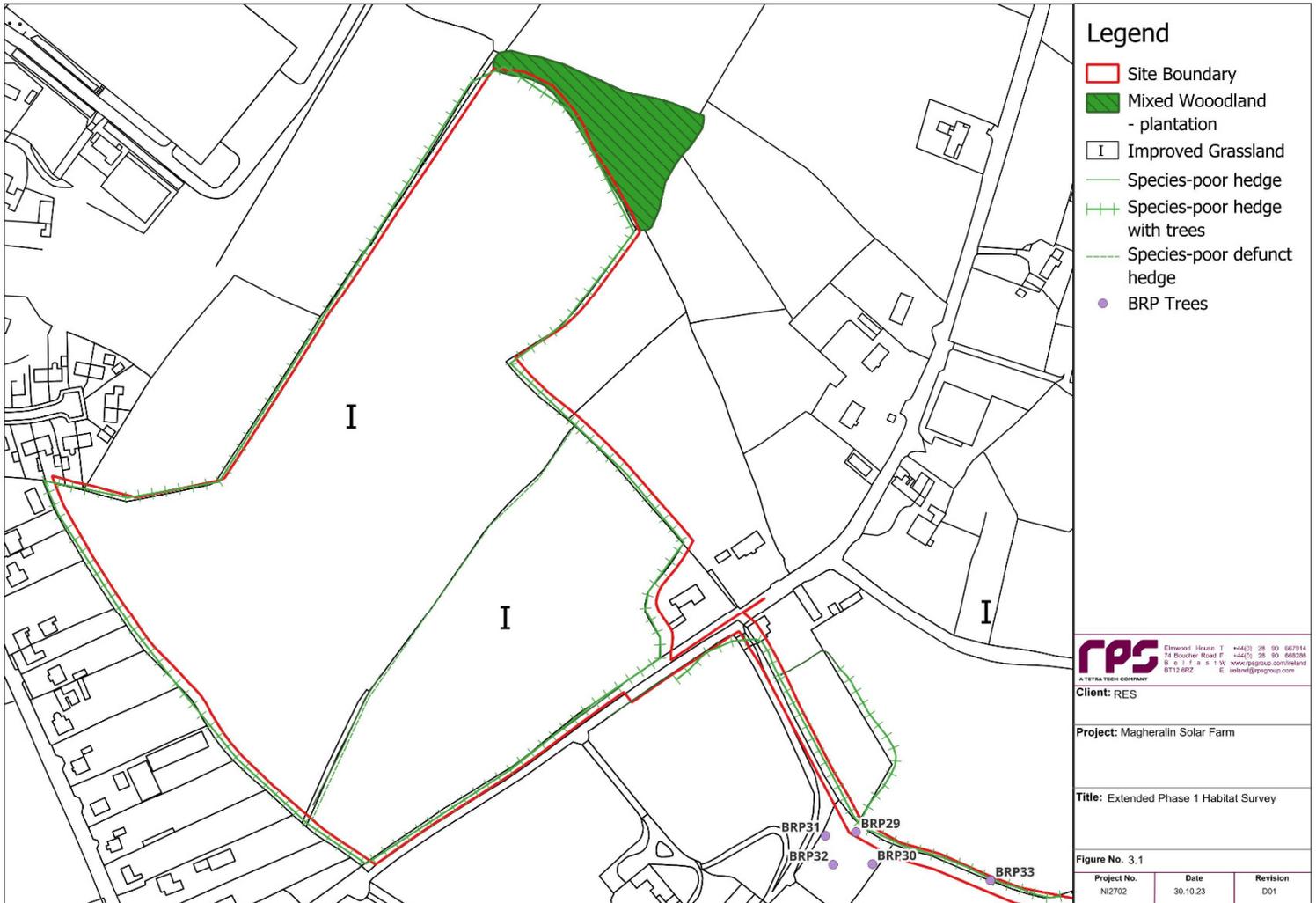
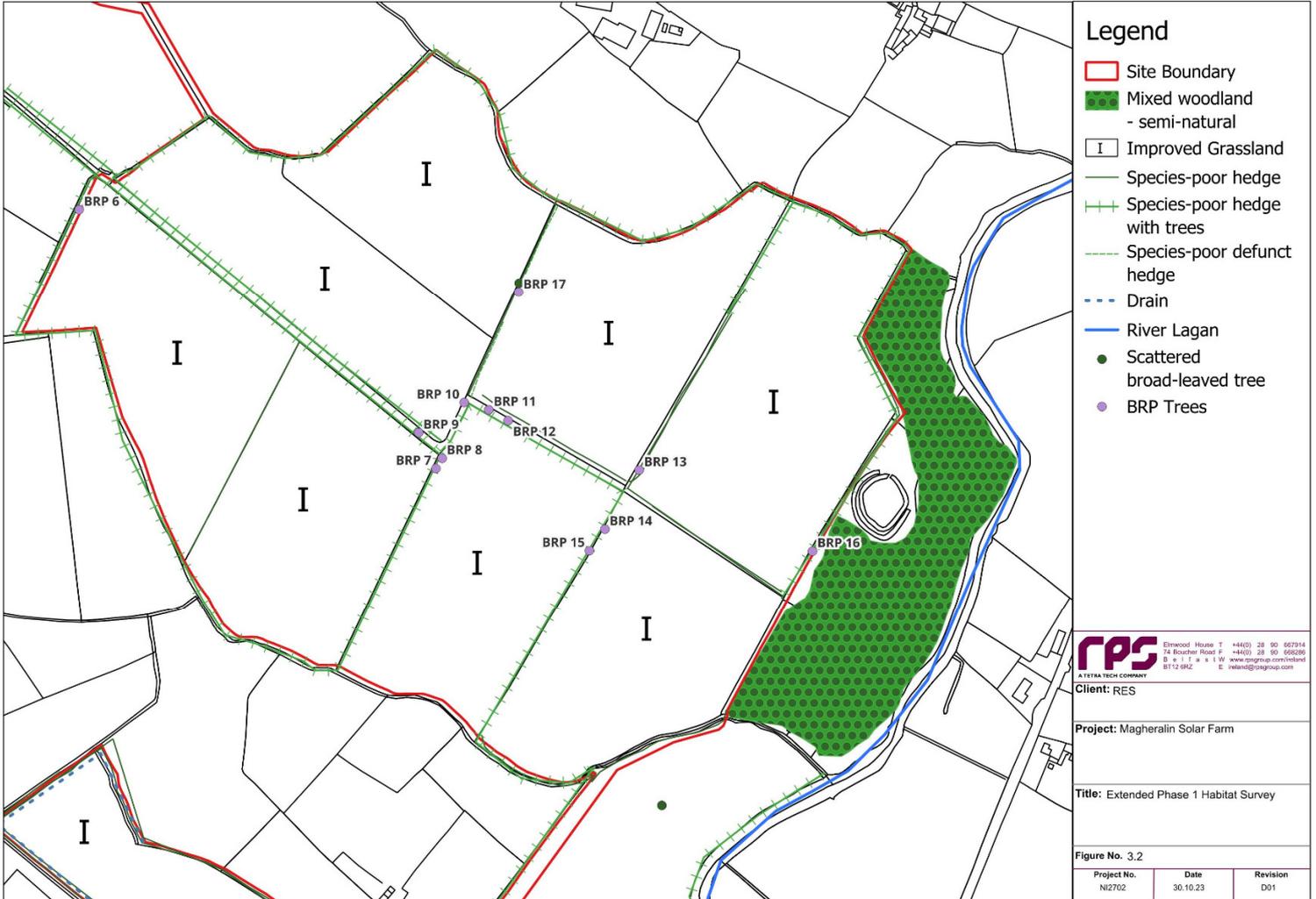
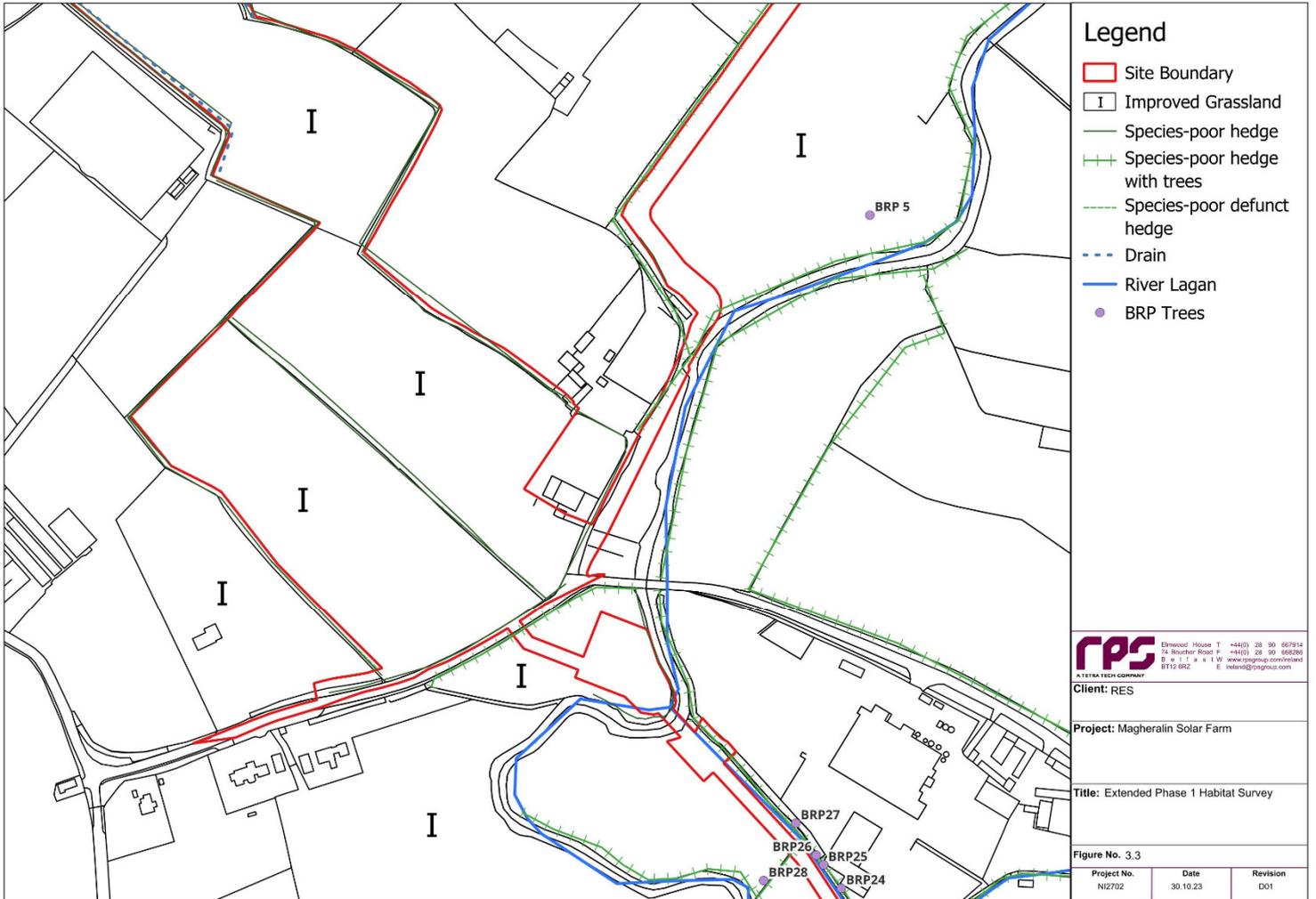
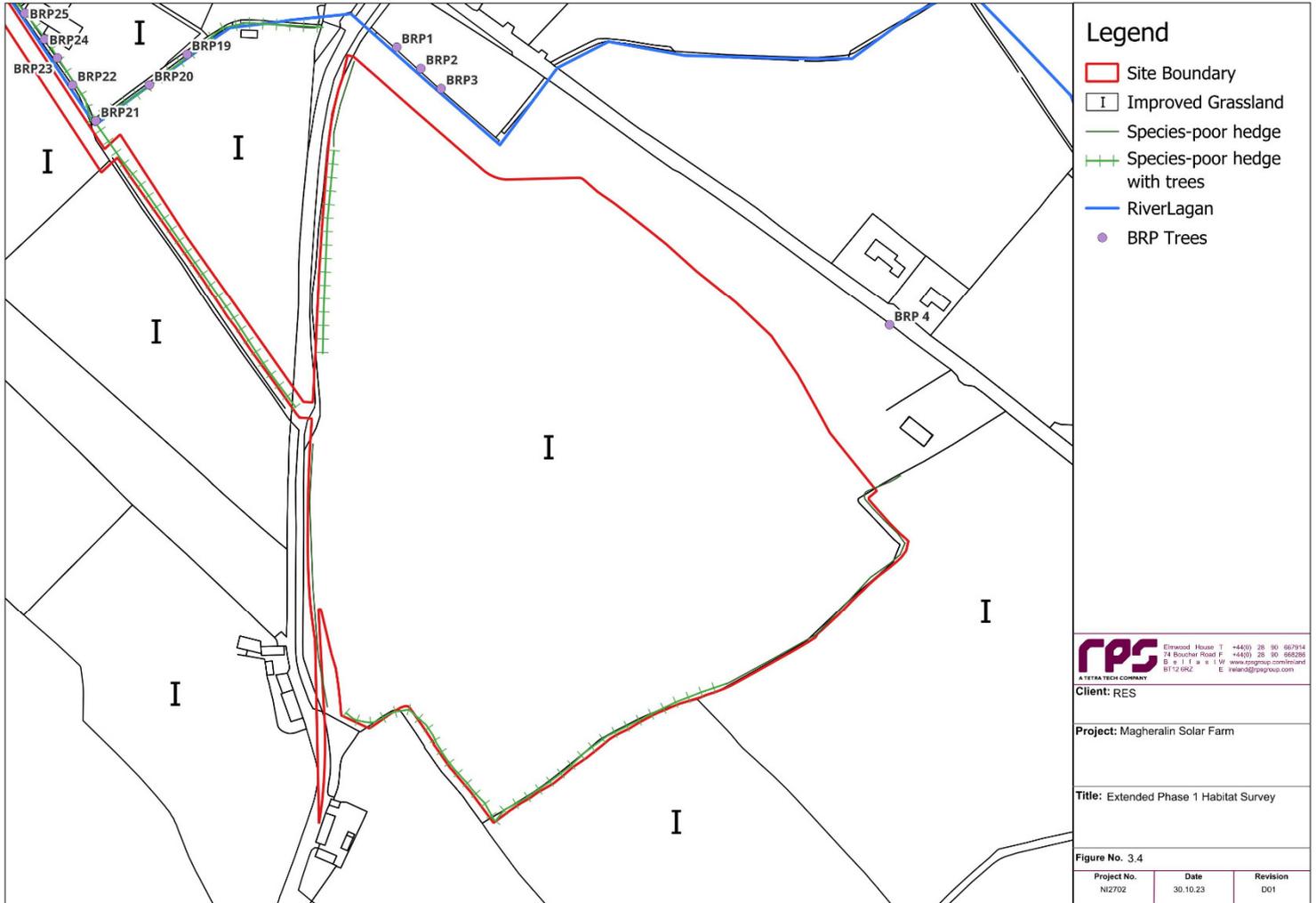


Figure 3: Extended Phase 1 Habitat Survey Results









- Legend**
- Site Boundary
 - Improved Grassland
 - Species-poor hedge
 - Species-poor hedge with trees
 - River Lagan
 - BRP Trees

rps Elmwood House T +44(0) 28 90 667914
74 Boucher Road F +44(0) 28 90 666288
5 s i l l a s l w www.rpsgroup.com/ireland
R172 BRZ E ireland@rpsgroup.com

Client: RES

Project: Magheralin Solar Farm

Title: Extended Phase 1 Habitat Survey

Figure No. 3.4

Project No.	Date	Revision
N12702	30.10.23	D01

APPENDICES

Appendix I Historical Ecological Records

Appendix II NIBG Records

Appendix III Preliminary Roost Assessment of Trees

Appendix IV Field Number Map

Appendix V Ecological Survey for Birds

Appendix VI Shadow Habitats Regulations Assessment

Confidential Annex Badger Survey Report
(not included in publicly available version of this report)

Appendix I: Historical Ecological Records

Table A1.1: CEDaR Records within 1km of the site

Common Name	Taxon Latin Name	Event Date	Event Location
Brown Trout	<i>Salmo trutta</i> subsp. <i>fario</i>	08/04/1996	River Lagan at Magheralin
Eel	<i>Anguilla anguilla</i>	08/04/1996	River Lagan at Magheralin
Brown Trout	<i>Salmo trutta</i> subsp. <i>fario</i>	10/06/1997	River Lagan at Magheralin
Eel	<i>Anguilla anguilla</i>	10/06/1997	River Lagan at Magheralin
Brown Trout	<i>Salmo trutta</i> subsp. <i>fario</i>	25/08/2001	River Lagan at Magheralin
Otter	<i>Lutra lutra</i>	05/05/2002	Steps Bridge, River Lagan
Hedgehog	<i>Erinaceus europaeus</i>	25/04/1999	Magheralin, Lurgan BT67
Brown Trout	<i>Salmo trutta</i> subsp. <i>fario</i>	12/08/1996	River Lagan (County Down)
Brown Trout	<i>Salmo trutta</i> subsp. <i>fario</i>	12/08/1996	River Lagan (County Down)
Brown Trout	<i>Salmo trutta</i> subsp. <i>fario</i>	12/08/1996	River Lagan (County Down)
Holly Blue	<i>Celastrina argiolus</i> subsp. <i>britannica</i>	19/04/2009	Waringstown, 1km SE of Lurgan
Holly Blue	<i>Celastrina argiolus</i> subsp. <i>britannica</i>	30/07/2011	Dollingstown, Lurgan
Holly Blue	<i>Celastrina argiolus</i> subsp. <i>britannica</i>	27/03/2012	Craigavon (Unlocalised)
Otter	<i>Lutra lutra</i>	2010	Geehan's Bridge, River Lagan
Hedgehog	<i>Erinaceus europaeus</i>	29/05/2016	Magheralin (Maralin), 1km SW of Moira
Hedgehog	<i>Erinaceus europaeus</i>	17/07/2013	Waringstown, 1km SE of Lurgan
Holly Blue	<i>Celastrina argiolus</i>	08/04/2017	Dollingstown, Lurgan
Tree Sparrow	<i>Passer montanus</i>	17/04/2017	Magheralin (Maralin), 1km SW of Moira
Red Kite	<i>Milvus milvus</i>	27/03/2016	Magheralin (Maralin), 1km SW of Moira
Red Kite	<i>Milvus milvus</i>	06/07/2018	Waringstown, 1km SE of Lurgan

Appendix II: NIBG Records

Table A1.2: Northern Ireland Bat Group Records within 5km of Proposed Development

Scientific name	Common name	Date	Abundance
bat sp.	unidentified	01/06/1990	41
bat sp.	unidentified	18/08/1993	0
Pipistrellus species	Pipistrelle	1988	Present
bat sp.	unidentified	08/06/2004	15
Pipistrellus	Pipistrelle Bat species	14/06/1993	76 Count of Roost
Pipistrellus species	Pipistrelle	29/07/1991	8
bat sp.	unidentified	27/05/1998	
Plecotus auritus	Brown Long-eared Bat	08/07/1987	Present
bat sp.	unidentified	19/05/1997	
Pipistrellus pipistrellus	Common pipistrelle	18/07/2018	50
Pipistrellus species	Pipistrelle	24/07/1992	72
bat sp.	unidentified	24/06/1996	21
Nyctalus leisleri	Leisler's Bat	23/03/2005	0
bat sp.	unidentified	29/07/1986	20
Pipistrellus species	Pipistrelle	09/07/2001	12
Nyctalus leisleri	Leisler's Bat	28/07/1993	1 Count of female
bat sp.	unidentified	14/01/2006	0
bat sp.	unidentified	08/03/1988	6
Myotis mystacinus	Whiskered Bat	30/07/1992	1 Count of female
Plecotus auritus	Brown Long-Eared Bat	27/05/1991	
Pipistrellus species	Pipistrelle	06/02/2003	1
Pipistrellus species	Pipistrelle	08/08/1991	12
bat sp.	unidentified	18/08/1987	85
bat sp.	unidentified	04/07/1988	40
Pipistrellus species	Pipistrelle	30/08/2005	100
Nyctalus leisleri	Leisler's Bat	18/04/1995	1
Pipistrellus species	Pipistrelle	11/08/2003	25
Plecotus auritus	Brown Long-Eared Bat	23/08/2010	
bat sp.	unidentified	02/07/1996	60
bat sp.	unidentified	03/07/2001	35
bat sp.	unidentified	29/05/1998	
Pipistrellus species	Pipistrelle	03/06/2003	15
bat sp.	unidentified	01/06/1988	51
Pipistrellus species	Pipistrelle	31/08/1995	45
Pipistrellus	Pipistrelle Bat species	31/08/1995	45 Count of Roost
Nyctalus leisleri	Leisler's Bat	12/06/1999	72 Count of Roost
Nyctalus leisleri	Leisler's Bat	07/07/1990	1
Nyctalus leisleri	Leisler's Bat	17/07/1990	1 Count of juvenile male

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Scientific name	Common name	Date	Abundance
Pipistrellus species	Pipistrelle	23/06/2004	16
Pipistrellus species	Pipistrelle	18/07/2006	10
Pipistrellus pygmaeus	Soprano pipistrelle	24/08/2017	50
Pipistrellus pipistrellus 45kHz	45 kHz Pipistrelle	07/06/2005	130
bat sp.	unidentified	21/04/1994	Present
Pipistrellus species	Pipistrelle	08/07/1987	72
Pipistrellus	Pipistrelle Bat species	17/02/2010	
Chiroptera	Bats	18/05/1992	1 Count of adult
Pipistrellus	Pipistrelle Bat species	22/06/1995	406 Count of Roost
Pipistrellus species	Pipistrelle	22/06/2007	1
Pipistrellus species	Pipistrelle	18/07/1996	200
bat sp.	unidentified	30/10/1989	6
Pipistrellus species	Pipistrelle	02/08/1990	12
Pipistrellus species	Pipistrelle	25/07/1996	173
Nyctalus leisleri	Leisler's Bat	30/08/1992	1 Count of male
Nyctalus leisleri	Leisler's Bat	21/05/1993	0
Pipistrellus species	Pipistrelle	10/07/1995	Possibly extinct.
Pipistrellus species	Pipistrelle	21/08/1991	50
Nyctalus leisleri	Leisler's Bat	17/06/1986	61
Pipistrellus species	Pipistrelle	28/06/2005	14
Pipistrellus species	Pipistrelle	17/07/2001	15
bat sp.	unidentified	18/10/1988	75
Pipistrellus pipistrellus	Pipistrelle	22/06/2010	
bat sp.	unidentified	15/06/1993	18
Pipistrellus species	Pipistrelle	15/06/1989	70
Pipistrellus	Pipistrelle Bat species	14/10/2008	
Chiroptera	Bats	17/09/1996	20 Count of Roost
Pipistrellus	Pipistrelle Bat species	07/05/1999	65 Count of Roost
Pipistrellus	Pipistrelle Bat species	05/07/1996	Present Count of Roost
bat sp.	unidentified	01/08/1988	
bat sp.	unidentified	25/06/1986	4
Pipistrellus species	Pipistrelle	01/06/1993	100
bat sp.	unidentified	1984	98
Pipistrellus	Pipistrelle Bat species	15/06/1992	20 Count of Roost
bat sp.	unidentified	25/10/1985	several
Pipistrellus nathusii	Nathusius' Pipistrelle	19/07/1998	
Pipistrellus pygmaeus	55 kHz Pipistrelle	28/06/1999	975
Chiroptera	Bats	01/07/1986	10 Count of Roost
Chiroptera	Bats	01/07/1993	Present Count of Roost
Nyctalus leisleri	Leisler's Bat	21/03/1997	1
bat sp.	Unidentified	07/07/2013	
Pipistrellus pipistrellus 45kHz	45 Khz Pipistrelle	22/07/1997	Present Count
Myotis	Unidentified Bat	01/05/2014	

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Scientific name	Common name	Date	Abundance
Pipistrellus pipistrellus	Pipistrelle	22/06/2010	
Plecotus auritus	Brown Long-Eared Bat	23/08/2010	0

Appendix III: Preliminary Roost Assessment of Trees

Table A3.1: Preliminary Roost Assessment of Structures & Trees

Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Large ash tree with potential ash die back disease, large wound feature from broken limb, rotting at the tops leading to a central split down the main trunk of the tree, top of the feature is relatively exposed and may allow water into feature, potential for internal cavities inside wound feature.</p> <p>(IG: 312467, 256264)</p>	<p>No</p>	<p>Low</p>	<p>NA</p>
	<p>Large ash tree knot hole on one of three leading stems from main trunk, 10m up SW facing, has potential for internal cavities.</p> <p>(IG: 312481, 356251)</p>	<p>No</p>	<p>Low</p>	<p>NA</p>

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Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Ash tree covered in dense ivy, half dead with missing crown, knot hole around 6m up, Knot hole appears to be well worn with an active appearance, may be suggestive that is being used by nesting birds.</p> <p>(IG: 312493, 356238)</p>	No	Low	NA
	<p>Large veteran oak tree with dense ivy cover on main stem. A Broken Branch around 6m up off of the main stem may offer potential internal cavity. Dense ivy growth may also conceal other potential features.</p> <p>(IG: 312777, 356093)</p>	No	Low	NA

Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Notable mature ash tree with some ivy cover on main stem, butt rot hole at base of tree with a limited cavity into main stem and knot hole on main stem around 4m up.</p> <p>(IG: 312249, 356761)</p>	<p>No</p>	<p>Low</p>	<p>NA</p>
	<p>Notable mature oak with ivy growth on main stem, Knot hole 8m up on branch.</p> <p>(IG: 311747, 357473)</p>	<p>No</p>	<p>Low</p>	<p>NA</p>

Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Mature ash with 1 knot hole on 8m up main stem which has potential internal cavity and a rooting pruning cut on a lower branch.</p> <p>(IG 312077, 357250)</p>	<p>No</p>	<p>Low</p>	<p>NA</p>
	<p>Mature ash tree with break/rotting limb and large tear out feature 8m up on main stem, exterior dimensions are 20cm x 10cm, max internal depth of scope, cavity open at top allowing light and water in.</p> <p>(IG: 312077, 357473)</p>	<p>No</p>	<p>Moderate</p>	<p>Low</p>

Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Mature ash tree with two knot holes on main stem approximately 6m up on main stem. Knot hole 1 – 6m up on southern aspect, exterior dimensions 4cm x 4cm internal cavity max depth 2cm, feature deemed unsuitable due to a lack of shelter. Knot hole 2 – 6m up on western aspect, exterior dimensions 3cm x 4cm and 3cm max depth, also deemed unsuitable feature due to a lack of available shelter.</p> <p>(IG: 312069, 357270)</p>	No	Moderate	Negligible
	<p>Standalone mature ash tree with 7x knot holes & one pruning wound 5x knot holes at 10m, 9m and 5m deemed unsuitable after climbing due to no internal cavity present or two exposed to elements upon inspection. Knot hole 8m up on main stem 8cm max depth, exterior dimensions 7cm x 3cm – low suitability Knot hole 7m up on main stem, 10cm deep and 8cm x 8cm exterior dimensions – low suitability Knot hole 7m up on main stem 10cm deep – low suitability Large pruning wound, exterior dimensions 20cm x 22cm, internal upward facing cavity into main stem of trunk approximately 40cm deep and approximately 10cm wide diameter – moderate suitability.</p> <p>(IG: 312102 357306)</p>	No	Moderate	Moderate

Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Mature ash tree with rooting branch off of main stem 6m up, may offer some internal cavities. (IG: 312125, 357299)</p>	No	Low	<p>Low Unsafe to climb</p>
	<p>Large mature ash tree with 6 x knot holes on main stem, 6m -10m up. Chicks present in lowest knot hole proved presence of nesting birds and so rope climb inspection halted. (IG: 312150, 357284)</p>	No	Moderate	Moderate
	<p>Mature ash tree with 3 x knot holes on main stem and on branches off of main stem and tear out wound. Knot hole 1 – 7m up on branch, old birds nest approximately 12cm exterior diameter and around 40cm deep cavity – Moderate suitability Knot hole 2 – 6.5m up on main stem, 11cm exterior diameter and 12cm max depth internal cavity – low suitability Knot hole 3 – 5m up on main stem, 8cm exterior diameter with a max internal depth of 11cm – low suitability Tear out wound on lower branch approximately 5m up, chicks present confirming presence of nesting birds climbing halted – moderate suitability. (IG: 312259, 257238)</p>	No	Moderate	Moderate

Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Mature ash tree with ivy growth on main stem and three knot holes on main stem, approximately 6m-8m up, with potential for internal cavities, ivy may also conceal potential features on the tree. Climbing had to be halted due to nesting bird activity around the lowest knot hole. It is noted that suitable cavities exist if can be used by nesting birds.</p> <p>(IG: 312243, 357207)</p>	No	Moderate	Moderate
	<p>Mature ash with two knot holes on branches off of main stem, approximately 8m up, with potential for internal cavities. Climbing had to be halted due to nesting bird activity around a knot hole. It is noted that suitable cavities exist if can be used by nesting birds.</p> <p>(IG: 312232, 357195)</p>	No	Moderate	Moderate
	<p>Veteran ash tree with some ivy growth on main stem, large break wound on branch eastern aspect approximately 6m up.</p> <p>(IG:312417, 357168)</p>	No	Low	Low

Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Mature ash tree with two knot holes on main stem approximately 5m and 7m up. Climbing had to be halted due to nesting bird activity around a knot hole. It is noted that suitable cavities exist if can be used by nesting birds.</p> <p>(IG: 312149, 357404)</p>	No	Moderate	Moderate
	<p>Mature ash tree with butt rot extending into and internal cavity in heart wood, knot hole present on main stem approximately 6m up, with potential for internal cavity.</p> <p>(IG: 311684, 357587)</p>	No	Low	NA
	<p>Mature ash tree with two knot holes at 6m & 9m, one of which appears to have a well-worn entrance – potentially used as a birds nest, suggesting a suitable internal cavity. Ivy on main stem may potentially conceal features.</p> <p>(IG: 312347, 356283)</p>	No	Low	NA

Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Mature ash with broken branch wound feature and knot hole approximately 7m up on south aspect. Knot hole has potential for an internal cavity.</p> <p>(IG: 312262, 356219)</p>	No	Low	NA
	<p>Notable mature ash tree with ivy on main stem which may conceal features, one knot hole on branch and two knot holes on main stem on western aspects.</p> <p>(IG: 312267, 356210)</p>	No	Low	NA
	<p>Mature ash tree with dense ivy growth, and two knot hole, one main stem at 6m and one on branch around 7m up. Dense ivy may conceal potential features.</p> <p>(IG:312250, 356246)</p>	No	Low	NA

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Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Mature ash tree with cracks in underside of the bark on main stem and knot hole on main stem approximately 5m up. (IG:312241, 346264)</p>	No	Low	NA
	<p>Mature ash tree with wound/knot hole 3m on main stem, potential for internal cavity. (IG: 312227, 356284)</p>	No	Low	NA
	<p>Half dead ash tree with numerous knot holes in main stem, leading into hollow centre of tree and large split up the centre of trunk, potential upwards cavity at the top of feature. Centre of tree is relatively exposed to the elements. (IG: 312214, 356300)</p>	No	Low	NA
	<p>Mature Scots pine tree with knot hole in branch off of main stem and split in bark on broken branch approximately 5m up. (IG:3122008, 356305)</p>	No	Low	NA

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Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Mature Scots pine tree with large broken limb wound approx. 8m off of main stem, potential for small cavities at tear out.</p> <p>(IG: 312200, 356313)</p>	No	Low	NA
	<p>Mature ash tree with dense ivy growth that may conceal potential features and large wound feature on NW aspect approximately 8m up.</p> <p>(IG: 312174, 356272)</p>	No	Low	NA
	<p>Veteran oak tree, given the trees size and maturity it is likely it offers some potentially features of roosting suitability for bats, despite any visible features.</p> <p>(IG: 311664, 357729)</p>	No	Low	NA

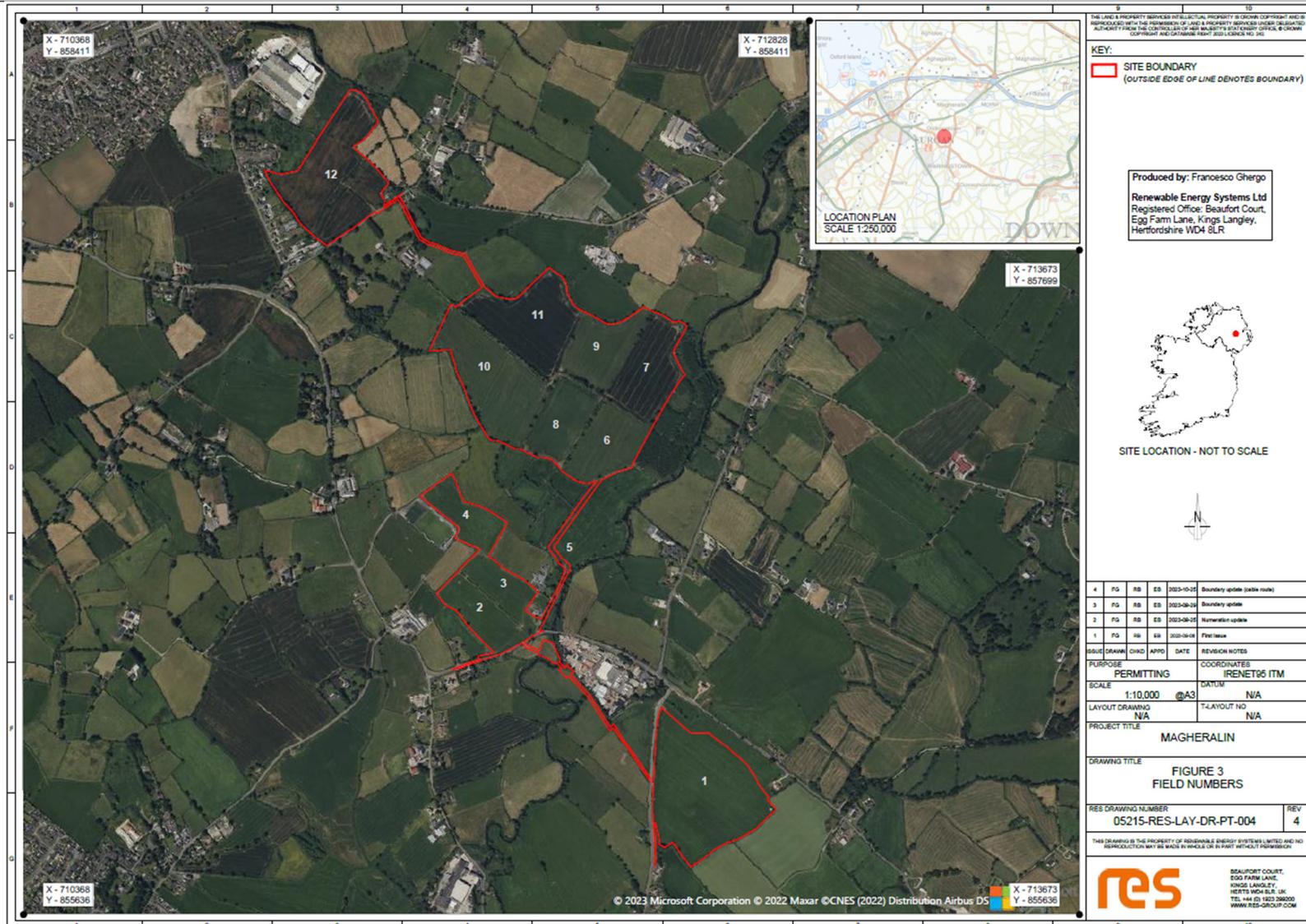
Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Veteran oak tree, given the trees size and maturity it is likely it offers some potentially features of roosting suitability for bats, despite any visible features.</p> <p>(IG: 311661, 357718)</p>	No	Low	NA
	<p>Veteran oak tree, given the trees size and maturity it is likely it offers some potentially features of roosting suitability for bats, despite any visible features.</p> <p>(IG: 311683, 57692)</p>	No	Low	NA
	<p>Veteran oak tree, given the trees size and maturity it is likely it offers some potentially features of roosting suitability for bats, despite only one visible feature, a tear out wound approximately 7m up on the western aspect.</p> <p>(IG: 311657, 357702)</p>	No	Low	NA

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Photo	Description	Evidence of Bats	Ground Level Bat Suitability	Tree Climbing Bat Suitability
	<p>Large half dead ash will well developed ash die back disease, large knot hole approximately 6m up and large cracks/ peeling bark on main stem.</p> <p>(IG:311756, 357686)</p>	No	Low	NA

Appendix IV: Field Numbers Map

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Appendix V: Ecological Survey for Birds

Appendix VI: Shadow Habitats Regulations Assessment

Confidential Annex: Badger Survey Report

Please note:

This confidential annex to the EclA report is not included in the publicly available version of the report in accordance with current guidance from NIEA Natural Environment Division which advises that “badgers are vulnerable to persecution and survey information must therefore not be made publically available” (NIEA, 2017¹).

Results of badger survey for the proposed development have been provided to the planning authority and relevant consultees as a confidential annex to the EclA report under separate cover.

¹ NIEA (2017) Badger Survey NIEA Specific Requirements, available at:
<https://www.daera-ni.gov.uk/sites/default/files/publications/daera/badger-survey-specifications.pdf>