Aderrig Phase 3: Residential Development at Adamstown SDZ

Ecological Impact Assessment Report

BSM Est. 1968

Brady Shipman Martin

Built. Environment.

Ecological Resilience **Built Environment**

Client: Quintain Developments Ireland Ltd

Date: 19 October 2022

DOCUMENT CONTROL SHEET

6940_Ad3_RPEA_Ecological Impact Assessment Report

Project No.	6940
Client:	Quintain Developments Ireland Ltd
Project Name:	Aderrig Phase 3: Residential Development at Adamstown SDZ
Report Name:	Ecological Impact Assessment Report
Document No.	Ad3_RPEA
Issue No.	02
Date:	19/10/2022

This document has been issued and amended as follows:

Issue	Status	Date	Prepared	Checked
01	Draft	13 Oct 2022	MH	MH
02	Final	19 Oct 2022	MH	MH

Contents

1 Introduction

Quintain Developments Ireland Ltd is seeking permission for a proposed residential development within the Aderrig tile in Adamstown Strategic Development Zone.

The proposed development will be Phase 3 of development at this site and will comprise a total of 207 dwellings and all associated development works and landscaping.

This document comprises an appraisal of the likely effects on biodiversity (flora and fauna) of the proposed development.

The potential for any significant effects on sites designated as European (Natura 2000) sites, under the EU Habitats and Birds Directives was also appraised, and the results of that study are presented in a separate report (Appropriate Assessment Screening Report).

Brady Shipman Martin was commissioned to prepare this report. The work was carried out by Ecologist Matthew Hague BSc MSc Adv. Dip. Plan. & Env. Law CEnv MCIEEM. Matthew is an Associate with Brady Shipman Martin and is a highly experienced and qualified ecologist, with a master's degree in Ecosystem Conservation and Landscape Management. He has 20 years of experience in ecological and environmental consultancy, across a wide range of sectors. He has prepared numerous reports for AA Screening as well as Natura Impact Statements, for projects of all scales, from small residential developments to nationally important infrastructure projects.

Matthew is a Chartered Environmentalist (CEnv) and a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Matthew has also completed an Advanced Diploma in Planning and Environmental Law, at King's Inns and is a member of the Irish Environmental Law Association (IELA).

2 Methodology

2.1 Introduction

A detailed desk-based assessment has been undertaken, and a number of comprehensive ecological surveys have been undertaken at the Aderrig Phase 3 site, over several years, both in the preparation of the current planning application and as part of previous developments at Aderrig and on the wider Adamstown lands, now permitted and under construction or completed.

In order to provide comprehensive baseline on the local ecological environment, biodiversity surveys were carried out at the site by Matthew Hague of Brady Shipman Martin on several dates between 2018 and 2022. The surveys undertaken comprised habitat, invasive species, rare and/or protected species, mammals, bird surveys and assessment of bat roosts. Surveys were undertaken at various points throughout the year, allowing optimal levels of survey to be undertaken for habitats and flora, birds, bats and large mammals (e.g. badgers and otters).

In addition to the surveys undertaken by the author a number of specialist surveys have been undertaken. These include habitat and botanical (hedgerow appraisal) surveys, as well as large mammal, breeding bird and bat surveys, undertaken in 2020, 2021 and 2022. These were undertaken by the author and other specialist ecologists (Mr Brian Keeley, bat ecologist; Dr Joanne Denyer MCIEEM, botanist; and Mr John Fox, ornithologist). These surveys covered the entire tile at Aderrig.

A final site survey was undertaken by the author in the preparation of this report on 21 September 2022. Overall the level of survey undertaken in 2022 provides a comprehensive biodiversity baseline for the site.

This report has been prepared in accordance with the following **publications**:

- EPA *Guidelines on the Information to be Contained in Environmental Impact Statements* (EPA, 2002);
- EPA *Guidelines on the Information to be Contained in Environmental Impact Assessment reports* (EPA, 2022);
- *Environmental Impact Assessment of Projects – Guidance on Screening* (European Commission, 2017).

- *OPR Practice Note PN02: Environmental Impact Assessment Screening* (Office of the Planning Regulator (OPR) (2021);
- *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013);
- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (Department of Housing, Planning and Local Government, August 2018);
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (Transport Infrastructure Ireland (formerly the National Roads Authority, 2009);
- *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater, Coastal and Marine* ('the CIEEM Guidelines') published by the Chartered Institute of Ecology and Environmental Management (CIEEM), September 2018, updated in September 2019 (V1.1), further updated in April 2022 (V1.2).

The proposed development complies with the following **legislative instruments**:

- The Planning and Development Act 2000 as amended (the "Planning Acts");
- The Wildlife Act 1976 to 2021 and the Wildlife (Amendment) Act 2000;
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the "Habitats Directive");
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the "Birds Directive");
- European Communities (Birds and Natural Habitats) Regulations 2011-2021;
- Flora (Protection) Order 2022 (SI No. 235 of 2022);
- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment;
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

The report has regard to the following **Policies and Plans**:

- *Third National Biodiversity Plan 2017 – 2021* (Department of Culture, Heritage and the Gaeltacht, 2017);
- *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* (Inland Fisheries Ireland, 2016);
- *Planning for Watercourses in the Urban Environment* (Inland Fisheries Ireland, 2020);
- *All-Ireland Pollinator Plan 2021-2025* (National Biodiversity Data Centre);
- *Adamstown Strategic Development Zone (SDZ), 2014 Planning Scheme, including the Environmental Report;*
- *South Dublin County Development Plan 2016 – 2022, including the associated Statement for Appropriate Assessment.*

2.2 Appraisal methodology

A desk study was undertaken to collate the available information on the local ecological environment. In addition to the resources listed in Section 2.1, information collated from the sources listed below was reviewed:

- Data on rare and protected plant and animal species contained in the following databases:
    - The National Parks and Wildlife Service (NPWS) of the Department of Housing, Local Government and Heritage (www.NPWS.ie);
    - The National Biodiversity Data Centre (NDBC) (www.biodiversityireland.ie);
    - Birdwatch Ireland (www.birdwatchireland.ie);
    - Bat Conservation Ireland (www.batconservationireland.org);
- Recent aerial photography and photographs taken at the site;
- Recent and historic ordnance survey mapping (www.geohive.ie, Google Earth);

- Information on protected areas, as well as watercourses, catchments and water quality in the area available from https://gis.epa.ie/EPAMaps/;
- Information on soils, geology and hydrogeology in the area available from www.gsi.ie ;
- Information on the Status of EU Protected Habitats and Species in Ireland (Article 17 report) (NPWS, August 2019);
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government www.myplan.ie/en/index.html.

Habitats were classified using *A Guide to Habitats in Ireland* (Fossitt, 2000). Vascular plant nomenclature follows that of the *New Flora of the British Isles* 4th Edition (Stace, 2019).

All hedgerows, tree lines, field edges and watercourses/ditches were searched for any evidence of badgers, such as setts, commuting routes, territorial marking, latrines or feeding signs as well as paw prints, snagged hairs and piles of bedding material. Mammal surveys followed the methodologies contained in the NRA *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* and the *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes.*

A dedicated appraisal of the hedgerows on the site was undertaken, in accordance with the methodology contained in the Hedgerow Appraisal System (Foulkes *et al.*, 2013). Refer to **Appendix 1**.

Four breeding bird surveys were undertaken between late March and early July 2022. The four visits were timed for early morning to coincide with the period when breeding birds are most active and therefore most easily observed. The shortest visit was for just 65 minutes and was cut short by heavy rain. The longest visit was for 1 hours and 50 minutes. The visits were undertaken on the 26 March, 27 April, 22 June and 1 July 2022 and provided a good overview of breeding activity within the breeding season. Approximate populations, breeding status and conservation status were assigned to each species recorded. A species table and distribution map for the lands were prepared. Refer to **Appendix 2**.

Day-time appraisals of potential roost sites and night-time bat activity surveys were undertaken. The bat surveys undertaken are consistent with the level of survey recommended in the NPWS document *Bat Mitigation Guidelines for Ireland V2– Irish Wildlife Manuals No. 134 (2022)* and *Bat Mitigation Guidelines for Ireland- Irish Wildlife Manuals No. 25 (2006)*. The survey focussed on all Irish bat species that are fully protected under the Wildlife Act 1976 and subsequent amendments, and under the EU Habitats Directive, which is transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011-2015 (as amended). Refer to **Appendix 3.**

An examination of available information from Bat Conservation Ireland (BCI) and the National Biodiversity Data Centre was also undertaken to compile a list of most likely species in the overall area in addition to the evaluation of the habitat for bats. There are no bat species listed as Qualifying Interests in any European sites within the Zone of Influence. However, Article 12 of the Habitats Directive requires Member States to take *requisite measures to establish a system of strict protection of animal species listed in Annex IV(a) in their natural range*. The potential impacts of the proposed development on bats and otters (also protected under Article 12 of the Habitats Directive) are assessed in this report.

As a result of the extensive biodiversity-related surveys and research, and given the habitats and species known to be present on the site and in the wider area, the amount of information gathered to date is sufficient to allow a comprehensive understanding of the potential impacts of any proposed development at the site on biodiversity and related receptors.

The ecological surveys undertaken are up-to-date and valid, and the reports in the Appendices are appropriately detailed to enable the potential impacts of the proposed development to be appraised.

2.3 Evaluation of ecological features

The methodologies used to determine the value of ecological resources, to characterise impacts of proposed development and to assess the significance of impacts and any residual effects are in accordance with the NRA

Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA/TII, 2009). This methodology is consistent with the *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland – Terrestrial, Freshwater, Coastal and Marine* ('the CIEEM Guidelines', CIEEM, September 2019).

In accordance with the NRA Guidelines, impact assessment is undertaken of sensitive ecological receptors (Key Ecological Receptors) within the Zone of Influence of the proposed development. According to the NRA Guidelines, the Zone of Influence is the "effect area" over which change resulting from the proposed development is likely to occur and the Key Ecological Receptors are defined as features of sufficient value as to be material in the decision-making process for which potential impacts are likely. In the context of the proposed development at Aderrig, a Key Ecological Receptor is defined as any feature valued as follows:

- International Importance;
- National Importance;
- County Importance;
- Local Importance (Higher Value).

Features of local importance (Lower Value) and features of no ecological value are not considered to be Key Ecological Receptors.

3 Existing environment

3.1 General description of the study area and receiving environment

The proposed development site is located within Adamstown Strategic Development Zone (SDZ) (see **Figures 1** and **2**). It comprises the third phase of proposed development, in the western part of the Aderrig tile in the centre of the SDZ area. The proposed development has a total area of approximately 6.36ha.

The site is bounded to the west by a large and mature hedgerow, part of which is a townland boundary. The Celbridge Link Road, permitted under SDZ17A/0009, bounds the site to the east and Adamstown Way (which was constructed in 2006 under permission Reg. Ref. SDZ 06A/5) passes east-west through the southern part of the site. The western boundary hedgerow is severed by this road and by the Celbridge Link Road.

Permitted/planned development is taking place to the east and south. An area to the north east, on the eastern side of the Celbridge Link Road, is also included in the proposed development site and will comprise landscaped open space.

The site comprises disturbed land, formerly in agricultural use. There are no naturally functioning streams on the site, and no significant volumes of flowing water in the western boundary ditch. The nearest watercourse is a former stream known as the Tobermaclugg (Lucan) Stream. This is mapped as flowing along the southern boundary of the site (See **Figure 5** (habitat map)), however it has been substantially altered over time and is now a heavily vegetated, generally dry ditch, which periodically contains standing water, with minimal flow. This stream is incorporated into a new linear park that has been constructed as part of Aderrig Phase 1, c.200m to the east. The stream is linked to the Backstown Stream to the north and eventually flows into the River Liffey near Lucan Village, according to the EPA water features database[1].

[1] https://gis.epa.ie/EPAMaps/

Figure 1 The location of Aderrig within Adamstown SDZ (Source: *Planning Scheme documentation*). The site is located in the western part of Tile 8 and is outlined in a dashed blue line

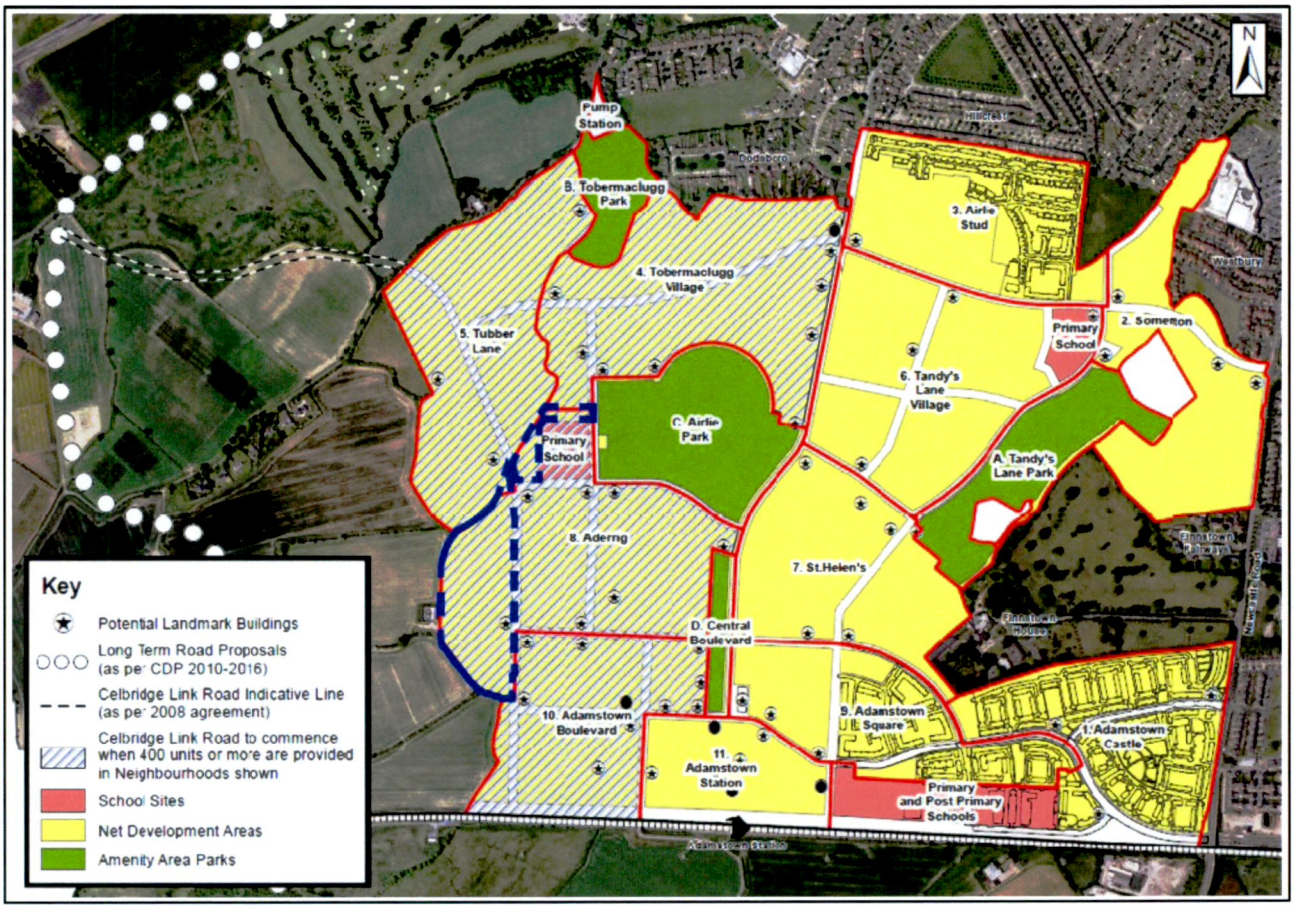
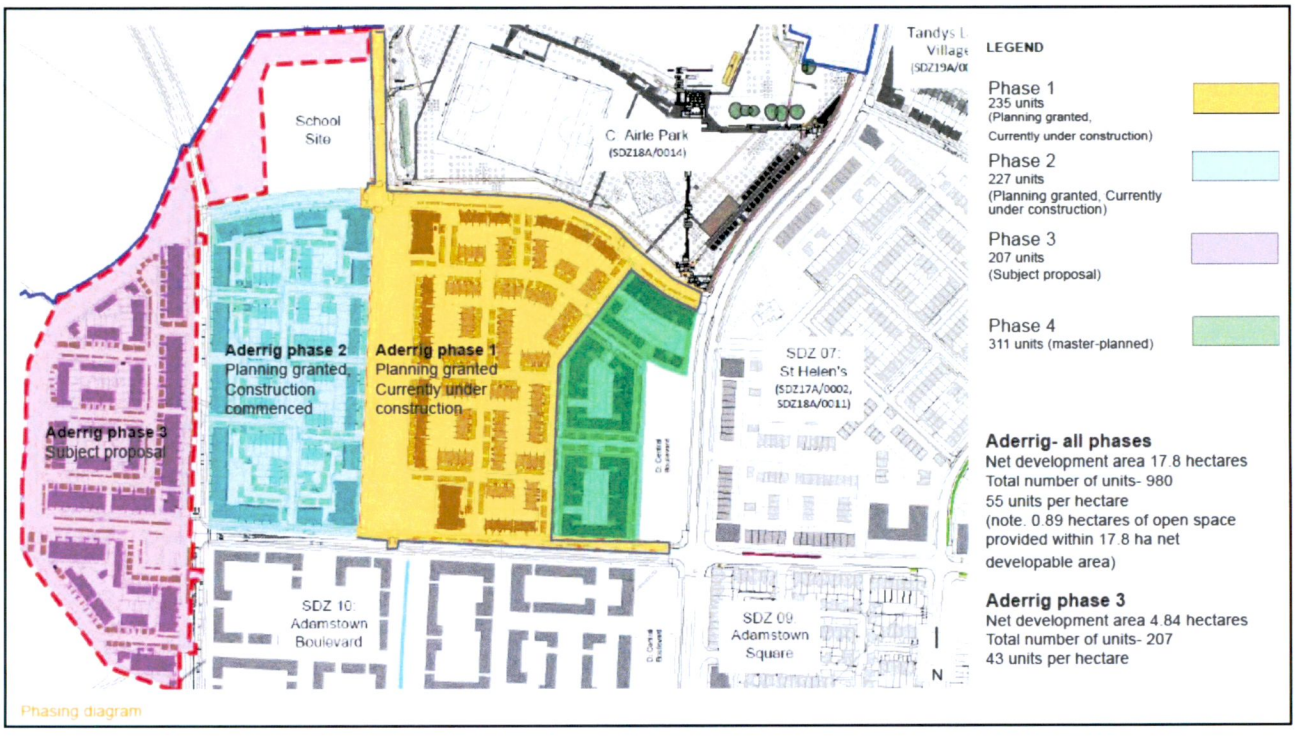


Figure 2 The location of the proposed Aderrig Phase 3 development site (in purple shading, with the previously permitted and proposed developments also shown)



3.2 Designated conservation areas

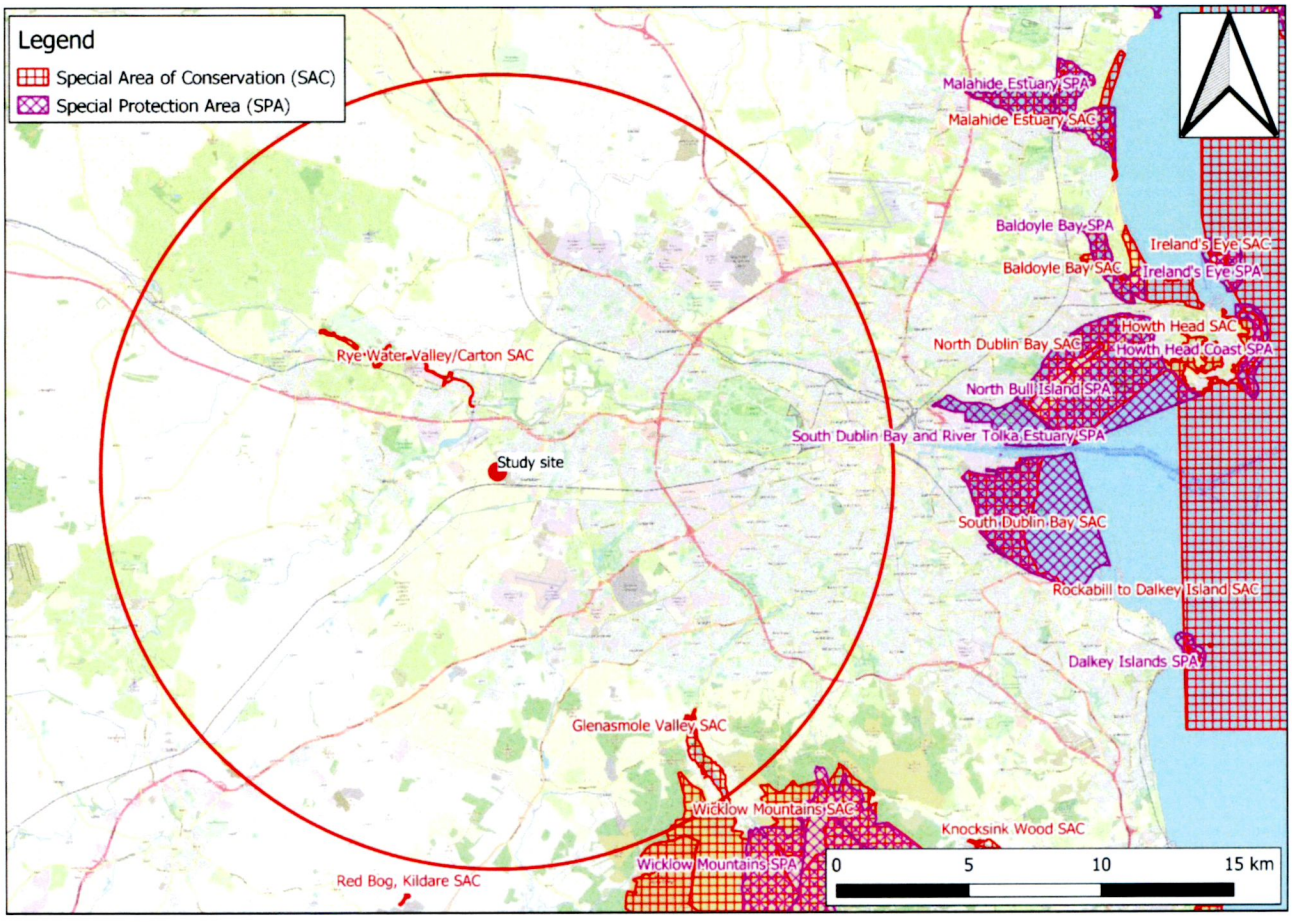
Screening for Appropriate Assessment has been undertaken, and a report (Appropriate Assessment Screening Report) has been prepared in order to address any potential impacts on European sites.

There are no European sites within the immediate vicinity of the proposed development site at Aderrig. The nearest such sites are as follows (as shown in **Figure 3**):

- Rye Water Valley/Carton SAC (site code 001398), c.2.5km to the north west;
- Glenasmole Valley SAC (site code 001209), c.11.6km to the south east;
- Wicklow Mountains SAC (site code 002122), c.13.3km to the south;
- Red Bog, Kildare SAC (site code 000397), c.16.4km to the south;
- South Dublin Bay SAC (site code 000210), c.17.6km to the east;
- North Dublin Bay SAC (site code 000206), c.19.8km to the east;
- Wicklow Mountains SPA (site code 004040), c.16.4km to the south;
- South Dublin Bay and River Tolka Estuary SPA (site code 004024), c.16.6km to the east;
- Poulaphouca Reservoir SPA (site code 004063), c.17.6km to the south;
- North Bull Island SPA (site code 004006), c.19.8km to the east;

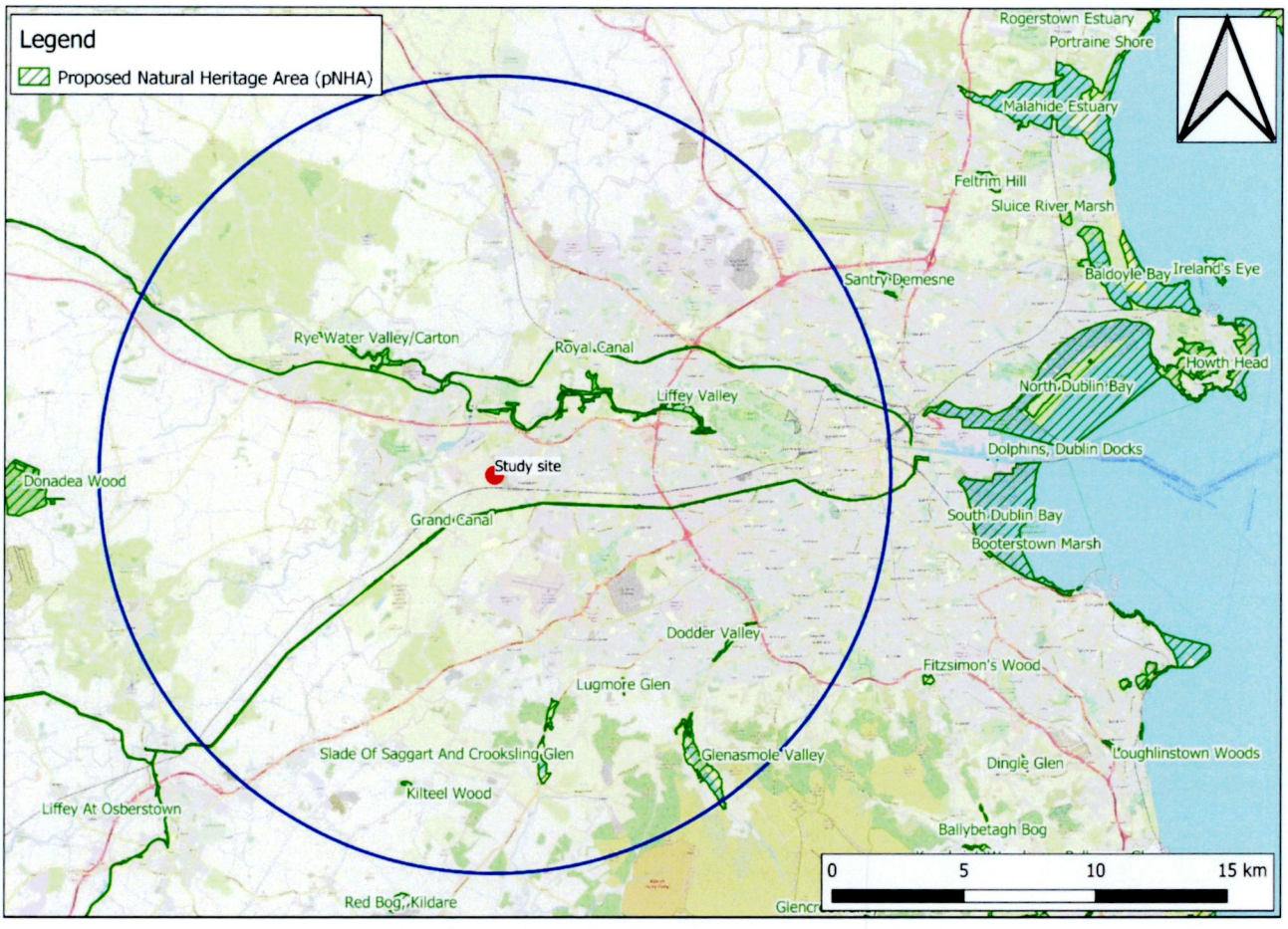
Note that the above-listed distances are linear (i.e. 'as the crow flies).

Figure 3 European sites within zone of influence of the proposed development. A 15km radius is shown for scale.



In addition to the European sites, a number of other sites designated for nature conservation are present in the wider area (**Figure 4**). The nearest such sites designated for nature conservation, not otherwise designated as European sites, are Grand Canal proposed Natural Heritage Area (pNHA site code 002104), c.1.1km to the south, Liffey Valley pNHA (site code 000128), c.1.6km to the north and Royal Canal pNHA (site code 002103), c.3.2km to the north.

Figure 3 pNHA sites within zone of influence of the proposed development. A 15km radius is shown for scale.



3.3 Rare and protected species

The proposed development site is not under any wildlife or conservation designation. A population (approximately 45 plants) of a rare and protected species, hairy St. John's wort (*Hypericum hirsutum*) listed in the Irish Red Data Book 1 – Vascular Plants (Curtis & McGough, 1988) and the Flora Protection Order, 2022 has been recorded to the north of the Aderrig Tile (north east of Aderrig Phase 3), within the boundary of a proposed park (Airlie Park) which is currently under construction. A second, smaller population, of approximately three plants, was recorded within the development boundary of Aderrig Phase 1, immediately to the east of Phase 2, within the alignment of the proposed (and permitted) linear park. No legally protected plant species are known to occur within the site, and none were recorded during the surveys undertaken in the preparation of this report.

3.4 Ecological features

3.4.1 Proposed development site

3.4.1.1 Habitats

The location of the proposed development site is shown in **Figure 1**. The habitats present on the proposed development site are described in this section and are shown in **Figure 5**.

The site comprises a mix of disturbed and modified habitats on the western edge of the SDZ lands. Although formerly the overall site was made up of agricultural fields with associated hedgerows, parts of the site have been impacted by historical development operations. The key ecological feature associated with the Aderrig 3 site is the mature western boundary hedgerow and tree line (Fossitt code: **WL1/WL2**). This feature in fact comprises three

distinct sections, referred to as H5, H7 and H8 in the hedgerow survey report (**Figure 6**, extracted from Appendix 1). Hedgerows H5 and H8, the northern and southern thirds of this boundary are classified as highly significant heritage hedgerow. The central part of this hedgerow (H7) is classified as moderately significant. Hedgerow H6, that passes east-west through the northern part of the site, is also classified as moderately significant. The hedgerows contain a high diversity of woody species. The southern and northern hedges are dominated by mature trees, but the ash (*Fraxinus excelsior*) trees exhibit extensive signs of ash dieback disease. Other hedgerow species present throughout the boundaries include hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), sycamore (*Acer pseudoplatanus*), elder (*Sambucus nigra*) and occasional hazel (*Corylus avellana*) and elm *Ulmus glabra*). Bramble (*Rubus fruticosus* agg.), roses (*Rosa* spp.), nettles (*Urtica dioica*) and ivy (*Hedera hibernica*) are all frequent. The blackthorn (and bramble) are spreading westwards into the site along much of the length of the western boundary, creating a new scrub (WS1) habitat.

Ground flora associated with the western boundary hedge includes cow parsley (*Anthriscus sylvestris*), lords and ladies (*Arum maculatum*), ground ivy (*Glechoma hederacea*), with grassland species such as foxtail (*Alopecurus pratensis*), rosebay willowherb (*Chamanaerion angustifolium*), creeping thistle (*Cirsium arvense*), cock's foot (*Dactylis glomerata*), cleavers (*Galium aparine*), hogweed (*Heracleum sphondylium*), bitter dock (*Rumex obtusifolius*) and bush vetch (*Vicia sepium*) as well as hairy willowherb (*Epilobium hirsutum*), silverweed (*Potentilla anserina*) and common dandelion (*Taraxacum officinale*). Herb-Robert (*Geranium robertianum*), ribwort plantain (*Plantago lanceolata*) and creeping buttercup (*Ranunculus repens*) are also present.

Occasional oak (*Quercus robur*) are present, with a particularly fine mature example located in the western boundary (located in H5 in **Figure 6**).

The eastern boundary of this site is marked by a road (**BL3**) and spoil/bare ground (**ED2**). There is also a small area of hardstanding with concrete walls (**BL3** – a defunct agricultural structure) on the western boundary. The north eastern part of the site – to the north east of the central north south road, there is an area of hardstanding (**BL3** – a construction compound) and bare and recolonising ground (**ED3**) with very little vegetation other than some ruderal plants and grasses.

As can be seen in Figure 5, the main part of the site (the old fields) is effectively divided into three habitat mosaics, none of which are particularly ecologically diverse. The northern part comprises a former arable field (**GS1**), now unmanaged. The central section is a mosaic of scrub and recolonising bare ground/exposed soil (**WS1/ED2/ED3**) and the southern part is a mosaic of rank grassland and recolonising spoil (**GS1/ED2/ED3**) dominated by tall ruderal vegetation (nettle, rosebay willowherb, thistles). Other species present throughout these three habitat types include beaked hawk's-beard (*Crepis vesicaria*), knapweed (*Centaurea nigra*), creeping buttercup, docks, bramble, ribwort plantain, cleavers, greater stitchwort (*Stellaria holostea*) red clover (*Trifolium pratense*), white clover (*Trifolium repens*), broad-leaved dock, common hogweed, tufted vetch, dandelion, herb-Robert, great willowherb and hoary willowherb (*E. parviflorum*). Other species occasionally present include scarlet pimpernel (*Anagallis arvensis*), self-heal (*Prunella vulgaris*) and cut-leaved crane's-bill (*Geranium dissectum*). All of these species are typical of such a disturbed site.

There are no watercourses on the site, however the boundary hedge occasionally contains small areas of standing water.

Figure 5 Habitat map for the proposed development site. For the project red line please refer to the reports that accompany the application

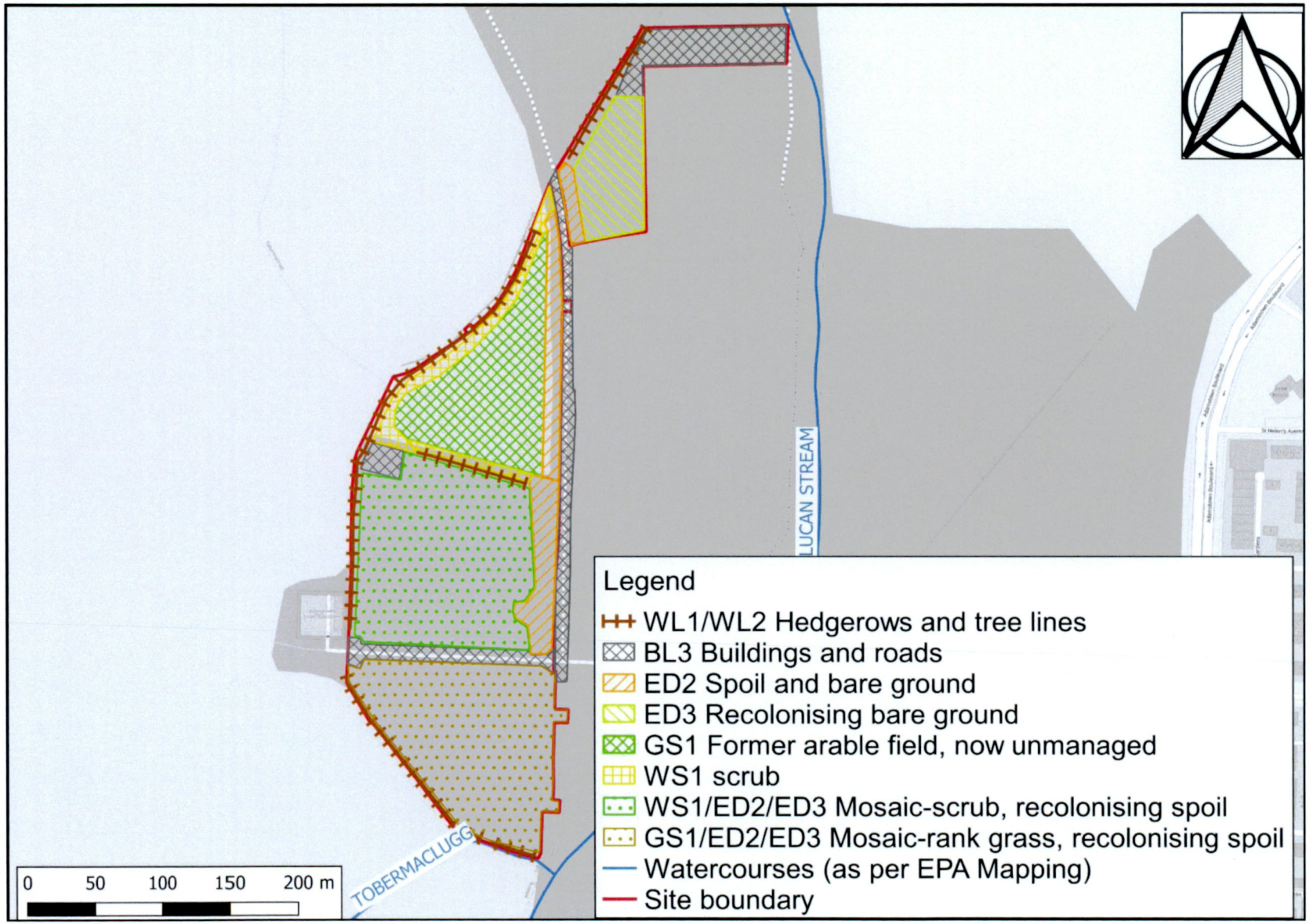
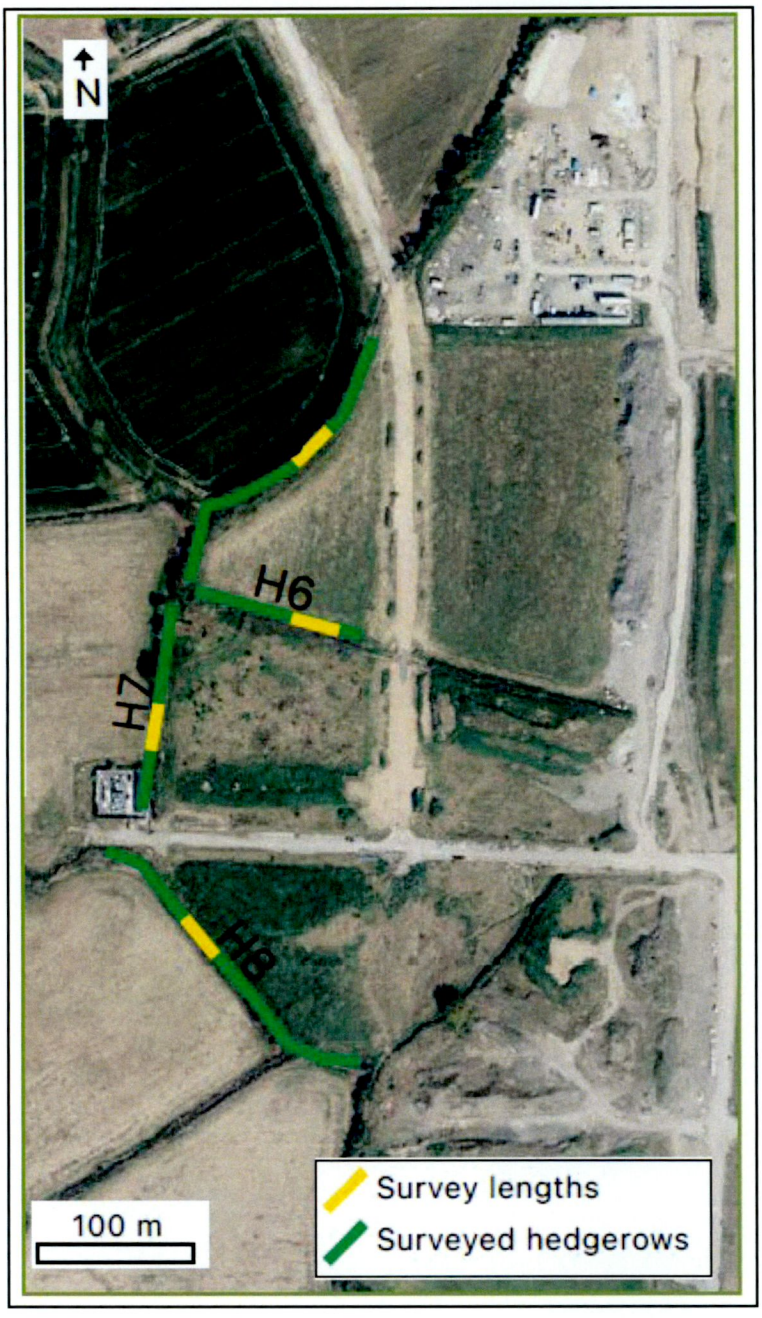


Figure 5 Surveyed hedgerows and locations of 30m survey sections (extracted from Appendix 1)



3.4.1.2 Fauna

As confirmed in the bird survey report (**Appendix 2**), during the surveys undertaken between March and July 2022 a total of 31 common bird species of Ireland were recorded on the lands, thirteen of which were confirmed as breeding. Three species of highest conservation concern (red listed) were recorded, two of which (meadow pipit and yellowhammer) were confirmed to breed. The third species (common snipe) does not breed on or close to the site.

Seven species of medium conservation concern were recorded of which two (skylark and linnet) were confirmed to breed, three probably or possibly breed (goldfinch, starling, greenfinch) and two do not breed on the lands (herring gull and swift). The remaining 21 species recorded were of least conservation concern, nine of which were confirmed to breed on the site (wren, dunnock, robin, stonechat, blackcap, whitethroat, great tit, goldfinch, reed bunting). The remaining 12 species recorded, all of least concern, were either possibly or probably breeding

(buzzard, pheasant, woodpigeon, song thrush, blackbird, sedge warbler, blue tit, long-tailed tit, magpie, jackdaw, hooded crow, chaffinch.

As set out in detail in the bat survey report (**Appendix 3**), No bat roosts were identified within the site during the surveys undertaken in June and July 2022. This includes both the trees on the site and the substation outside the western boundary.

There was bat activity within the site during all survey periods. The main activity prior to sunrise was of Leisler's bats. Two Leisler's bats were noted to fly north prior to sunrise and out of the site. Most observations of Leisler's bats was feeding high over the hedgerow and treeline and around the substation.

Both common and soprano pipstrelles were also noted feeding within the site primarily along hedgerow with occasional forays over stubble within the field to the northwest of the site.

Pipistrelles were most commonly very close to the trees and within 3 to 4metres of the ground. Leisler's bats were often following the trees but at a height of 6 metres or greater.

Some evidence of badger activity was recorded on the site, with small amounts of foraging activity noted immediately next to the northern part of the western boundary hedgerow. Badger activity was more evident on the northern side of the boundary, outside the site. A small badger sett (with two entrances) was recorded in the north western boundary hedge. This is the same sett that was recorded by ecologist Faith Wilson, as described in the planning documentation associated with a proposed development (SDCC Planning Reg. Ref.: SDZ21A/0023) to the northwest of the Aderrig 3 subject site (at the time of writing (early October 2022) a decision has not been made on this application). The sett is not highly active, and is not currently being used as a 'main' (breeding) sett).

No evidence of, Irish hare or other protected large mammals, including otters was recorded in the site. Foxes and rabbits, neither of which species is protected, were both frequently observed.

Common (viviparous) lizard, common frog and smooth newt were not recorded during the site walkover surveys.

3.5 Overall ecological valuation of the site

The proposed development site is not under any wildlife or conservation designation. As noted in Section 3.3 and described in Section 3.4.1.1 a rare plant, hairy St. John's wort, has been recorded in two locations nearby, but not within the Aderrig 3 site area.

No rare habitats or habitats of particularly high ecological value (i.e. International, National or County) are present at the site. The majority of the hedgerows, however, are of Local (Higher Value) Importance. The western boundary hedgerow/tree line is of particular ecological value for its habitat connectivity and for nesting birds as well as commuting and foraging bats. It is also of value for badgers in the area – given the presence of a small sett and the fact that it facilitates badger movement north and south through the landscape. Meadow pipit and yellowhammer (red listed species as per the BoCCI (Gilbert *et al.* 2021)) were confirmed to breed on the lands.

Overall, with the exception of the western boundary hedgerows which are of Local Importance (Higher Value) the site is of Local Importance (Lower Value) in accordance with the ecological resource valuations presented in the National Roads Authority/Transport Infrastructure Ireland *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA/TII, 2009 (Rev. 2)). The western boundary hedgerows will be retained and protected as part of the proposed development.

4 Potential impacts of the proposed development

4.1 Description of the proposed development

Each element of the development under appraisal is required to comply with the Approved Adamstown SDZ Planning Scheme (2014). This contains a number of Strategic Environmental Objectives in relation to biodiversity,

in order to sustain and enhance ecological habitats, avoid significant adverse impacts and to sustain and enhance key ecological networks. In addition, the South Dublin County Development Plan 2022-2028 has a series of objectives intended to protect and enhance the natural environment. For example the CDP contains significant objectives to protect and enhance green infrastructure within the county. It also includes policies to protect water bodies and watercourses, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains, within the County from inappropriate development.

In line with Green Infrastructure (GI) Objective 4 of the Plan A *Green Space Factor Plan* has been developed and is presented as part of the Landscape Design Development report, prepared by the project landscape architects (Doyle + O'Troithigh Landscape Architecture Ltd) and submitted separately. See also Section 5.2.

The CDP and Planning Scheme aims have been achieved in so far as is practicable within the Aderrig Phase 3 development, taking account of the constraints imposed by the SDZ planning scheme instead.

The current application site (6.36ha) is located within Development Area 8 – Aderrig of the Adamstown SDZ Planning Scheme, 2014, as amended. The proposed development will consist of 207 dwellings.

Permission is also sought for all associated site and development works including roads, public open space, car parking, bicycle parking, bin storage areas, associated pedestrian footpaths and cycle paths, hard and soft landscaping and boundary treatment.

The proposed development will provide for roads, drainage (wastewater and surface water), water supply and utilities. The development is accessed from Celbridge Link Road via access points already approved and under construction by SDCC Reg. Ref. SDZ17A/0009. Parking bays, buffer zones, cycle paths and footpaths along the western side of the Celbridge Link Road permitted under Reg. Ref. SDZ17A/0009 are included in the current application.

Aderrig Phase 3 is the third phase of a four phase development within the Aderrig Tile. The construction of Phase 1 is well progressed, and Phase 2 has recently commenced enabling works.

4.2 Designated conservation areas –Appropriate Assessment

As previously stated, the potential for any impacts on these sites under the EU Habitats and Birds Directives was considered and a Screening report for Appropriate Assessment was prepared. Full results of that study are presented in a separate report. The following paragraphs comprise a summary of the conclusions outlined in that report:

> *In view of best scientific knowledge this report concludes that the proposed development at Aderrig (Phase 3), individually or in combination with another plan or project, will not have a significant effect on any European sites. This conclusion was reached without considering or taking into account mitigation measures or measures intended to avoid or reduce any impact on European sites.*
>
> *It is considered that this report provides sufficient relevant information to allow the Competent Authority (South Dublin County Council) to carry out an AA Screening, and reach a determination that the proposed development will not have any likely significant effects on European sites under Article 6 of the Habitats Directive in light of their conservation objectives.*

4.3 Habitat loss and disturbance within the site, including impacts on fauna

In line with the Adamstown Planning Scheme, there is an expectation/requirement that the lands in question transition from a rural character to an urban one and this will have consequences for existing habitats.

The proposed development will involve the removal of much of the existing area of the site and its replacement with residential development, open space and development-related infrastructure. This includes the removal of the now disused fields and the east-west hedgerow that traverses the northern part of the site. The disused fields

contain mosaics of scrub, grassland and recolonising-type habitats that are reasonably diverse. This loss is considered to be a *probable permanent impact, significant* at the site level. The loss of the existing habitats will also reduce the feeding opportunities for bats and birds. The removal of these features as well as the internal hedge has the potential to *impact at the local scale* on breeding birds, bats and badgers due to loss of foraging areas, breeding habitat and commuting pathways. No roosting bat species were identified within the site boundary and no impacts on roosting bats are expected.

The proposed development will result in the loss of hedge H6 that extend into the site. This is classified as a moderately significant hedgerow and this loss will be *permanent and significant* at the site scale. However, the mitigation strategy, set out in Section 5.2 and in the Landscape Design Development Report includes the planting of 247 linear metres of new hedgerow (made up of hawthorn, hazel, spindle, blackthorn and holly), to replace the 130m of hedgerow being removed in H6. Significant street tree planting is proposed, in addition to the proposed creation of over 5,000m^2 of new woodland in the northern-most part of the site. The new woodland will be planted using the 'Miyawaki' method of woodland creation.

Although hedgerow H6 is to be removed, hedges H5, H7 and H8 along the western boundary hedge are all to be retained and enhanced – the habitat connectivity along the western boundary of the site is to be retained as part of the proposed development.

The long-term landscaping design, which is focussed on biodiversity enhancement, will ensure that the impacts on biodiversity are reduced over time (refer to the accompanying landscape design, prepared by Doyle + O'Troithigh).

The most important ecological feature on the site, the western boundary hedgerow, is to be retained as part of the development. The small badger sett is located in this western boundary hedgerow. This hedgerow will be retained intact and will be managed and enhanced as part of the landscape and open space strategy for the proposed development. It is, therefore, proposed to retain the sett intact within the development. The retention of the hedge, coupled with the landscaping proposed, will ensure that ecological connectivity is maintained all along the western boundary of the Aderrig Phase 3 site.

The intention is to retain the badger sett untouched, and the design of the proposed development and landscape strategy will ensure that there will be no direct impacts on the sett. Nevertheless, the proposed development under the current planning application could result in potential disturbance to badgers due to the proximity of the proposed construction areas. There is, therefore, the potential for impacts on badgers in the area during the construction phase. This includes the potential for impacts on badgers due to death or injury as well as loss of foraging habitats or disturbance to foraging areas. Construction works in close proximity to breeding setts can cause disturbance to badgers and cubs. However, there is no construction proposed within the tree protection zone along the north western part of the site and it will not be necessary to close the existing sett, even on a temporary basis in order to facilitate the development. A licence to disturb badgers (issued by NPWS under Section 23 of the *Wildlife Act, 1976*, as amended), will not be required.

It is not expected that there will be any impacts on other large mammals, including on otters, or on amphibians or reptiles, as a result of the proposed development. In addition there will be no loss of habitat utilised by overwintering birds, such as lapwing or curlew.

Lighting can affect different species to varying degrees and within species there is also a range of responses to introduced light ranging from minimal effects to complete avoidance. Badgers in urban areas can become very tolerant to light but in rural areas are typically most comfortable in and confined to unlit areas. Bats may actively avoid artificial lighting, especially if it is shining upon a roost site. There are no roosts within the Aderrig Phase 3 site. Lighting is not a critical feature for badgers as they will adjust to increased lighting once they have an opportunity to pass through it unnoticed.

Therefore, lighting from the proposed development during the operational phase may have a *long-term to permanent, moderate, negative* impact upon bats and a *long-term to permanent, slight, negative* impact upon badgers.

There will be no transfer of invasive plant material during the construction phase that could potentially lead to species such as giant hogweed or Japanese knotweed becoming established in the area. The construction methodology will ensure that no invasive species are introduced, either deliberately or inadvertently, to the site.

4.4 Water

All **construction activities** pose a potential risk to watercourses as surface water arising at a site may contain contaminants. The main contaminants arising from construction activities may include suspended solids, hydrocarbons and concrete/cement products. If not properly managed, such pollutants could pose a temporary risk to surface water quality in local watercourses, and in the surface water drainage infrastructure, during construction.

Although there are no significant watercourses on or in the vicinity of the site, the drainage ditches and Lucan Stream/Tobermaclugg Stream are linked to the Backstown Stream to the north. The site ultimately drains to the Liffey and the construction of the proposed development at Aderrig Phase 3 could have impacts on water quality, via run-off to the wider surface water network, including the sewer network and via infiltration to the ground. Therefore in the event that contaminated water should enter any drainage ditch, watercourse or sewer during the construction (or operation) of the proposed development, there is the theoretical potential for negative effects on water quality.

Once operational it is proposed to discharge the surface water from the proposed development, via a series of SuDS features and downstream defender manholes, into the existing downstream stormwater system, as prescribed in the ASDZ scheme. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations in the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual and the recently published Sustainable Drainage Explanatory Design & Evaluation Guide (2022). It is proposed to incorporate a Storm Water Management Plan though the use of various SuDS techniques.

As part of the planning application for this development a full flood risk assessment has been prepared by Waterman Moylan Consulting Engineers) and is submitted under a separate cover. The flood risk assessment considers tidal, fluvial, pluvial, groundwater, and human/mechanical errors as flooding sources and noted that the residual risk of each were rated as low or extremely low (not applicable in the case of tidal flooding).

5 Mitigation measures

5.1 Designated conservation areas

No designated conservation areas will be impacted in any way by the proposed development and no specific mitigation measures are required for the protection of these sites.

Full details in relation to European sites are provided in the accompanying Appropriate Assessment Screening Report.

5.2 Habitats

In line with the Adamstown SDZ Planning Scheme, there is an expectation and requirement that the land at Aderrig Phase 3 will change from a rural to an urban character and that this will have consequences for existing habitats. All site clearance and landscaping works will comply with current legislative requirements and best practice. Where possible, all vegetation clearance will take place outside the bird nesting season (avoiding the period 1 March to 31 August).

Construction works will be undertaken in strict accordance with the requirements of the Construction Environmental Management Plan (a preliminary plan has been prepared by Waterman Moylan and submitted separately), and in line with the requirements of Inland Fisheries Ireland, who will be consulted prior to the commencement of works.

As it is proposed to effectively change the site from former agricultural/disturbed ground to an urban character, it is not possible to mitigate all of the potential impacts on local ecological receptors. A total of 130m of mature hedgerow of moderate significance will be removed, as is the clearing of virtually all of the scrub, unmanaged grassland and recolonising ground. It is therefore essential that a significant level of ecological mitigation is provided. In order to achieve this the design team, in particular the project landscape architect, arborist, architect, ecologist, civil engineer and developer have all collaborated to ensure that, within the constraints imposed by the SDZ planning scheme, the impacts on local biodiversity receptors are minimised, and the areas of new biodiversity are maximised.

The mitigation strategy is two-fold. Firstly, the western boundary hedgerow is to be entirely protected. Prior to any construction commencing, a tree protection fence (refer to Independent Tree Surveys Ltd drawing 22028_TPP_Overview) will be erected along the western boundary. This boundary will be treated in accordance with British Standard BS5837:2012 Trees *in Relation to Design, Demolition and Construction' – Recommendations*. No works, other than works required to enhance the condition of the retained hedge, will be permitted inside this fence.

The exclusion zone provides a buffer to the western hedgerow and trees into which no roads, buildings or sub surface services are to be located. In doing so, this ensures that roots of the retained hedgerow and trees and not impacted on by the development. The exclusion zone to the western boundary hedgerow and trees allows for the retention of 673 linear metres of hedgerow and associated trees. It also allows for the full protection of the badger sett in the boundary hedgerow. Further to this, the pathway on the western edge of the development will be constructed using a cell web (no dig) system. Full details are shown on the accompanying landscape drawings prepared by Doyle + O'Troithigh, including drawing LD-06-PP Details D03.

Full details of the planting proposed, including drawings, planting schedules and long-term management proposals are set out in the accompanying landscape design reports and drawings, prepared by Doyle + O'Troithigh, however in summary the western boundary will be strengthened, new hedgerows will be planted and new blocks of woodland will also be planted. On completion of the development, and once the hedgerow works have been completed, the tree protection fencing will be removed.

As set out in the landscape design report, a total of 247m of native hedgerows will be planted as replacement for the 130m that will be removed to facilitate the development. In total between the hedgerows retained on the western boundary and the new hedgerows planted there is a post construction net increase of 117m of native hedgerow on site.

Areas of native woodland will be planted to provide a total of 5,183m2 of new, high biodiversity-value woodland (to be delivered using the Miyawaki method of woodland planting). These quick establishing areas of native woodland planting will greatly enhance the green lung of the western boundary.

In parallel to the Miyawaki planting the western and northern boundary of the future school site will be planted with a new native hedgerow. The species selected include hawthorn, hazel, spindle, blackthorn and holly.

Across the site a total of 359 street trees will be planted, with 106 to be planted in bio retention tree pits and the remaining 253 to be planted in standard tree pits. In addition to the 359 street trees to be planted across the development a further 133 trees will be planted in open space areas.

In line with Green Infrastructure (GI) Objective 4 of the 2022 – 2028 South Dublin County Development plan (to implement a Green Space Factor (GSF) a Green Space Factor Plan has been prepared. As per the scoring detailed in the South Dublin Green Space Factor Guidance Note, the Aderrig Phase 3 site has recorded a Green Space Factor score of 0.31. In line with the Green space factor guidance notes the project team will engage with South Dublin County Council in order to develop alternative GI solutions for the site. These discussions will include the provision of GI enhancement from the non-exhaustive list on page 5 of the Guidance notes and alternative site-specific interventions.

Figure 6 Extract from the proposed Tree Protection Plan prepared by Independent Tree Surveys Ltd, showing the tree protection fencing (blue line) set back from the tree line (see drawing set 22028_TPP_Aderrig P3 Tree Protection Plan for full details)

Figure 7 Extract from the Landscape Plan prepared by Doyle + O'Troithigh Landscape Architecture, showing the extent of retained and new landscape and habitat features (see drawing no. 17-064 LP-01-PP for full details)

The planting proposed for the development will, wherever possible, comprise an appropriate mixture of native trees and shrubs, preferably of local provenance. The planting will also incorporate a range of species that will attract feeding invertebrates, including moths, butterflies and bees. It will take account of and implement the relevant objectives of the All-Ireland Pollinator Plan 2021-2025.

Bird boxes and insect hotels will be provided throughout the proposed development site. A total of 5 no. assorted wooden or woodcrete bird boxes and 3 no. wooden insect hotels (to be located within the proposed parks or the new woodland blocks) will be included.

The landscaping and enhancement/mitigation planting will, over time, provide replacement habitat of benefit to the bats and birds that will continue to use the site and its boundaries.

All planting plans and landscaping proposals will ensure that no invasive species are introduced, either deliberately or inadvertently, to the site. This includes invasive plants that are not listed on the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations 2011-2015*, such as *Crocosmia* spp.

5.3 Fauna

Construction works will be undertaken in strict accordance with the requirements of the Construction Environmental Management Plan (prepared by Quintain and submitted separately).

5.3.1 Bats – recommendations

No bat roosts have been recorded at Aderrig Phase 3 and there is no evidence that trees within the site are in use as bat roosts from the surveys undertaken in 2022. It will not be necessary to apply for a derogation licence under Regulation 54 or 55 of the European Communities (Birds and Natural Habitats) Regulations 2011-2015).

Nevertheless, bats are mobile creatures and all mature trees shall be checked by a bat specialist prior to felling or major surgery. If the felling occurs in winter, all suitable cavities offering roost potential to bats shall be checked by a bat specialist by way of access from a hoist or other height access means. Felling in autumn is preferable as it would avoid nesting birds and hibernating bats. A bat detector assessment will be carried out if felling takes place in the period September to early October. Any ivy-covered trees which require felling should be left to lie for 24 hours after cutting to allow any bats beneath the cover to escape. Trees with potential for bat roosting i.e. those showing cavities, should be felled in the presence of a bat specialist in case bats are present. If found, such animals should be safely retained in an escape-proof container until nightfall then released onsite.

A total of six bat boxes, such as Schwegler 2F with a double front (or similar, as recommended by the project ecologist/bat specialist) shall be installed in the site. If these cannot be facilitated within the site then bat access into the built structures shall be provided using specially designed bat access elements (e.g., bat access bricks, built-in boxes etc.).

5.3.2 Bats – lighting

All new public lighting (see the accompanying Public Lighting report and drawings, prepared by Sabre Electrical Services Ltd and submitted as part of the planning application) for the proposed development will be constructed in line with the recommendations of the Bat Conservation Trust (Lighting Guidelines, 2018).

The lighting design has been reviewed to consider the potential impact on foraging and commuting bats. The most important part of the site, the western boundary hedgerow, is to be maintained as a dark corridor. Prior to installation, the final lighting design for the proposed development will be reviewed to ensure that, while taking account of all necessary safety and security requirements, it minimises the potential for impacts on the local bat population, particularly along the western edge of the site.

The lighting takes account of the following lighting design characteristics:

- There will be no light spill onto the western boundary hedgerow – the street lights and associated cowling are designed to point away from the hedge to light the street only;
- The minimum level of appropriate/required lighting level will be provided within the developed/residential areas;
- Light standards will be fitted with low intensity, horizontal cut-off LED light fittings employing a narrow directional light or cowled light. This will avoid the effect of light spill arising;
- Light standards and associated lighting will where design requirements permit, be directed away from areas of open space, in particular the proposed linear valley;
- No floodlighting will be used in the development.

Given the level of bat activity recorded on the site during the bat surveys undertaken at the site it is considered that the lighting design is appropriate. The lighting design has been reviewed to consider the potential impact on roosting, foraging and commuting bats, and it is concluded that the lighting as designed will have no significant impacts on bat populations in the area.

As noted in the bat survey report, there will be a loss of vegetation within the site and an increase in lighting in areas where lighting is essential for traffic movement. This will lead to a slight to negligible negative impact upon bats.

5.3.3 Badgers

All works relating to the badger setts will be carried out in accordance with the NRA *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (n.d.).

Prior to the commencement of any construction works a pre-construction badger survey will be carried out by a suitably qualified badger specialist, in order to establish the current status of badger setts in the vicinity of the proposed development site, in particular the sett on the western boundary.

It is not proposed to close or destroy any sett, however badger sett tunnel systems can extend up to c. 20m from sett entrances. Therefore, no heavy machinery should be used within 30m of badger setts (unless carried out under the supervision of the project ecologist). Lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance, and light work, such as digging by hand or scrub clearance should not take place within 10m of sett entrances.

The following mitigation measures are proposed for the general protection of badgers:

- Day-to-day measures to ensure the welfare of badgers is maintained will be implemented as follows:
  - Good house-keeping measures will be maintained and no loose netting, fencing or other materials that could trap badgers will be left out on site;
  - Food waste will be secured so as not to attract badgers to the construction site at night;
  - Ramps will be included in any excavation deeper than 500mm to allow animals to escape if necessary.

5.4 Water

5.4.1 Surface water

As set out in Section 5.2 a preliminary Construction and Environmental management Plan has been prepared by Waterman Moylan and submitted separately). In addition to the requirement to implement these measures in full, the following Best Practice measures will be adopted during construction:

- The newly constructed storm water systems will be protected from ingress of silt, debris and deleterious material during all phases of construction;

- Appropriately designed silt prevention measures will be installed where necessary and will be regularly maintained and retained in situ for the duration of the construction phase, until such time as all proposed permanent surface water protection measures are installed and operational;
- Discharge Licences – It will not be permitted to discharge into any newly constructed storm water systems or watercourse without adhering to the conditions of the discharge licence and agreeing the same with the Site Manager and Local Authority Area Engineer;
- Discharge of surface water from the construction site will be via silt/sediment trap and/or temporary hydrocarbon interceptors and will be monitored to meet any requirements set by the Local Authority/Environmental Protection Agency;
- No discharge will occur where there is a risk of cement or residue in the discharge;
- Concrete Washout – The washing out of concrete trucks on site will not be permitted as they are a potential source of high alkalinity in watercourses. Consequently it is a requirement that all concrete truck washout takes place back in the ready-mix depot;
- Control of spoil and other materials to prevent spillage, and through appropriate handling and selection of spoil/material storage locations;
- Careful siting and bunding of fuel storage facilities and any areas used for the storage of potentially hazardous materials;

The strategy for controlling and mitigating potential adverse environmental during construction will also include the following, as appropriate:

- If required, sampling and testing of excavated spoil in order to assess the suitability of materials for reuse on site;
- Dust suppression from soils by the regular use of water sprays during any dry conditions, sheeting of haulage vehicle loads;
- Should invasive weeds be found, they will be treated as controlled waste and disposed of off- site at a landfill site that is licensed to receive such material;
- The storage of hazardous liquids (fuels and chemicals) will be avoided in so far as is possible. The handling and storage of any potentially hazardous liquids on site will be controlled and best practice guidance such as that published by the EPA, will be followed. Storage tank/container facilities will be appropriately bunded within designated compound areas and sited as far as possible from any watercourse or surface drain;
- If hazardous liquids escape during the works, the bunds and other protective measures will contain the spillage until remedial action, which will be taken as soon as possible.

The implementation and effectiveness of these standard best-practice mitigation measures will be inspected and recorded regularly during the construction period and where deficiencies or faults are identified they will be immediately remedied.

5.4.2 Foul water

It is proposed to discharge **foul water** from the Aderrig Phase 3 development directly to the existing foul water system. On 7 March 2019, in response to a Pre-Connection Enquiry (PCE) submission, Irish Water confirmed (customer reference no. 9540800086) that the current capacity available within the system can facilitate the proposed development. The Irish Water Confirmation of Feasibility Letter is contained in Appendix A of the accompanying Engineering Assessment Report, prepared by Waterman Moylan Consulting Engineers.

Foul water will be conveyed to the Irish Water WwTP at Ringsend, where the effluent will be subject to treatment prior to discharge to Dublin Bay at Poolbeg. This creates an indirect hydrological pathway linking the proposed development site with European Sites in Dublin Bay.

As set out in the Engineering Assessment Report that accompanies the submission, the peak wastewater discharge is calculated at 6.3l/s for the overall development. The Ringsend WwTP operates under licence from the EPA (Licence no. D0034-01) and received planning permission (ABP reg. ref.: 301798) in 2019 for upgrade works, which commenced in 2018 and are expected to be fully completed by 2025. The upgrade works will result in treatment of sewage to a higher quality than current, thereby ensuring effluent discharge to Dublin Bay will comply with the Urban Wastewater Treatment Directive by Q4 2023.

The peak wastewater discharge would not have a measurable impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive). Hydrodynamic and chemical modelling within Dublin Bay has shown that there is significant dilution for contaminants of concern (DIN and MRP) available quite close to the outfall for the treatment plant (Ringsend WWTP 2012 EIS, Ringsend WWTP 2018 EIAR; refer to Section 12.4.22, ABP-301798-18 Inspector's report). The most recent water quality assessment of Dublin Bay WFD Waterbody undertaken by the EPA (*Water Quality in 2020: An Indicator Report*, 2021) also shows that Dublin Bay on the whole, currently has an 'Unpolluted' water quality status (refer to www.catchments.ie). In any event no mitigation in relation to foul water infrastructure is required in the context of biodiversity.

5.5 Monitoring

A suitably experienced Project Ecologist will be appointed for the duration of the construction phase and regular monitoring of all related works will take place to ensure the correct and full implementation of all mitigation measures. The Project Ecologist will ensure that all construction works take place in accordance with planning conditions, the project CEMP and the mitigation measures set out in this EcIA.

The active badger sett in the western boundary hedgerow will require monitored protection in accordance with the parameters set out in best practice guidance including the NRA *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes*, for the entire duration of the construction phase. Should any additional badger setts be discovered within the site (e.g. that establish at a later stage but prior to construction), it may be necessary to exclude and close these setts, under licence from NPWS.

Should vegetation clearance be required during the bird nesting season, and should this work be unavoidable, such clearance will take place only after the Project Ecologist has undertaken a survey to ensure that no active bird nests or recently fledged birds are present. Pre-construction surveys will be required to ensure that any necessary tree felling or works to buildings continue to have no impact on roosting bats.

Monitoring of all fuel / oil storage areas will also be undertaken to ensure that all related mitigation measures are being implemented effectively.

No long-term ecological monitoring is required, other than post-construction monitoring of the bat and bird boxes, and insect hotels installed. The bat and bird boxes, and insect hotels installed on the site will be checked annually for a period of two years post-completion of the works, to ensure that they continue to be accessible to these species. If necessary, they will be repositioned within the site.

On completion of construction, the lighting installed will be reviewed by the Project Ecologist and a bat specialist, to ensure that it is operating according to the approved specifications. The landscape architect will similarly ensure that all works undertaken are in full compliance with the landscape specification. The arborist will ensure that all hedgerow and tree management measures are fully implemented. All monitoring tasks will be recorded and logged for inspection by the site manager.

6 Conclusion

The proposed Aderrig Phase 3 development will result in the removal of an internal hedge, as well as areas of scrub, unmanaged grassland and disturbed and recolonising ground. In line with the requirements of the Adamstown SDZ planning scheme, a new residential development will be delivered. Associated with the development will be new public open space and landscaped areas, including significant areas of ecologically sensitive planting and bat boxes and the retention and enhancement of the western boundary hedgerow. With the implementation of the required mitigation, including the significant additional hedgerow planting and the Miyawaki woodland, there will be no long-term residual impact on any ecological receptors, either within or in the vicinity of the site, or associated with any site designated for nature conservation as a result of the proposed development.

Appendix 1 Hedgerow survey report

ADERRIG PHASE 3, ADAMSTOWN SDZ
HEDGEROW SURVEY AND ASSESSMENT

September 2022

Report produced by Denyer Ecology for:
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CONTENTS

1 INTRODUCTION

1.1 Background

Denyer Ecology was commissioned by Brady Shipman Martin to undertake a detailed survey of selected hedgerows at Lands at Aderrig Phase 3, Lucan, South Dublin, in 2022 to inform development planning at the site.

1.2 Aim

The aim of the survey was to assess the ecological value/ significance of hedgerows on the site and their condition.

1.3 Site

The site is located within the Adamstown SDZ Planning Scheme Area. The approximate site boundary is shown on Figure 1.1. The site comprises former agricultural land with hedgerows along old field boundaries. The site is no longer used for agriculture and the fields are abandoned and overgrown. The northern part of the site has had some hedgerow removed and land clearance related to construction.

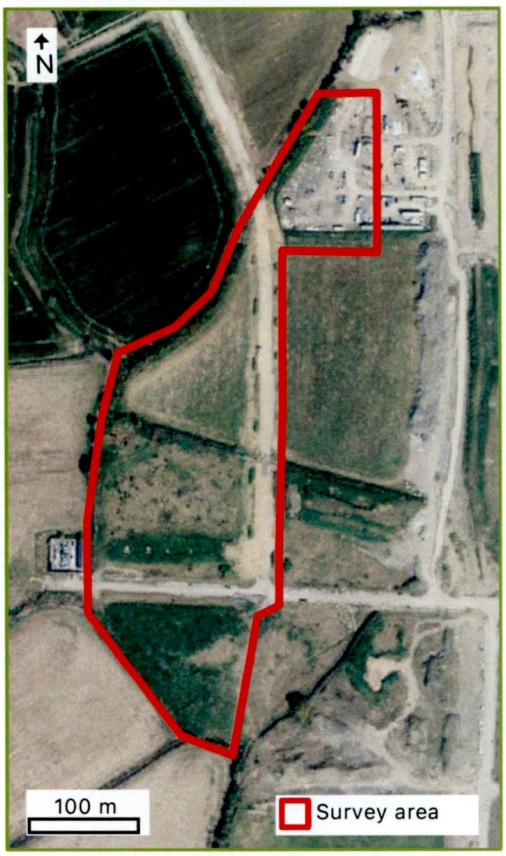

Figure 1.1. Survey area
RGB Aerial Photography - © Bluesky Geospatial Limited

2 METHODOLOGY

2.1 Desktop data

The following resources were consulted:

- Ordnance Survey Ireland (OSI) mapping (accessed: http://map.geohive.ie/mapviewer.html)
- Aerial imagery (Bing maps)
- EPA data on watercourses (downloaded shapefiles)
- Flora of County Dublin (Doogue *et. al.*, 1998).

2.2 Hedgerow assessment

The hedgerow survey and appraisal methodologies were based on the latest hedgerow survey guidelines: *Hedgerow Appraisal System - Best Practice Guidance on Hedgerow Survey, Data Collation and Appraisal* (Foulkes et al., 2013). The survey focused on rating the significance of the remaining sections of hedgerows currently present on site.

The survey comprised walking both sides of each hedgerow and recording the hedgerow flora species present and other hedgerow features. In addition, an attempt was made to survey the centre of the hedge to determine whether there is a bank, ditch or watercourse associated with the hedgerow and to survey the ground flora. This was sometimes only possible in one or two locations along the hedgerow, as the hedgerows are very mature and dense. Information was recorded from both the whole hedgerow and a 30m representative survey section. The locations of the surveyed hedgerows and 30m survey sections are shown on Figure 2.1

The following information was recorded and used to assess the significance of the hedgerow:

- General description of hedgerow including dominant woody species.
- Favourable tree, shrub and woody climber species (based on list in Foulkes et al., 2013). Recorded from hedgerow length and 30m survey section.
- Unfavourable tree, shrub and woody climber species (based on list in Foulkes et al., 2013). Recorded from hedgerow length and 30m survey section.
- Herbaceous ground flora (based on list in Foulkes et al., 2013). Recorded from hedgerow length and 30m survey section.
- Additional woodland/ hedgerow flora species if not included in the list by Foulkes et al. (2013)
- GPS position of start and finish of 30m survey section.
- Historical information (from desktop data).
- Species diversity (favourable woody species, ground flora and ferns and allies).
- Presence and height of wall or bank.
- Presence of wet or dry ditch or watercourse.
- Other features of ecological importance, such as Badger Setts.
- Habitat connectivity.
- Presence of mature trees.

In addition, the following information was used to assess the condition of the hedgerow:

- Height
- Width
- Profile
- Basal density
- % gaps and gap size
- Degradation of banks and walls
- % cover of negative indicators such as Ivy *Hedera hibernica*, unfavourable woody species, ruderal species indicative of high nutrients (e.g. *Urtica dioica*)
- Habitat at margins of hedgerow (e.g. grassy or ploughed/ disturbed)

2.3 Hedgerow significance

Using the guidance of Foulkes et al. (2013), the significance of each hedgerow is assessed by ranking the hedgerow features in five categories:

- Historical Significance
- Species Diversity Significance
- Structure, Construction and Associated Features
- Habitat Connectivity Significance
- Landscape Significance

Each category is scored on a scale of 0-4 (with 0 being the lowest). The score for each hedgerow is shown in Appendix A. The hedgerows have been ranked using the following criteria:

- Highly significant (Heritage Hedgerow): scores 4 in any category; cumulative score of 16 or greater over the five categories. These hedges should be considered as high priority in terms of retention and management action (Foulkes et al., 2013).
- Moderately significant: total score of 10-15 (may still be of value depending on the context).
- Low significance: total score less than 10 (may still be of value depending on the context).

2.4 Hedgerow condition

The hedge structure recorded criteria (e.g. height, width, cross sectional profile, quantity and age profile of trees) is used to assess hedgerow condition (Foulkes et al., 2013). Important factors include the size and percentage of gaps, density of basal growth, damage to banks and walls and overall growth form. Hedgerows are ranked in three categories representing structure, continuity and any other negative Indicators. The maximum possible condition score is 24. The higher the recorded score, the more favourable the condition (Foulkes et al., 2013). However, a score of 0 in any category represents a hedgerow in unfavourable condition.

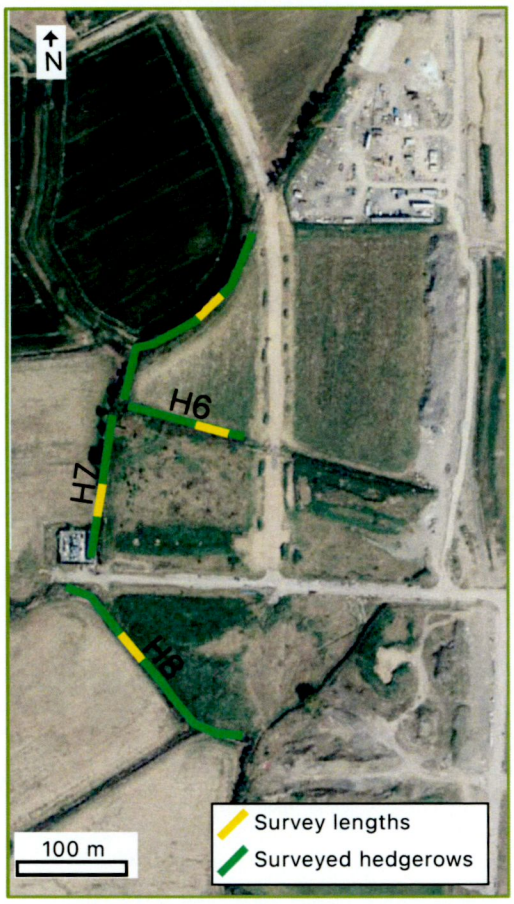

Figure 2.1. Surveyed hedgerows and location of 30m survey sections
RGB Aerial Photography - © Bluesky Geospatial Limited

2.5 Nomenclature

Vascular plant nomenclature will follow that of the *New Flora of the British Isles*. 4th Edition (Stace, 2019). The bryophyte nomenclature adopted by Blockeel et al. (2021) is used. Habitats were identified and classified using the *Guide to Habitats in Ireland* (Fossitt, 2000).

3 HEDGEROW EVALUATION

3.1 Hedgerow survey and evaluation results

Full details of the detailed hedgerow survey and 30m survey sections are shown in Appendix A. Key features of each hedgerow are summarised in Table 3.1 and the 'Significance' ranking of each hedgerow is shown on Figure 3.1. Two hedgerows (H5 and H8) rank as 'Highly significant' Heritage Hedgerows and two hedgerows (H6 and H7) as 'Moderately significant'. This is despite all of the hedgerows having recently had part of the hedgerow removed and/ or gaps created and being affected by Ash dieback.

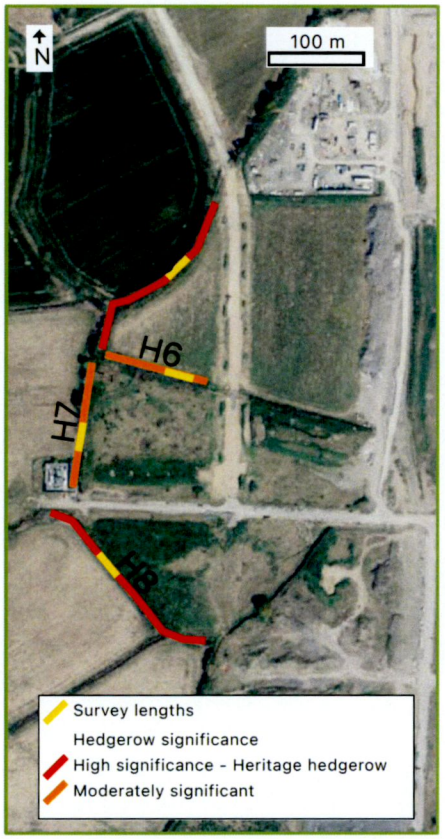

Figure 3.1. Hedgerow Significance map
RGB Aerial Photography - © Bluesky Geospatial Limited

Table 3.1. Summary of hedgerow survey and evaluation

ID	Appraisal Score1	Hedgerow Significance	Condition Assessment2
H5	18	Highly significant (**Heritage Hedgerow**). Scores ≥16 in all appraisal categories and scores >4 in Historical significance category	Favourable Scores 23/24 overall. There appears to be some impact of Ash dieback.
H6	13	Moderately significant. However, it is linked to two Heritage Hedgerows (H5 and H7)	Favourable Scores 21/24 overall. There appears to be some impact of Ash dieback.

ID	Appraisal Score1	Hedgerow Significance	Condition Assessment2
H7	14	Moderately significant. However, H7 and H8 were probably originally part of one hedgerow which would be classified as 'non-linear' and rank the single hedge as a 'Highly significant (Heritage Hedgerow)'. They have been considered two separate hedges in this assessment as they have different species, are separated by an access track and appear to be separate on aerial photography (from 1995 onwards).	Favourable Scores 21/24 overall. There appears to be some impact of Ash dieback.
H8	16	Highly significant (**Heritage Hedgerow**). Scores ≥16 in all appraisal categories and scores >4 in Historical significance category	Favourable Scores 19/24 overall. There appears to be some impact of Ash dieback.

[1]Maximum possible score = 40
[2]Maximum possible score = 24

3.2 Summary

Four extant hedgerows were surveyed within the project site. Two hedgerows were ranked as being **Highly significant (Heritage Hedgerows)**:

- H5: Shown on 1st Edition O.S and non-linear (= scores >4 for historical significance). Scores ≥16 in all appraisal categories.
- H8: Shown on 1st Edition O.S and non-linear (= scores >4 for historical significance). Scores ≥16 in all appraisal categories.

The remaining two hedgerows (H6 and H7) were ranked as being Moderately significant, despite recent hedgerow removal/ gap creation and ash dieback. They are also linked to the above Heritage hedgerows and H7 is likely to have historically been part of H8 (but now separated).

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HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Site name: Adamstown hedgerow survey	**Hedgerow/ treeline no.:** H5
Survey date: 27 June 2022	**Fossitt:** WL1

Hedgerow description:

A mature boundary hedgerow running SW to NE across the NW corner of the site. This hedgerow formerly continued to the northern boundary of the site but this section has been removed as part of an adjacent development. There is an arable field located to the W of the hedgerow, with planted crops to within 1m of the base of the hedgerow. On the E side there had previously been major earthworks up to the base of the hedgerow, with a large earth bank present along much of the hedgerow length. However the disturbed soil has now revegetated with grasses. The remaining section of the hedgerow is dominated with mature trees but the mature Ash *Fraxinus excelsior* trees show signs of Ash dieback disease. *Prunus spinosa* is locally abundant in the lower part of the hedgerow. There is a dry ditch in the centre of the hedgerow which is highly shaded and dominated by *Hedera hibernica*. Overall the ground flora is relatively species-poor. There are a number of herbaceous grounds flora indicator species present, but only *Glechoma hederacea* was recorded within the 30m survey section.

Photo 5.1. Hedgerow H5 (view to NW)

Photo 5.2. Hedgerow H5 (view to S)

Favourable tree, shrub and woody climber species

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Alnus glutinosa			*Prunus padus*		
Betula pendula			*Prunus spinosa*	x	x
Betula pubescens			*Pyrus communis*		
Castanea sativa			*Quercus petraea*	x	x
*Clematis vitalba**			*Quercus robur*		
Cornus sanguinea			*Rhamnus catharticus*		
Corylus avellana	x	x	*Rosa* sp.	x	x
Crataegus monogyna	x	x	*Rubus fruticosus* agg.*	x	x
Cytisus scoparius			*Rubus idaeus*		
Euonymus europaeus			*Salix aurita*		
Fraxinus excelsior	x	x	*Salix caprea*		
Hedera helix (H. hibernica)	x	x	*Salix cinerea oleifolia*		
Ilex aquifolium			*Salix pentandra*		
Juglans regia			*Salix triandra*		
Ligustrum vulgare			*Sambucus nigra*		x
Lonicera periclymenum			*Solanum dulcamara*		
Malus domestica			*Sorbus aria*		
Malus sylvestris			*Sorbus hibernica*		
Myrica gale			*Sorbus aucuparia*		
Pinus sylvestris			*Taxus baccata*		
Populus nigra			*Ulex europaeus*		
Populus tremula			*Ulmus glabra*		
Prunus avium			*Ulmus procera*		
Prunus cerasus			*Viburnum opulus*		
Prunus domestica					

*Not included in original species list by Foulkes et al. (2013)

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Unfavourable tree, shrub and woody climber species

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
All coniferous species*			*Lonicera nitida*		
Acer campestre			*Populus alba*		
Acer pseudoplatanus			*Prunus laurocerasus*		
Aesculus hippocastanum			*Salix alba*		
Carpinus betulus			*Salix fragilis*		
Clematis alba			*Prunus laurocerasus*		
Fagus sylvatica			*Syringa vulgaris*		
Fuchsia magellanica			*Tilia* spp.		
Laburnum anagyroides			*Viburnum lantana*		
Ligustrum ovalifolium					

*except *Pinus sylvestris*

Herbaceous Ground Flora

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Ajuga reptans			*Lapsana communis*		
Alliaria petiolata			*Lathraea squamaria*		
Allium ursinum			*Luzula sylvatica*		
Anemone nemorosa			*Lysimachia nemorum*		
Anthriscus sylvestris		x	*Neottia nidus-avis*		
Arum maculatum		x	*Oxalis acetosella*		
Chrysosplenium oppositifolium			*Potentilla sterilis*		
Conopodium majus			*Primula vulgaris*		
Digitalis purpurea			*Sanicula europaea*		
Epipactis helleborine			*Stachys sylvatica*		
Ficaria verna			*Stellaria holostea*		
Fragaria vesca			*Veronica montana*		
Galium odoratum			*Viola* spp.		
Geranium robertianum					
Geum urbanum					
Glechoma hederacea	x	x			
Hyacinthoides non-scripta					
Hypericum androsaemum					

Ferns and allies

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Asplenium scolopendrium		x	*Dryopteris aemula*		
Athyrium lix-femina			*Dryopteris carthusiana*		
Blechnum spicant			*Polystichum setiferum*		
Dryopteris filix-mas			*Polypodium spp.*		
Dryopteris dilatata			*Equisetum telmateia*		
Dryopteris affinis			*Equisetum sylvaticum*		

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Hedgerow significance assessment

0	1	2	3	4
Low significance	**Slightly significant**	**Moderately significant**	**Significant**	**Highly significant**
Historical Significance				
Recently Established (0-25 years)	Internal Field Boundary	Roadside / Rail / Canal Boundary: Farm boundary etc	Boundary appears on 1st Edition O.S	Townland Parish / County Boundary: Shown as, or connected to, woodland on 1st Edition O.S. map:
				4
	Past evidence of laying or coppicing		Non-linear (excluding roadside)	
			3	
Species Diversity Significance				
Tree / Shrub / Climber Species Count/ 30m strip:				
1-3 species	4-5 species	6-7 species	8-9 species	10+ species
			3	
Ground Flora Significance				
Dominated by ruderal species* - nettles/ docks/ thistles/ cleavers				
-				
Species Count (from list)/ 30m strip:				
<2 species	2-3 species	4-5 species	6-7 species	>7 species
0				
Pteridophytes from list/ 30m strip:				
			3-5 species	>5 species
0				
Structure, Construction & Associated Features				
	Wall / Bank < 0.5m (height / depth)	Wall / Bank 0.5 - 1m	Wall / Bank > 1m	Double Ditch
			3	
		Dry Ditch	Wet Ditch / Drain	Stream / River
		2		
		Badger Sett		
		Green Lane		
Habitat Connectivity Significance				
No connection with other semi-natural habitat	Single link with semi-natural habitat including hedgerow	Multiple links with semi-natural habitats, including other hedgerows	Link with woodland / forest habitat	Link with designated area, particularly woodland
	1			
Landscape Significance				
	Wind shaped	Mature Hedgerow Trees		Area covered by Landscape designation
		2		
Other factors of significance				
The hedgerow ranks as a Highly significant (**Heritage Hedgerow**) as it appears to be on the boundary of a townland parish on the 1st Edition O.S.				
				Total Significance Score = 18

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Hedgerow condition assessment

	0 Unfavourable	1 Adequate	2 Favourable	3 Highly favourable
Structural variables				
Height	<1.5m	1.5 - 2.5m	2.5 - 4m	>4m
				3
Width	<1m	1 - 2m	2 - 3m	>3m
				3
Profile	Remnant; Derelict	Wind-shaped; Losing base structure	Boxed / A-shaped; Straight sided	Overgrown; Top heavy/ undercut; Outgrowths at base
				3
Basal density / porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque / Dense
				3
Continuity				
% gaps	>10%	5-10%	<5%	Continuous
				3
Specific gaps	Individual Gap > 5m	Individual gap <5m	No gaps	No gaps
			2	
Negative Indicators/ Degradation / Issues affecting long-term viability				
Bank / Wall	>20% of the length of the hedge degraded	<20% of the length of the hedge degraded	Minor degradation	No degradation
				3
% of canopy dominated by Ivy	>25%			
	(locally but not overall)			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	>10%			
	-			
Ground Flora / Hedge Base: % ground layer showing evidence of Herbicide Use	>20%			
	-			
Ground Flora / Hedge Base: % Noxious weeds/ Nutrient Rich Species	>20%			
	(locally only)			
Ground Flora / Hedge Base: Alien invasive species	Present			
	-			
Degraded Margin	Ploughing up to base of hedge shrubs or Poaching/erosion		(grassy) margin (2 m or greater on one side of the hedge)	(grassy) margins (2 m or greater on both sides of the hedge)
				3
				Total Condition Assessment Score =23

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Site name: Adamstown hedgerow survey	**Hedgerow/ treeline no.:** H6
Survey date: 27 June 2022	**Fossitt:** WL1

Hedgerow description:

A mature internal hedgerow running W to E across the western section of the site. The eastern 2/3 of the hedgerow has been recently removed. The fields to the north and south of the hedgerow are no longer ploughed and have developed into rough grassland to the base of the hedgerow. An area of disturbance to the south of the hedgerow and soil bank within 1-2m of the hedgerow has also revegetated with grasses and ruderal species such as Nettle *Urtica dioica.* The hedgerow has few remaining mature trees as these have either been removed or died from Ash dieback (*Fraxinus excelsior*). The remaining hedgerow is dominated by *Crataegus monogyna* with locally abundant *Sambucus nigra, Rubus fruticosus* agg. and *Rosa* sp. It was very dense and difficult to access the centre of the hedge, which had an internal dry ditch and earth bank. These are highly shaded with a small cover of *Hedera hibernica, Rubus fruticosus* agg. and bryophytes such as *Kindbergia praelonga.* Overall the ground flora is relatively species-poor, dominated by grassland species with only one hedgerow indicator species (*Geranium robertianum*). Additional species recorded include *Agrostis stolonifera, Arrhenatherum elatius, Cirsium arvense, Dactylis glomerata, Galium aparine, Epilobium hirsutum, Plantago lanceolata, Potentilla anserina, Ranunculus repens, Rumex obtusifolius* and *Urtica dioica.*

Photo 6.1. Hedgerow H6 (view to E)

Photo 6.2. Hedgerow H6 (view of centre of hedge)

Favourable tree, shrub and woody climber species

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Alnus glutinosa			*Prunus padus*		
Betula pendula			*Prunus spinosa*		
Betula pubescens			*Pyrus communis*		
Castanea sativa			*Quercus petraea*		
*Clematis vitalba**			*Quercus robur*		
Cornus sanguinea			*Rhamnus catharticus*		
Corylus avellana			*Rosa* sp.	x	x
Crataegus monogyna	x	x	*Rubus fruticosus* agg.*	x	x
Cytisus scoparius			*Rubus idaeus*		
Euonymus europaeus			*Salix aurita*		
Fraxinus excelsior	x	x	*Salix caprea*		
Hedera helix (H. hibernica)	x	x	*Salix cinerea oleifolia*		
Ilex aquifolium			*Salix pentandra*		
Juglans regia			*Salix triandra*		
Ligustrum vulgare			*Sambucus nigra*	x	x
Lonicera periclymenum			*Solanum dulcamara*		
Malus domestica			*Sorbus aria*		
Malus sylvestris			*Sorbus hibernica*		
Myrica gale			*Sorbus aucuparia*		
Pinus sylvestris			*Taxus baccata*		
Populus nigra			*Ulex europaeus*		
Populus tremula			*Ulmus glabra*	x	x
Prunus avium			*Ulmus procera*		
Prunus cerasus			*Viburnum opulus*		
Prunus domestica					

*Not included in original species list by Foulkes et al. (2013)

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Unfavourable tree, shrub and woody climber species

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
All coniferous species*			*Lonicera nitida*		
Acer campestre			*Populus alba*		
Acer pseudoplatanus			*Prunus laurocerasus*		
Aesculus hippocastanum			*Salix alba*		
Carpinus betulus			*Salix fragilis*		
Clematis alba			*Prunus laurocerasus*		
Fagus sylvatica			*Syringa vulgaris*		
Fuchsia magellanica			*Tilia* spp.		
Laburnum anagyroides			*Viburnum lantana*		
Ligustrum ovalifolium					

*except *Pinus sylvestris*

Herbaceous Ground Flora

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Ajuga reptans			*Lapsana communis*		
Alliaria petiolata			*Lathraea squamaria*		
Allium ursinum			*Luzula sylvatica*		
Anemone nemorosa			*Lysimachia nemorum*		
Anthriscus sylvestris			*Neottia nidus-avis*		
Arum maculatum			*Oxalis acetosella*		
Chrysosplenium oppositifolium			*Potentilla sterilis*		
Conopodium majus			*Primula vulgaris*		
Digitalis purpurea			*Sanicula europaea*		
Epipactis helleborine			*Stachys sylvatica*		
Ficaria verna			*Stellaria holostea*		
Fragaria vesca			*Veronica montana*		
Galium odoratum			*Viola* spp.		
Geranium robertianum		x			
Geum urbanum					
Glechoma hederacea					
Hyacinthoides non-scripta					
Hypericum androsaemum					

Ferns and allies

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Asplenium scolopendrium		x	*Dryopteris aemula*		
Athyrium lix-femina			*Dryopteris carthusiana*		
Blechnum spicant			*Polystichum setiferum*		
Dryopteris filix-mas			*Polypodium spp.*		
Dryopteris dilatata			*Equisetum telmateia*		
Dryopteris affinis			*Equisetum sylvaticum*		

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Hedgerow significance assessment

0	1	2	3	4
Low significance	**Slightly significant**	**Moderately significant**	**Significant**	**Highly significant**
Historical Significance				
Recently Established (0-25 years)	Internal Field Boundary	Roadside / Rail / Canal Boundary: Farm boundary etc	Boundary appears on 1st Edition O.S	Townland Parish / County Boundary: Shown as, or connected to, woodland on 1st Edition O.S. map:
			3	
	Past evidence of laying or coppicing		Non-linear (excluding roadside)	
Species Diversity Significance				
Tree / Shrub / Climber Species Count/ 30m strip:				
1-3 species	4-5 species	6-7 species	8-9 species	10+ species
		2		
Ground Flora Significance				
Dominated by ruderal species* - nettles/ docks/ thistles/ cleavers				
-				
Species Count (from list)/ 30m strip:				
<2 species	2-3 species	4-5 species	6-7 species	>7 species
0				
Pteridophytes from list/ 30m strip:				
			3-5 species	>5 species
0				
Structure, Construction & Associated Features				
	Wall / Bank < 0.5m (height / depth)	Wall / Bank 0.5 - 1m	Wall / Bank > 1m	Double Ditch
			3	
		Dry Ditch	Wet Ditch / Drain	Stream / River
		2		
		Badger Sett		
		Green Lane		
Habitat Connectivity Significance				
No connection with other semi-natural habitat	Single link with semi-natural habitat including hedgerow	Multiple links with semi-natural habitats, including other hedgerows	Link with woodland / forest habitat	Link with designated area, particularly woodland
	1			
Landscape Significance				
	Wind shaped	Mature Hedgerow Trees		Area covered by Landscape designation
		2		
Other factors of significance				
The boundary is present on the 1st Edition O.S., although no hedgerow is shown				
				Total Significance Score = 13

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Hedgerow condition assessment

	0 Unfavourable	1 Adequate	2 Favourable	3 Highly favourable
Structural variables				
Height	<1.5m	1.5 - 2.5m	2.5 - 4m	>4m
				3
Width	<1m	1 - 2m	2 - 3m	>3m
				3
Profile	Remnant; Derelict	Wind-shaped; Losing base structure	Boxed / A-shaped; Straight sided	Overgrown; Top heavy/ undercut; Outgrowths at base
				3
Basal density / porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque / Dense
				3
Continuity				
% gaps	>10%	5-10%	<5%	Continuous
			2	
Specific gaps	Individual Gap > 5m	Individual gap <5m	No gaps	No gaps
		1		
Negative Indicators/ Degradation / Issues affecting long-term viability				
Bank / Wall	>20% of the length of the hedge degraded	<20% of the length of the hedge degraded	Minor degradation	No degradation
				3
% of canopy dominated by Ivy	>25%			
	-			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	>10%			
	-			
Ground Flora / Hedge Base: % ground layer showing evidence of Herbicide Use	>20%			
	-			
Ground Flora / Hedge Base: % Noxious weeds/ Nutrient Rich Species	>20%			
	(locally)			
Ground Flora / Hedge Base: Alien invasive species	Present			
	-			
Degraded Margin	Ploughing up to base of hedge shrubs or Poaching/erosion		(grassy) margin (2 m or greater on one side of the hedge)	(grassy) margins (2 m or greater on both sides of the hedge)
				3
				Total Condition Assessment Score = 21

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Site name: Adamstown hedgerow survey	**Hedgerow/ treeline no.:** H7
Survey date: 27 June 2022	**Fossitt:** WL1

Hedgerow description:

A mature boundary hedgerow running N to S across the W of the site. On the eastern side there is an abandoned, overgrown field with tall grass and locally abundant *Rubus fruticosus* agg., which makes it hard to access the hedgerow. On the western side formerly there was an arable field, with ploughing to the base of the hedgerow but this has now revegetated with grasses. There was one new gap (*c.* 3m) in the hedgerow. Although this hedgerow joins onto hedgerow H5, the species present are different with frequent *Acer pseudoplatanus* and *Ulmus glabra* and abundant *Crataegus monogyna* and *Sambucus nigra* in H7. Mature trees present were mainly *Fraxinus excelsior* and these showed signs of Ash dieback. There is a dry ditch in the centre of the hedgerow which is highly shaded and dominated by *Hedera hibernica. Rubus fruticosus* agg. is abundant around the base of the hedgerow and has doubled the basal width of the hedge on the eastern side. Overall the ground flora is relatively species-poor, with no hedgerow indicator species. Species recorded include *Alopecurus pratensis, Chamerion angustifolium, Cirsium arvense, Epilobium hirsutum, Potentilla anserina, Taraxacum officinale* agg., *Urtica dioica* and *Vicia sepium.*

Photo 7.1. Hedgerow H7 (view to NW)

Photo 7.2. Hedgerow H7 (centre of hedge)

Favourable tree, shrub and woody climber species

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Alnus glutinosa			*Prunus padus*		
Betula pendula			*Prunus spinosa*		
Betula pubescens			*Pyrus communis*		
Castanea sativa			*Quercus petraea*		
*Clematis vitalba**			*Quercus robur*		
Cornus sanguinea			*Rhamnus catharticus*		
Corylus avellana			*Rosa* sp.	x	x
Crataegus monogyna	x	x	*Rubus fruticosus* agg.*	x	x
Cytisus scoparius			*Rubus idaeus*		
Euonymus europaeus			*Salix aurita*		
Fraxinus excelsior		x	*Salix caprea*		x
Hedera helix (H. hibernica)	x	x	*Salix cinerea oleifolia*		
Ilex aquifolium			*Salix pentandra*		
Juglans regia			*Salix triandra*		
Ligustrum vulgare			*Sambucus nigra*	x	x
Lonicera periclymenum			*Solanum dulcamara*		
Malus domestica			*Sorbus aria*		
Malus sylvestris			*Sorbus hibernica*		
Myrica gale			*Sorbus aucuparia*		
Pinus sylvestris			*Taxus baccata*		
Populus nigra			*Ulex europaeus*		
Populus tremula			*Ulmus glabra*	x	x
Prunus avium			*Ulmus procera*		
Prunus cerasus			*Viburnum opulus*		
Prunus domestica					

*Not included in original species list by Foulkes et al. (2013)

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Unfavourable tree, shrub and woody climber species

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
All coniferous species*			*Lonicera nitida*		
Acer campestre			*Populus alba*		
Acer pseudoplatanus	x	x	*Prunus laurocerasus*		
Aesculus hippocastanum			*Salix alba*		
Carpinus betulus			*Salix fragilis*		
Clematis alba			*Prunus laurocerasus*		
Fagus sylvatica			*Syringa vulgaris*		
Fuchsia magellanica			*Tilia* spp.		
Laburnum anagyroides			*Viburnum lantana*		
Ligustrum ovalifolium					

*except *Pinus sylvestris*

Herbaceous Ground Flora

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Ajuga reptans			*Lapsana communis*		
Alliaria petiolata			*Lathraea squamaria*		
Allium ursinum			*Luzula sylvatica*		
Anemone nemorosa			*Lysimachia nemorum*		
Anthriscus sylvestris			*Neottia nidus-avis*		
Arum maculatum			*Oxalis acetosella*		
Chrysosplenium oppositifolium			*Potentilla sterilis*		
Conopodium majus			*Primula vulgaris*		
Digitalis purpurea			*Sanicula europaea*		
Epipactis helleborine			*Stachys sylvatica*		
Ficaria verna			*Stellaria holostea*		
Fragaria vesca			*Veronica montana*		x
Galium odoratum			*Viola* spp.		
Geranium robertianum					
Geum urbanum					
Glechoma hederacea					
Hyacinthoides non-scripta					
Hypericum androsaemum					

Ferns and allies

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Asplenium scolopendrium		x	*Dryopteris aemula*		
Athyrium lix-femina			*Dryopteris carthusiana*		
Blechnum spicant			*Polystichum setiferum*		
Dryopteris filix-mas			*Polypodium spp.*		
Dryopteris dilatata			*Equisetum telmateia*		
Dryopteris affinis			*Equisetum sylvaticum*		

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Hedgerow significance assessment

0	1	2	3	4
Low significance	**Slightly significant**	**Moderately significant**	**Significant**	**Highly significant**
Historical Significance				
Recently Established (0-25 years)	Internal Field Boundary	Roadside / Rail / Canal Boundary: Farm boundary etc	Boundary appears on 1st Edition O.S	Townland Parish / County Boundary: Shown as, or connected to, woodland on 1st Edition O.S. map:
			3	
	Past evidence of laying or coppicing		Non-linear (excluding roadside)	
Species Diversity Significance				
Tree / Shrub / Climber Species Count/ 30m strip:				
1-3 species	4-5 species	6-7 species	8-9 species	10+ species
		2		
Ground Flora Significance				
Dominated by ruderal species* - nettles/ docks/ thistles/ cleavers				
-				
Species Count (from list)/ 30m strip:				
<2 species	2-3 species	4-5 species	6-7 species	>7 species
0				
Pteridophytes from list/ 30m strip:				
			3-5 species	>5 species
0				
Structure, Construction & Associated Features				
	Wall / Bank < 0.5m (height / depth)	Wall / Bank 0.5 - 1m	Wall / Bank > 1m	Double Ditch
			3	
		Dry Ditch	Wet Ditch / Drain	Stream / River
		2		
		Badger Sett		
		Green Lane		
Habitat Connectivity Significance				
No connection with other semi-natural habitat	Single link with semi-natural habitat including hedgerow	Multiple links with semi-natural habitats, including other hedgerows	Link with woodland / forest habitat	Link with designated area, particularly woodland
		2		
Landscape Significance				
	Wind shaped	Mature Hedgerow Trees		Area covered by Landscape designation
		2		
Other factors of significance				
Hedgerows H7 and H8 were probably originally part of one hedgerow, which would be classified as 'non-linear' and would rank the single hedge as a 'Highly significant (**Heritage Hedgerow**)'. However, they are considered to be two separate hedges as they have different species compositions, are separated by an access track and appear to be separate on aerial photography (from 1995 onwards). It should be noted that H8 and H5 (to the N of H7) are both non-linear and rank as 'Highly significant (**Heritage Hedgerows**)'.				
				Total Significance Score = 14

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Hedgerow condition assessment

	0 Unfavourable	1 Adequate	2 Favourable	3 Highly favourable
Structural variables				
Height	<1.5m	1.5 - 2.5m	2.5 - 4m	>4m
				3
Width	<1m	1 - 2m	2 - 3m	>3m
				3
Profile	Remnant; Derelict	Wind-shaped; Losing base structure	Boxed / A-shaped; Straight sided	Overgrown; Top heavy/ undercut; Outgrowths at base
				3
Basal density / porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque / Dense
				3
Continuity				
% gaps	>10%	5-10%	<5%	Continuous
			2	
Specific gaps	Individual Gap > 5m	Individual gap <5m	No gaps	No gaps
		1		
Negative Indicators/ Degradation / Issues affecting long-term viability				
Bank / Wall	>20% of the length of the hedge degraded	<20% of the length of the hedge degraded	Minor degradation	No degradation
				3
% of canopy dominated by Ivy	>25%			
	-			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	>10%			
	-			
Ground Flora / Hedge Base: % ground layer showing evidence of Herbicide Use	>20%			
	-			
Ground Flora / Hedge Base: % Noxious weeds/ Nutrient Rich Species	>20%			
	-			
Ground Flora / Hedge Base: Alien invasive species	Present			
	-			
Degraded Margin	Ploughing up to base of hedge shrubs or Poaching/erosion		(grassy) margin (2 m or greater on one side of the hedge)	(grassy) margins (2 m or greater on both sides of the hedge)
				3
				Total Condition Assessment Score = 21

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Site name: Adamstown hedgerow survey	**Hedgerow/ treeline no.:** H8
Survey date: 27 June 2022	**Fossitt:** WL1

Hedgerow description:

A mature boundary hedgerow running NW to SE across the NW corner of the site. There is an abandoned, overgrown field to the E of the hedgerow, dominated by tall ruderals such as *Urtica dioica*. On the W there is an arable field, with ploughing to the base of the hedgerow. There are two small gaps within the hedgerow, which do not appear to be of recent origin. *Ulmus glabra* is dominant to locally abundant within the hedgerow. There is moderate woody species diversity with species such as *Corylus avellana, Crataegus monogyna, Fraxinus excelsior, Prunus spinosa* and *Sambucus nigra.* There is a high cover of Ivy *Hedera* hibernica on dead trees. There is a slight depression/ dry ditch within the hedgerow which is less than 0.5m deep and heavily shaded. Overall the ground flora is moderately species-rich. There were three hedgerow indicator species recorded: *Anthriscus sylvestris, Arum maculatum* and *Glechoma hederacea,* with grassland species such as *Alopecurus pratensis, Chamerion angustifolium, Cirsium arvense, Dactylis glomerata, Galium aparine, Heracleum sphondylium, Rumex obtusifolius, Urtica dioica* and *Vicia sepium.* There are signs of Ash dieback and possible Dutch Elm disease.

Photo 8.1. Hedgerow H8 (view to SE)

Photo 8.2. Hedgerow H8 (close)

Favourable tree, shrub and woody climber species

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Alnus glutinosa			*Prunus padus*		
Betula pendula			*Prunus spinosa*	x	x
Betula pubescens			*Pyrus communis*		
Castanea sativa			*Quercus petraea*		
*Clematis vitalba**			*Quercus robur*		
Cornus sanguinea			*Rhamnus catharticus*		
Corylus avellana	x	x	*Rosa* sp.	x	x
Crataegus monogyna	x	x	*Rubus fruticosus* agg.*	x	x
Cytisus scoparius			*Rubus idaeus*		
Euonymus europaeus			*Salix aurita*		
Fraxinus excelsior	x	x	*Salix caprea*		
Hedera helix (H. hibernica)	x	x	*Salix cinerea oleifolia*		
Ilex aquifolium			*Salix pentandra*		
Juglans regia			*Salix triandra*		
Ligustrum vulgare			*Sambucus nigra*	x	x
Lonicera periclymenum			*Solanum dulcamara*		
Malus domestica			*Sorbus aria*		
Malus sylvestris			*Sorbus hibernica*		
Myrica gale			*Sorbus aucuparia*		
Pinus sylvestris			*Taxus baccata*		
Populus nigra			*Ulex europaeus*		
Populus tremula			*Ulmus glabra*	x	x
Prunus avium			*Ulmus procera*		
Prunus cerasus			*Viburnum opulus*		
Prunus domestica					

*Not included in original species list by Foulkes et al. (2013)

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Unfavourable tree, shrub and woody climber species

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
All coniferous species*			*Lonicera nitida*		
Acer campestre			*Populus alba*		
Acer pseudoplatanus			*Prunus laurocerasus*		
Aesculus hippocastanum			*Salix alba*		
Carpinus betulus			*Salix fragilis*		
Clematis alba			*Prunus laurocerasus*		
Fagus sylvatica			*Syringa vulgaris*		
Fuchsia magellanica			*Tilia* spp.		
Laburnum anagyroides			*Viburnum lantana*		
Ligustrum ovalifolium					

*except *Pinus sylvestris*

Herbaceous Ground Flora

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Ajuga reptans			*Lapsana communis*		
Alliaria petiolata			*Lathraea squamaria*		
Allium ursinum			*Luzula sylvatica*		
Anemone nemorosa			*Lysimachia nemorum*		
Anthriscus sylvestris	x	x	*Neottia nidus-avis*		
Arum maculatum	x	x	*Oxalis acetosella*		
Chrysosplenium oppositifolium			*Potentilla sterilis*		
Conopodium majus			*Primula vulgaris*		
Digitalis purpurea			*Sanicula europaea*		
Epipactis helleborine			*Stachys sylvatica*		
Ficaria verna			*Stellaria holostea*		
Fragaria vesca			*Veronica montana*		
Galium odoratum			*Viola* spp.		
Geranium robertianum					
Geum urbanum					
Glechoma hederacea	x	x			
Hyacinthoides non-scripta					
Hypericum androsaemum					

Ferns and allies

Species	30m strip	Hedgerow	Species	30m strip	Hedgerow
Asplenium scolopendrium			*Dryopteris aemula*		
Athyrium lix-femina			*Dryopteris carthusiana*		
Blechnum spicant			*Polystichum setiferum*		
Dryopteris filix-mas			*Polypodium spp.*		
Dryopteris dilatata			*Equisetum telmateia*		
Dryopteris affinis			*Equisetum sylvaticum*		

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Hedgerow significance assessment

0	1	2	3	4
Low significance	**Slightly significant**	**Moderately significant**	**Significant**	**Highly significant**
Historical Significance				
Recently Established (0-25 years)	Internal Field Boundary	Roadside / Rail / Canal Boundary: Farm boundary etc	Boundary appears on 1st Edition O.S	Townland Parish / County Boundary: Shown as, or connected to, woodland on 1st Edition O.S. map:
			3	
	Past evidence of laying or coppicing		Non-linear (excluding roadside)	
			3	
Species Diversity Significance				
Tree / Shrub / Climber Species Count/ 30m strip:				
1-3 species	4-5 species	6-7 species	8-9 species	10+ species
			3	
Ground Flora Significance				
Dominated by ruderal species* - nettles/ docks/ thistles/ cleavers				
0				
Species Count (from list)/ 30m strip:				
<2 species	2-3 species	4-5 species	6-7 species	>7 species
	1			
Pteridophytes from list/ 30m strip:				
			3-5 species	>5 species
0				
Structure, Construction & Associated Features				
	Wall / Bank < 0.5m (height / depth)	Wall / Bank 0.5 - 1m	Wall / Bank > 1m	Double Ditch
	1			
		Dry Ditch	Wet Ditch / Drain	Stream / River
		2		
		Badger Sett		
		Green Lane		
Habitat Connectivity Significance				
No connection with other semi-natural habitat	Single link with semi-natural habitat including hedgerow	Multiple links with semi-natural habitats, including other hedgerows	Link with woodland / forest habitat	Link with designated area, particularly woodland
	1			
Landscape Significance				
	Wind shaped	Mature Hedgerow Trees		Area covered by Landscape designation
		2		
Other factors of significance				
Hedgerows H7 and H8 were probably originally part of one hedgerow, which would be classified as 'non-linear' and would rank the single hedge as a 'Highly significant (**Heritage Hedgerow**)'. However, they are considered to be two separate hedges as they have different species compositions, are separated by an access track and appear to be separate on aerial photography (from 1995 onwards).				
				Total Significance Score = 16

HEDGEROW APPRAISAL AND CONDITION ASSESSMENT

Hedgerow condition assessment

	0 Unfavourable	1 Adequate	2 Favourable	3 Highly favourable
Structural variables				
Height	<1.5m	1.5 - 2.5m	2.5 - 4m	>4m
				3
Width	<1m	1 - 2m	2 - 3m	>3m
				3
Profile	Remnant; Derelict	Wind-shaped; Losing base structure	Boxed / A-shaped; Straight sided	Overgrown; Top heavy/ undercut; Outgrowths at base
				3
Basal density / porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque / Dense
				3
Continuity				
% gaps	>10%	5-10%	<5%	Continuous
		1		
Specific gaps	Individual Gap > 5m	Individual gap <5m	No gaps	No gaps
		1		
Negative Indicators/ Degradation / Issues affecting long-term viability				
Bank / Wall	>20% of the length of the hedge degraded	<20% of the length of the hedge degraded	Minor degradation	No degradation
				3
% of canopy dominated by Ivy	>25%			
	Present			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	>10%			
	-			
Ground Flora / Hedge Base: % ground layer showing evidence of Herbicide Use	>20%			
	-			
Ground Flora / Hedge Base: % Noxious weeds/ Nutrient Rich Species	>20%			
	-			
Ground Flora / Hedge Base: Alien invasive species	Present			
	-			
Degraded Margin	Ploughing up to base of hedge shrubs or Poaching/erosion		(grassy) margin (2 m or greater on one side of the hedge)	(grassy) margins (2 m or greater on both sides of the hedge)
			2	
				Total Condition Assessment Score = 19

Appendix 2 Bird survey report

Breeding Bird Survey Aderrig 3 Lands

Adamstown

Dublin

John Fox

Late March to early July 2022.

Fig 1. Aderrig 3 Lands. View of central area looking South.

John Fox

31 Waverley Avenue,

Fairview,

Dublin 3

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Summary:

Between late March and early July 2022, a breeding bird survey was undertaken on the lands known as Aderrig 3, Adamstown, Co Dublin. The lands were visited on four separate dates. The visits were undertaken on the 26th of March, the 27th of April, the 22nd June and the 1st of July 2022.

The lands were walked slowly over a one to two-hour period on each visit. The route walked focused primarily on existing hedge rows, areas of scrub and areas with mature trees. Bird Species that were heard or seen were recorded, with their position noted, and a breeding status assigned to them.

Data from the four visits were amalgamated and approximate positions for the birds as seen or heard were plotted on aerial photographs. Approximate populations, breeding status and conservation status were assigned to each species. A species table and distribution map for the red and amber listed species encountered on the lands were prepared.

A total of 31 common bird species of Ireland were recorded on the lands, of which thirteen were confirmed as breeding. Three species of high conservation concern were recorded, two of which were confirmed to breed, the third does not breed on or very close to the lands. Seven species of medium conservation concern were recorded of which two were confirmed to breed, two probably breed, one possibly breeds and two do not breed on the lands. The remaining 21 species recorded were of least conservation concern, nine of which were confirmed to breed on the site. Two of the 31 species recorded were seen in flight only and most probably were not breeding on the site.

Introduction:

This survey of the breeding birds at Aderrig 3 Lands, Adamstown, Co Dublin, was commissioned by Brady Shipman Martin in March 2022. The survey was undertaken between late March and early July 2022.

This aim of the survey is to identify all the bird species observed on or close to the property and to establish which if any bird species are breeding on the property.

Study area:

The site is of mixed habitat types. These include, previously tilled land, spoil heaps, bare ground, recolonising bare ground, dry meadow and grassy verges, hedgerow, scrub, recently exposed soil and some artificial surfaces. Many areas of the lands are also being used to store construction materials. The Aderrig 3 lands were surveyed previously as part of a wider area survey. The additional area that is not part of this current survey is now an active building site with housing under construction there.

Several roads and tracks have been created through the lands and access to nearby active construction sites is via the road that runs north to south along the eastern boundary of the Aderrig 3 lands. Construction vehicles were observed on many parts of the survey lands during the visits and

some recent excavation work and movement of soil was also noted in the southern and eastern area of the lands.

The field to the north of the site was formerly tilled land which was sown with a cereal crop but is now recolonising area of meadow and scrub. This field has mature hedgerows along its western boundary and a site access road along the eastern boundary.

In the central area to the south of the northern field is an area of scrub with some spoil heaps and bare ground. This area has mature hedgerows along its northern and western boundaries and there is a concrete road along its southern boundary and a site access road to the east.

The most southern part of the lands is a field of recolonising ground and dry meadow containing tall grasses, nettles, hog weed etc. It was quite difficult to penetrate in places due to the sward height. It is surrounded by mature hedge rows on the southwestern boundary and by a concrete road to the north. There is a recently excavated bare soil roadway cutting through this area too. Much of the soil in this southern part of the lands has been disturbed in the recent past and some drainage channels and mounds of spoil have been formed.

The lands in general are flat apart from in locations where heaps of spoil and drainage channels have been created in the recent past.

Fig 2. Singing male Yellowhammer. Red listed species. Confirmed breeding on Aderrig 3 lands, Adamstown.

Fig 4. Aderrig 3. Typical habitat in central area. **(Photo J Fox)**

Fig 4 Aderrig 3. Typical habitat in northern area.

Fig 3. Overall site aerial photography. Red line encloses approximate extent of the Aderrig 3 lands surveyed.

Methodology:

The site was visited on four occasions from late March to early July 2022. The four visits were timed for early morning to coincide with the period when breeding birds are most active and therefore most easily observed. The shortest visit was for just 65 minutes and was cut short by heavy rain. The longest visit was for 1 hours and 50 minutes. The visits were undertaken on the 26th of March, the 27th of April, the 22nd of June and the 1st of July 2022 and provided a good overview of breeding activity within the breeding season. No visits were made after dark and no nocturnal species were recorded during this survey.

All observations took place when weather conditions were suitable for surveying. All species observed were recorded, and their breeding status was determined by observation of bird behaviour against a series of standardised behavioural indicators. Binoculars (42x10) were used throughout each survey period, to aid with identification of species and activities.

Conservation Status: A list of *"Birds of Conservation Concern in Ireland 4: 2020 to 2026"* (Gilbert *et al* 2021) indicates three categories of concern as follows. See appendix 1 for more detail.

- Red list species (high conservation concern).
- Amber list species (medium conservation concern).
- Green list species (least conservation concern).

These statuses have been assigned to all regularly occurring species in Ireland. The criteria on which they have been assessed is based on their international conservation status, historical breeding declines, recent population declines, European conservation status, breeding rarity, localised distribution and the international importance of populations.

Breeding Status Indicators: The following breeding status indicators were used to establish breeding status.

1. **Confirmed Breeding**: Eggs/nest, occupied nest, adult carrying faecal sac or food for young or recently fledged young.
2. **Probable Breeding**: Paired birds seen, agitated behaviour, permanent territory, courtship or display, nest building or visiting a nest site.
3. **Possible Breeding**: Species in suitable habitat during breeding season or singing male present.
4. **Non Breeding**: Birds present but not likely breeding due to a lack of suitable nesting habitat and no behavioural evidence to suggest breeding on the site.

The site was entered from the south via Adamstown GAA football pitch which lies a little to the south of the lands. All areas of the lands were walked. The location of all birds seen and heard were noted on aerial photography of the lands, together with any information about their breeding status. Emphasis was placed on walking along lines of mature hedge rows and through areas of scrub as these were the habitats potentially most suitable for breeding birds. Weather conditions were also noted at the start of each visit, including rainfall, cloud cover, wind speed and visibility.

Fig 5. Foraging male Linnet. Amber listed species confirmed breeding on Aderrig 3 lands Adamstown.

Results:

Table 1. Aderrig 3 Lands, Adamstown, Co Dublin. Bird Species Identified, Numbers Present and Breeding Status, 2022.

Common Name	BTO Code	Species	Breeding Status	Numbers Present
Buzzard	BZ	*Buteo buteo*	Possible Breeding	1 bird
Pheasant	PH	*Phasianus colchicus*	Possible Breeding	2 calling males
(Common) Snipe	SN	*Gallinago gallinago*	Non Breeding	2 Birds
Herring Gull	HG	*Larus argentatus*	Non Breeding	4 birds in flight
Woodpigeon	WP	*Columba palmubus*	Probable Breeding	3 to 5 pairs
Swift	SI	*Apus apus*	Non Breeding	2 birds in flight
Skylark	S.	*Alauda arvensis*	Confirmed Breeding	1 to 2 pairs
Meadow Pipit	MP	*Anthus pratensis*	Confirmed Breeding	1 to 2 pairs
Wren	WR	*Troglodytes troglodytes*	Confirmed Breeding	5 to 7 pairs
Dunnock	D.	*Prunella modularis*	Confirmed Breeding	3 to 4 pairs
Robin	R.	*Erithacus rubecula*	Confirmed Breeding	2 to 4 pairs
Stonechat	SC	*Saxicola torquatus*	Confirmed Breeding	2 Pairs
Song Thrush	ST	*Turdus philomelos*	Possible Breeding	1 singing male
Blackbird	B.	*Turdus merula*	Possible Breeding	2 singing males
Blackcap	BC	*Sylvia atricapilla*	Confirmed Breeding	2 to 3 pairs
Whitethroat	WH	*Sylvia communis*	Confirmed Breeding	1 to 2 pairs
Sedge Warbler	SW	*Acrocephalus schoenobaenus*	Probable Breeding	1 singing male
Goldcrest	GC	*Regulus regulus*	Possible Breeding	1bird
Great Tit	GT	*Parus major*	Confirmed Breeding	1 to 2 pairs
Blue Tit	BT	*Parus caeruleus*	Possible Breeding	1 bird
Long-tailed Tit	LT	*Aegithalos caudatus*	Possible Breeding	1 pair
Magpie	MG	*Pica pica*	Possible Breeding	1 to 2 pairs
Jackdaw	JD	*Corvus monedula*	Possible Breeding	1 bird
Hooded Crow	HC	*Corvus corone cornix*	Possible Breeding	In flight only
Starling	SG	*Sturnus vulgaris*	Possible Breeding	Flock of 30
Chaffinch	CH	*Fringilla coelebs*	Possible Breeding	1 Singing male
Linnet	LI	*Carduelis cannabina*	Confirmed Breeding	1 to 3 pairs
Goldfinch	GO	*Carduelis carduelis*	Confirmed Breeding	1 to 2 pairs
Greenfinch	GR	*Carduelis chloris*	Possible Breeding	1 singing male
Reed Bunting	RB	*Emberiza schoeniclus*	Confirmed Breeding	1 Pair
Yellowhammer	Y.	*Emberiza citrinella*	Confirmed Breeding	1 to 2 pairs

Coloured text refers to the conservation concern status of that species. Red, Amber or Green.

A total of 31 bird species were recorded on the site.

Three red listed species were observed. (Common) Snipe, Meadow Pipit and Yellowhammer. Meadow Pipit and Yellowhammer were confirmed as breeding species on the lands, Snipe however does not breed on the lands.

Seven amber listed species were observed of which just two, Skylark and Linnet were confirmed as breeding on the lands. Three amber listed species were possible breeders, Goldcrest, Starling and Greenfinch. Two amber listed species were observed which were non-breeding on the lands, Herring Gull and Swift, both species were observed in flight only.

An additional 21 green listed species were observed of which nine were confirmed breeding. Wren, Dunnock, Robin, Stonechat, Blackcap, Whitethroat, Great Tit, Goldfinch and Reed Bunting. Two green listed species were observed as probable breeders, Woodpigeon, and Sedge Warbler. Ten green listed species were observed as possible breeders, Buzzard, Pheasant, Song Thrush, Blackbird, Blue Tit, Long-tailed Tit, Magpie, Jackdaw, Hooded Crow and Chaffinch.

The only mammals observed on the lands were Rabbits which were noted at many locations.

Fig 6. Red and Amber Listed Bird Species Distribution Map. Aderrig 3 Lands, Adamstown 2022. (For BTO Codes see Table 1).

Discussion:

Similar breeding bird survey of these lands were carried out in 2018 and 2020 but the lands surveyed at those times covered a larger area much of which is now a building site for housing. As the Aderrig 3 lands form just a small part of the overall lands surveyed in 2018 and 2020 and the conservation status of many birds was updated in 2021, it is difficult to make meaningful comparisons between the results from the earlier surveys and this one.

The species encountered on the site are all widespread common birds of Ireland. Most species observed are currently green listed as species of least conservation concern in Ireland. Three red listed species of highest conservation concern, together with seven amber listed species, of medium conservation concern were observed. Of the three red listed species Meadow Pipit and Yellowhammer were confirmed to breed on the lands, Snipe however does not.

Meadow Pipits were observed during each visit in the central and western parts of the lands. They were seen to be agitated, were engaging in flight displays and song, indicating them to be holding permanent territory. Two Meadow Pipit fledgling were seen in the same area during the third visit confirming that breeding occurred during 2002 on or close to the Aderrig 3 lands.

A single male Yellowhammer was seen and heard singing in the hedge along the western boundary of the site during the final visit indicating a male holding permanent territory. A single male Yellowhammer, (possibly the same bird), was seen with food at the western end of the mature hedge that runs from west to east in the northern part of the site, indicating that a nest is probable in that hedge confirming breeding.

Two Snipe were flushed from a wet area just outside the site, by a colleague, a little later in the day of the first visit on 29th March 2022. Snipe however were not observed by the surveyor on the Aderrig 3 lands during any of the visits in 2022.

Of the seven amber listed species only two, Skylark and Linnet were confirmed to breed on the lands. A single Skylark fledgling was seen with an adult along the road that runs through the site in an east to west direction. Recently fledged Linnets were observed on the third and final visits close to the centre of the western boundary of the lands.

Three amber listed species Goldcrest, Starling and Greenfinch possibly breed on the lands. A single Goldcrest was seen foraging along the western boundary hedge during the first visit which would be considered, suitable breeding habitat. A flock of approximately 30 juvenile Starlings were seen foraging close to the centre of the lands, during the third visit. These birds appeared independent of adults and may have travelled considerable distances to get to the lands. It is however possible that some of their parent birds may have bred on or close to the Aderrig 3 lands.

The remaining two amber listed species, Herring Gull and Swift, are non-breeders, there being no suitable nesting habitat for these two species within the lands. Both species were only recorded in flight over the lands.

Of the remaining 21 green listed species 9 were confirmed to breed. These were Wren, Dunnock, Robin, Stonechat, Blackcap, Whitethroat, Great Tit, Goldfinch and Reed Bunting. Two species Wood Pigeon and Sedge Warbler are probable breeders on the lands. A further ten species possibly breed

on or close to the lands. These are Buzzard, Pheasant, Wood Pigeon, Song Thrush, Blackbird, Blue Tit, Long-tailed Tit, Magpie, Jackdaw Hooded Crow, and Chaffinch. There is suitable nesting habitat available within the site for any of those species.

It is worth noting that a single Buzzard was observed in the mature tree just east of the current eastern boundary of the southernmost portion of the site, during each visit of the 2018 survey. Some interaction was also observed between two Buzzards over the lands during that time. It was not possible to see a nest in the mature tree due to the foliage, but it was the author's belief that buzzards may have nested in that tree back in 2018. No such sightings occurred during the 2020 survey visits. Buzzards were seen and heard during each visit in 2020 but only in flight over the lands. A single Buzzard was seen flying from that same mature tree during the third visit in 2022 suggesting that the tree may be used by a Buzzard as a roost site.

Conclusion:

The survey was carried out between late March and early July of 2022, that being an appropriate time of year to conduct a breeding bird survey.

31 species, typical of the type of habitats were recorded on the lands. Of these thirteen were confirmed to breed, two probably breed and another thirteen possibly breed. The remaining three species do not breed on the lands, but some may breed on lands, buildings or structures close to the Aderrig 3 lands.

Two red listed species were confirmed to breed and a second red listed species does not breed on the lands. Two amber listed species were also confirmed to breed on the lands and a further three amber listed species possibly breed, with another two amber listed species not breeding.

The areas of scrub, mature trees, hedgerows adjoining arable land and all other hedgerows are the habitats of most importance for the breeding birds present on the site. Any hedgerow, scrub or tree removal should only be undertaken outside the breeding season. All mature trees and hedgerows should be retained where possible and checked for existing nest sites if they are to be removed.

The site may also support many wintering species including some already mentioned and others not commonly found in Ireland during the breeding season. These may include thrushes such as Fieldfare and Redwing, finches such as Siskin and Brambling as well as Snipe to name but a few.

Appendix 1.

Birds of Conservation of Concern in Ireland (BoCCI)

The first comprehensive analysis of the population status of birds on the island which identified those species most in need of conservation was published 16 years ago. (Newton *et al* 1999). It was an initial review followed the publication of the Irish Red Data Book by Wilde in 1993. A further review followed several years later (Lynas *et al* 2007), which include data for the first time on an all-Ireland basis. A third review six years later BoCCI (Colhoun and Cummin 2013) followed and was also

on an all-Ireland basis. BoCCI in Ireland 4: (Gilbert *et al* 2021) was published in 2021 and forms the basis on which the conservation statuses were assigned to the bird species in this report.

Seven quantitative criteria have been adopted to determine population status for birds in Ireland. These include, assessments of global and European conservation status, recent population decline (both in terms of numbers and distribution), historical population decline, breeding rarity, localised distribution and international importance.

The status of 211 species in Ireland was assessed against each of the chosen criteria.
Of these 54 species, were assigned to the Red List. A further 79 species were assigned to the Amber List. The remaining 78 species were assigned to the Green List. In terms of conservation concern the Red listed species are species of immediate conservation concern, Amber listed species are of medium-term concern while Green listed species are currently of least conservation concern.

Refrences:

- Colhoun, K. and Cummins, S. 2013. Birds of Conservation Concern in Ireland 2014-2019. Irish Birds, 9: 523 - 544. Birdwatch Ireland, Kilcoole Co Wicklow
- Gilbert G., Stanbury A., & Lewis L. 2021. Birds of Conservation Concern in Ireland 2020-2026. Irish Birds, 43: 1-22. Birdwatch Ireland, Kilcoole Co Wicklow.
- Lynas, P., Newton, S.F, & Robinson, J.A., 2007. The Status of Birds in Ireland: an analysis of conservation concern 2008 – 2013. Irish Birds 8:149 – 166.
- Newton, S.F., Donaghy, A., Allen, D. & Gibbons, D.1999. Birds of Conservation Concern in Ireland. Irish Birds 6: 333 – 344.

Appendix 3 Bat survey report

An Evaluation of the lands at Aderrig, Adamstown, Dublin For Potential For Bat Roost Sites and For Feeding and Commuting and Potential Impacts Of the Proposed Development of the Site Upon Bats

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September 2022

Introduction

Bats are a widespread element of the Irish fauna and make up one quarter of all terrestrial mammal species. They are known to occur from much of the rural landscape which predominates on the island of Ireland, but they are also present within the urban environment and here they occupy buildings and occasionally trees for short or long periods. Buildings are a vital element of the annual cycle of all Irish bat species and at no time more so than the period summer to early autumn, but many bats may also avail of buildings as hibernation sites often when the presence of bats may be impossible to determine. Trees are less commonly noted as roost sites, partly due to a younger tree population for the island than in the rest of Europe and partly due to under-reporting.

Habitat loss or modification is an issue for bats as well as many other species. Changes to a site such as tree-felling and hedgerow clearance and the introduction of new houses and entire estates may remove roost sites and reduce the lands available to bats as a feeding site or in some way prevent full utilisation of the area by bats by interfering with a bat's ability to commute through a site or roost within the site.

Bats are protected by Irish and EU law and to prevent unlawful injury or death, it is essential that a full understanding of the site is available in advance to protect the resident bats from unintentional disturbance and to create a pathway by which a legal derogation and exemption may be designed in consultation with the National Parks and Wildlife Service. This is a service of the Heritage Division of the Department of Housing, Local Government & Heritage, if

impacts are likely to be severe. Prior to further significant changes to a site, it may be necessary to ensure that there will be no impact upon protected species.

Bats of less common species may be present within a site unbeknownst to owners and residents and there is a requirement to undertake a survey by suitably qualified ecologists with the appropriate equipment to determine which species are present. Should bats be present, knowledge of the species concerned and the potential consequences of the modifications of the site can assist in identifying measures to alleviate the negative effects of these changes. This is a legal requirement given the protection level for these species to ensure that the nine species' conservation status are not reduced by major changes to an area.

Seasonal surveys provide a picture of the use of a site by bats. Feeding may, for example, be more concentrated in some areas due to better shelter from wind or rain. Trees or buildings may be occupied for various purposes at the different phases in the bat's annual cycle. Bats breed in the period May to August and maternity roosts may be encountered in trees, albeit that this is rare in Ireland. Individuals or small numbers of bats may use a tree throughout the rest of the year. Male bats may use trees to perch and establish mating perches or roosts in the summer and autumn. Bats may hibernate in trees from late October (in colder autumn / winter periods) to the end of March or April.

Similarly, buildings may serve for all of the above functions. In addition, the roosting potential of buildings and trees, these elements may serve as feeding areas for bats and a substrate for their prey. Trees are essential for insect diversity, shelter for wind and rain and as landmarks. Buildings are high-potential as roost sites but may also serve as feeding areas, especially during inclement weather, when insects may shelter from wind or rain and are available as prey for species such as pipistrelle, brown long-eared bat, Natterer's bat etc.

This assessment was undertaken during the breeding season in 2022, in June when young bats are born but incapable of flying and hunting for themselves and in July by which time most bats are flying and preparing for a level of autonomy from their mothers. Maternity roosts have been formed and there is very high bat activity as mothers either feed their young on milk or prepare to give birth. Surveying for bats in June and July is a highly suitable time to address the usage of a site during the breeding season.

Methodology

The survey of the lands at Aderrig was undertaken on two separate dates in summer 2022: 23rd June and 29th July by two bat specialists with the aid of two bat detectors (ultrasonic receivers). These were 2 x Echometer detectors in June: an Echometer Touch 2 Pro (EMT) and an Echometer 3 + (both detectors are handheld "real time expansion" (a term used by the manufacturer to explain that the equipment records all signals across the ultrasonic range and then speeds up the signal to create a real-time equivalent of the sounds produced by any bats encountered) bat detectors. In July, one EM3 and one Anabat Walkabout was used for the active survey. These are both handheld monitors. A static detector (Songmeter Mini Bats or "Mini") was placed at the gap in the tree lines that are most dominant within the site that are comprised of ash trees primarily at the substation.

Surveying was undertaken for at least 1.5 hours from prior to sunset on each date (23rd June and 29th July 2022) and from one hour prior to sunrise on 24th June and 30th July 2022. The entire site was covered on a walked transect. On all dates, the trees were visually examined for evidence of emerging bats with the accompaniment of ultrasonic monitoring with the detectors. All trees were additionally monitored for evidence of emerging bats using a Pulsar Helion 2 XP50 thermal imager. This assists in determining if bats have entered or emerged from a tree or simply flown past it (this can be difficult to confirm using the human eye alone).

An examination of available information from Bat Conservation Ireland, previous data from neighbouring sites was undertaken to compile a list of most likely species in the overall area in addition to the evaluation of the habitat and active bat survey.

Survey constraints

The survey was undertaken in a period of the year when bat activity is typically very high. This should allow a surveyor to identify feeding and commuting bats and resident bats and to determine the presence of important bat roosts, important feeding areas and any commuting corridors of value to bats.

Weather conditions were dry and mild. The temperature was 17 degrees Celsius prior to sunset (at 21.56 hours) and sunrise was at 05.00 hours and was mild, dry and breezy. Sunrise was at 04.58 hours. Temperature 14 degrees Celsius in June with 90% cloud, calm and dry conditions.

In July, sunset was at 21.28 hours. The temperature was 16 degrees Celsius at sunset with 30% cloud cover. Conditions were ideal for bats at all times during the survey dates.

Existing Environment

Bat fauna of Aderrig lands

Roosting species None

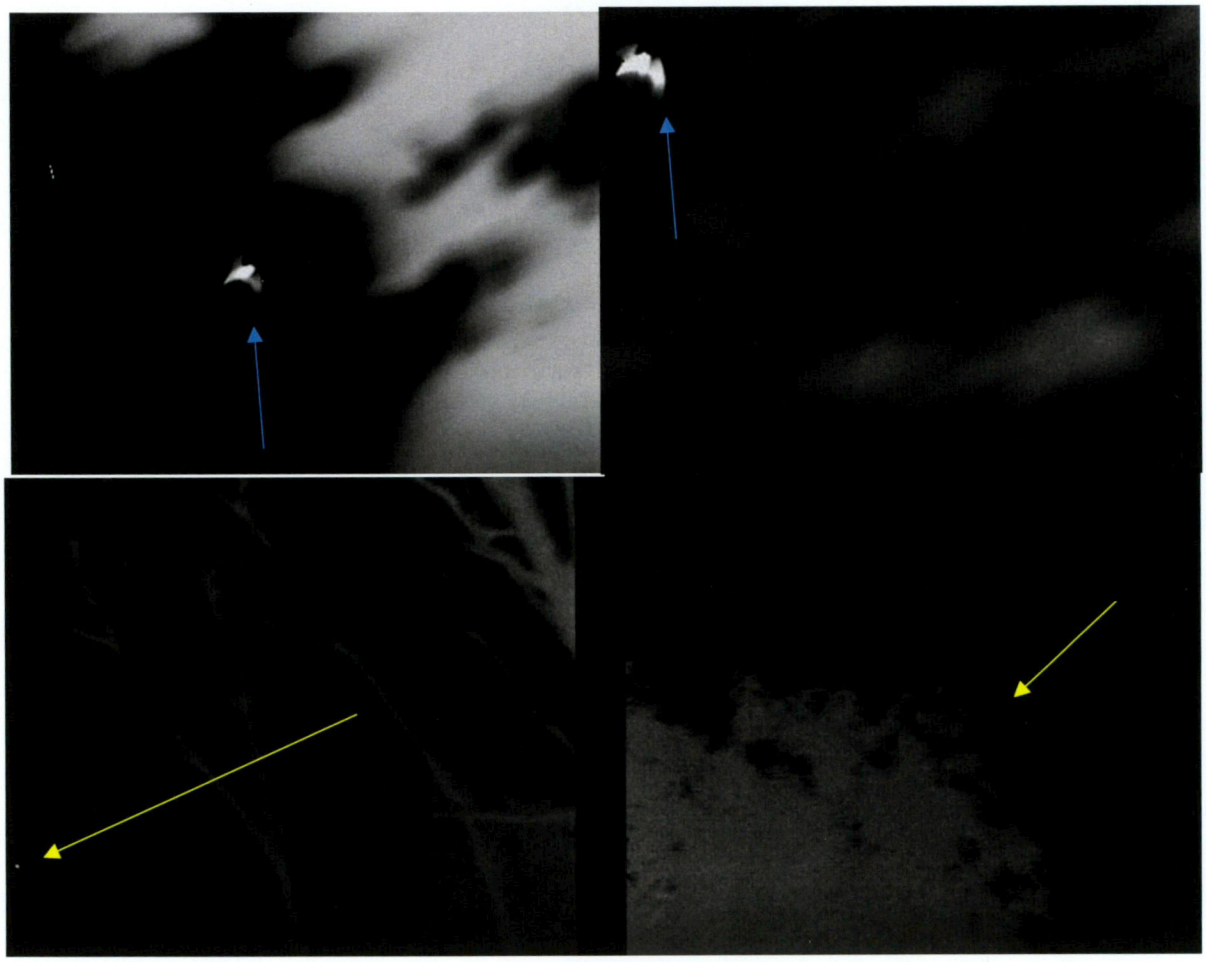
No bats were seen to emerge from or enter any tree within or around the site. No bats emerged from or entered the substation.

Bat species feeding or commuting within the site

Common pipistrelle	*Pipistrellus pipistrellus*
Soprano pipistrelle	*Pipistrellus pygmaeus*
Leisler's bat	*Nyctalus leisleri*

There was bat activity within the site during all survey periods. The main activity prior to sunrise was of Leisler's bats. Two Leisler's bats were noted to fly north prior to sunrise and out of the site. Most observations of Leisler's bats was feeding high over the hedgerow and treeline and around the substation.

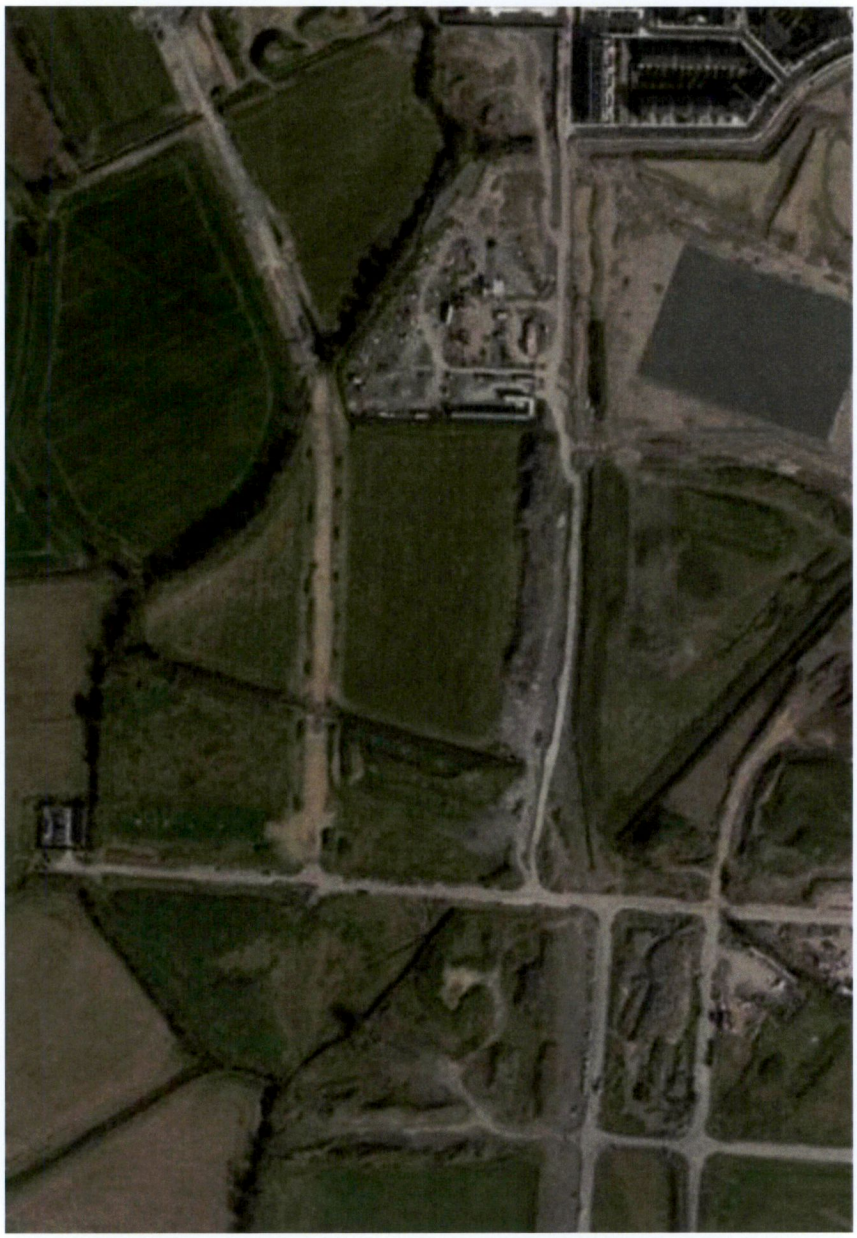
Both common and soprano pipstrelles were also noted feeding within the site primarily along hedgerow with occasional forays over stubble within the field to the northwest of the site. Pipistrelles were most commonly very close to the trees and within 3 to 4metres of the ground. Leisler's bats were often following the trees but at a height of 6 metres or greater.



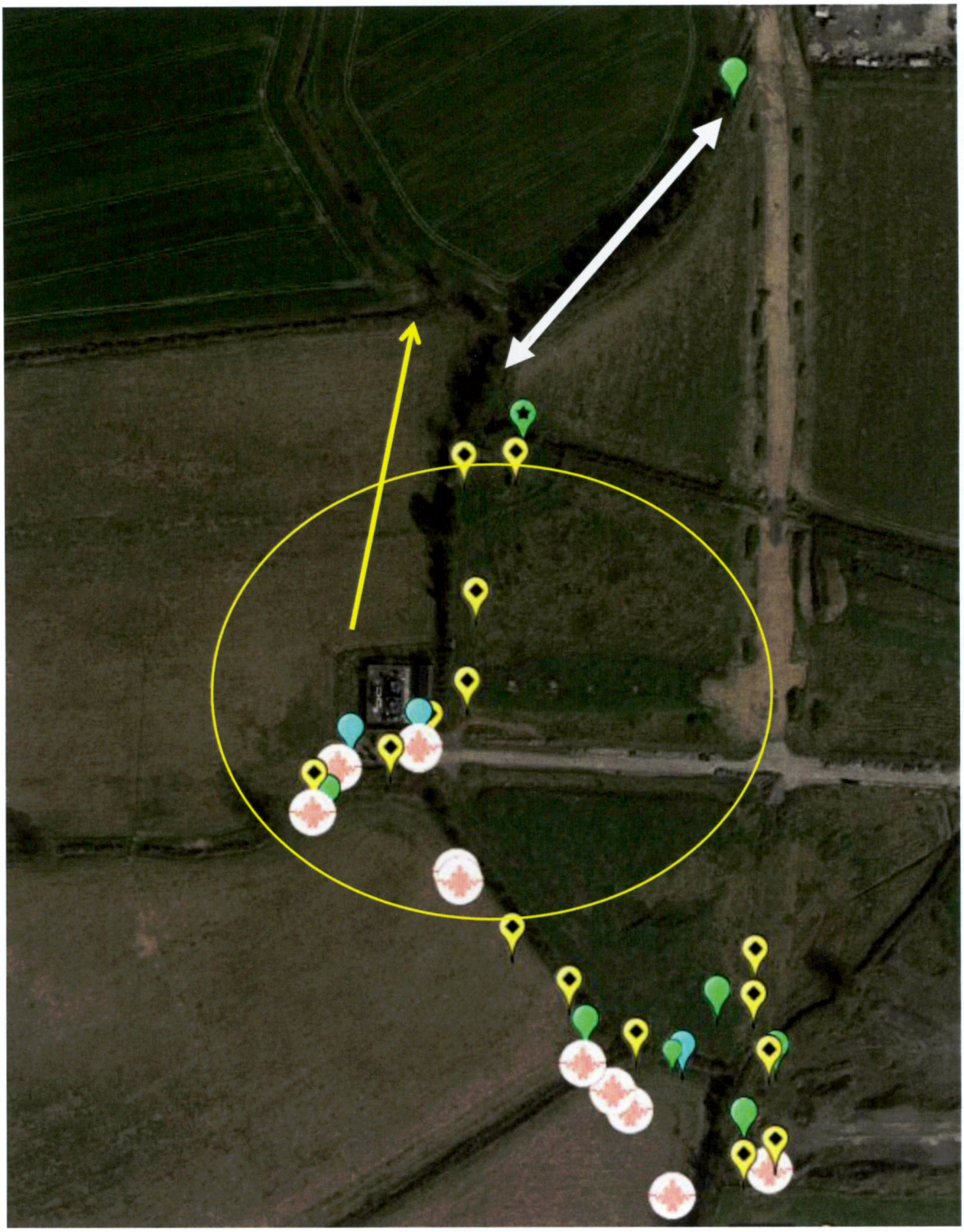
Thermal images describing the different use of the site by the different bat species

Pipistrelle flying low along hedgerow to northern end of site (blue arrow)

Leisler's bat flying high over trees north of the ESB substation (yellow arrow). The trees are present in each picture (foliage is slightly closer than the first bat while the bat in the bottom images is very high up in flight)



Aderrig lands at present

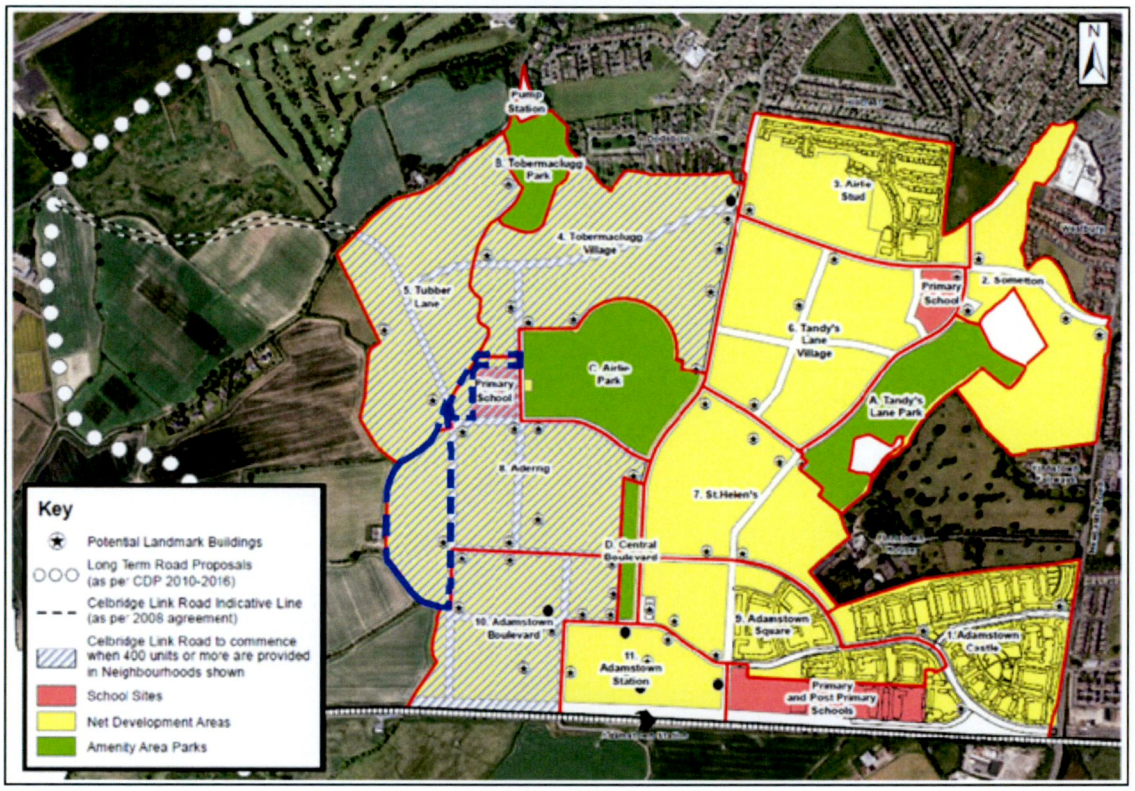


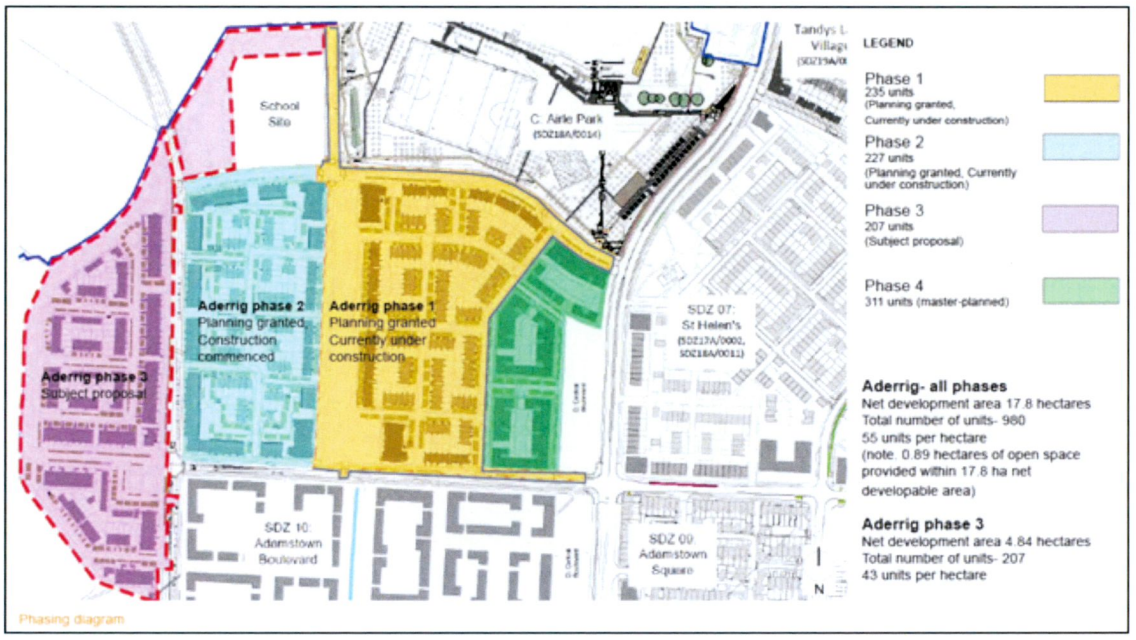
Bat activity at Aderrig June and July 2022

Legend	
Yellow paddles	*Leisler's bat recorded*
Yellow circle	*Main feeding area for visible Leisler's bats*
Yellow arrow	*Direction in which Leisler's bat seen to leave the site prior to sunrise*
Green paddle	*Common pipistrelle*
Blue paddle	*Soprano pipistrelle*
White disc	*Both pipstrelle species*

Proposed development

Proposed development at the site





Phasing diagram

Landscaping proposed for the development including proposed native woodland planting to the northern section of the site

Potential Impacts

Loss of roosts

There is some minor potential for roost loss within the site. Some of the trees were suitable for roosting bats but this is primarily through ivy cover and not obvious cavities or crevices. This would be a long-term slight negative impact if there were a bat roost. Should bats be in a tree when it is being felled, this would raise the significance of this to a long-term moderate negative impact as well as being a breach of the Wildlife Act and implementation of the Habitats Directive.

Loss of habitat

There will be a limited loss of scrub / mature trees which provide good shelter for bats to feed, and which would also assist in reducing light levels within the site. This will reduce insect abundance and feeding and commuting corridors. This is a long-term to permanent moderate negative impact without the implementation of mitigation.

Disturbance from lighting

At present, the site is an unlit green area. Lighting will be introduced for two different functions: 1) Access and safety 2) Security and policing. The former is to allow ease of use at night while the latter ensures a perceived higher security level.

Lighting may affect bat species, in particular, light-intolerant bat species during foraging and if directed at emergence points would affect all bat species, even those that will feed in illuminated areas. This is a long-term moderate negative impact without the implementation of mitigation.

Mitigation

Examination of all trees prior to removal

The trees shall be examined by an experienced bat specialist for the presence of bats prior to their removal. If the survey is undertaken at a time when bats are active, a bat detector survey shall be undertaken of the site sufficient to confirm the presence / absence of bats. The discovery of a bat roost shall require a derogation from NPWS and additional mitigation.

Provision of bat boxes

Specially designed bat boxes shall be incorporated into the site to provide roosts for bats. The following Woodcrete design offer high roost potential - 6 x Schwegler 2F with double front panel (or similar). If these cannot be facilitated within the site (i.e., no area provides sufficient darkness, a height of 3 metres and low disturbance), bat access into the built structures shall be provided using specially designed bat access elements (e.g., bat access bricks, built-in boxes etc.).

Lighting

Lighting must be designed that will limit overspill from the required area for illumination and prevent light pollution. This should aim to avoid mature trees and flanking vegetation. LED is the most energy efficient source available and wherever a permanent source of night lighting is unessential, it should be motion-activated.

•Dark corridor for movement of bats along the grounds of the site. Lighting should be directed downwards away from the treetops.
•All luminaires shall lack UV elements when manufactured and shall be LED
•A warm white spectrum (ideally <2700 Kelvin) shall be adopted to reduce blue light component
•Luminaires shall feature peak wavelengths higher than 550 nm
•Tree crowns in the adjacent lands shall remain unilluminated
•Planting shall provide areas of darkness suitable for bats to feed and commute through the site. Trees must not be illuminated as this would prevent their use for feeding by bats.

Planting

Planting shall seek to provide good shelter and future mature trees to create feeding and potential future roosts for bats. Native shrubs and trees must be used within the new development. Where other climbers and shrubs are required, they should be taken from the approved list from the All-Ireland Pollinator Plan – All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf (pollinators.ie). (https://pollinators.ie/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf)

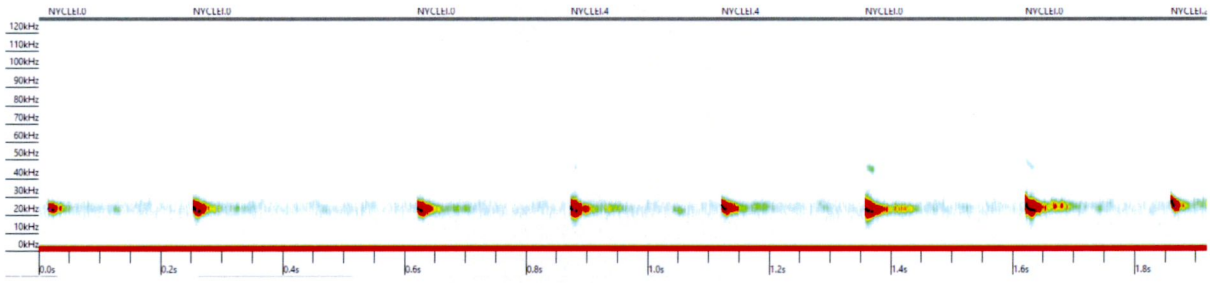
Impacts of the Development following Mitigation

Vegetation removal may result in a slight long-term negative impact upon bat species with full implementation of the proposed measures as there is a loss of hedgerow, mature trees and scrub and introduction of housing to a green area. This will reduce to a negligible negative impact over time. The measures proposed meet the requirements proposed in the Commission notice Guidance document on the strict protection of animal species of Community interest under the Habitats Directive, (Brussels, 12.10.2021 C(2021) 7301 final) as there will not be a measurable impact on the conservation status of any bat species within the site.

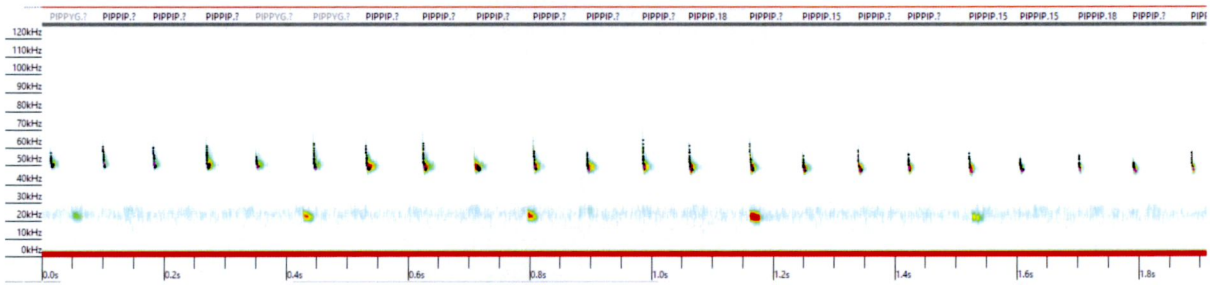
APPENDICES

Bat Conservation Ireland data: search results

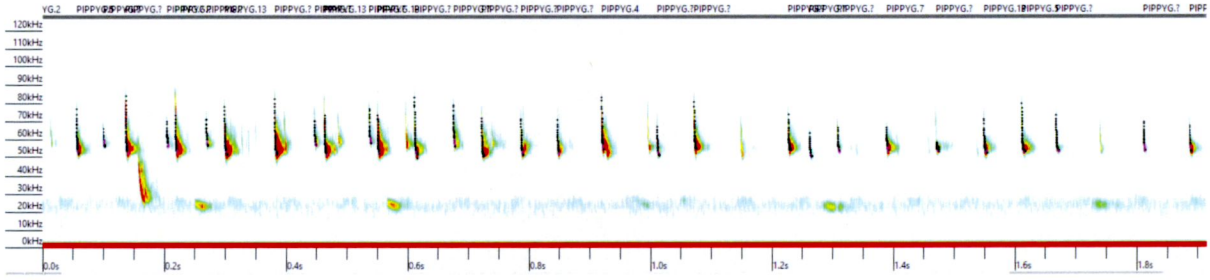
Data From Bat Conservation Ireland within 1 km of the site			
Roosts			
Name	Grid reference	Address	Species observed
Airlie Stud Stable Block; Adamstown; Co. Dublin	O020336	Airlie Stud Stable Block; Adamstown; Co. Dublin	Unidentified bat
Ad hoc records			
Survey	Grid reference	Date	Species
Bat Eco Services	O0166333627	02/06/2020	Nyctalus leisleri; Pipistrellus pipistrellus Pipistrellus pygmaeus
Bat Eco Services	O0136233265	02/06/2020	Nyctalus leisleri; Pipistrellus pipistrellus Pipistrellus pygmaeus; Plecotus auritus
Faith Wilson	O0133	01/09/2009	Nyctalus leisleri; Pipistrellus pipistrellus Pipistrellus pygmaeus
Faith Wilson	O0233	31/08/2009	Nyctalus leisleri; Pipistrellus pipistrellus Pipistrellus pygmaeus; Plecotus auritus



Leisler's bat spectrogram produced with Kaleidoscope Pro



Common pipistrelle and Leisler's bat spectrograms



Soprano pipistrelle and Leisler's bat

Bat Data from June 23rd at Aderrig site 2022 (handheld monitor)

Bat species	**Bat passes**		
			Grand Total
COMMON PIPISTRELLE	2	18	20
LEISLER'S BAT	72	21	93
SOPRANO PIPISTRELLE		6	6
SOPRANO PIPISTRELLE LEISLER'S BAT		1	1
Grand Total	**74**	**46**	**120**

Bat data from Aderrig bats July 29th 2022 (handheld monitor)

Bat species	Bat passes per hour					
Row Labels	**4**	**5**	**21**	**22**	**23**	**Grand Total**
Leisler's bat	1	41	1	10	5	58
pipistrelle bat		1				1
common pipistrelle			1	18		19
soprano pipistrelle				20		20
soprano pipistrelle Leisler's bat				4		4
Grand Total	**1**	**42**	**2**	**52**	**5**	**102**

Bat activity at the substation in 1 hour on 29th July 2022 (static monitor)

Bat species	Bat passes 22.00 hours	
Row Labels	**22**	**Grand Total**
Leisler's bat	21	21
Pipistrelle species	1	1
common pipistrelle Leisler's bat	3	3
common pipistrelle soprano pipistrelle	2	2
common pipistrelle	9	9
soprano pipistrelle	3	3
soprano pipistrelle	1	1
soprano pipistrelle Leisler's bat	8	8
Grand Total	**48**	**48**

The substation where Leisler's bat activity was very much in evidence

Trees and scrub within the site

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