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ENVIRONMENTAL CONSULTANTS

Ecological Impact Assessment Report

Cabinteely Greenway

Dún Laoghaire-Rathdown, Co. Dublin

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1 Introduction

Flynn Furney Environmental Consultants were commissioned to prepare an Ecological Impact Assessment (EclA) for the proposed development of a Greenway connecting Cornelscourt and Cherrywood via Cabinteely Park, Co. Dublin. This EclA investigates the potential impacts of the development on local ecological features, including those designated at an EU level by the Birds and Habitats Directives, at a National level by the Wildlife Acts, as well as locally important habitats and species that may not have legal designation, but are important for the functioning of healthy ecosystems.

Surveys were conducted on multiple dates, as detailed in this report, to establish baseline ecological data and assess the potential ecological impacts. The objectives of this EclA are to:

- Establish baseline ecological conditions within the site.
- Determine the ecological value of identified features.
- Assess potential impacts of the proposed development on biodiversity.
- Propose mitigation measures to avoid, minimise, or compensate for impacts; and
- Identify any residual impacts following the implementation of mitigation measures.

1.1 Outline Description of the Proposed Project

The Proposed Scheme has an overall length of approximately 2.3 km, commencing at the Bray Road/Cornelscourt Hill Road (R842) junction in Cornelscourt Village. It continues along Cornelscourt Hill Road, Glen Lawn Drive, Cabinteely Park, Clonkeen Road, Brennanstown Road and terminates adjacent to Druid's Glen Road. The Proposed Scheme involves the creation of an urban greenway and comprises four distinct sections. The proposed general layout of each of these sections is as follows:

Section A: Bray Road/Cornelscourt Hill Road Junction to Glen Lawn Drive

Widening the existing footpath on the eastern side of Cornelscourt Hill Road to create a 4.0 m wide shared path with a short, localized narrowing to 3.0 m to avoid impacting an existing mature tree. The route then passes through a green space and links to Glen Lawn Drive.

Section B: Glen Lawn Drive to Cabinteely Park

A new 4.0 m wide shared path will be constructed along the southern side of Glen Lawn Drive with a new raised zebra crossing implemented at the western end of Glen Lawn Drive. Alterations will be made to the existing Glen Drive Roundabout geometry and raised zebra crossings provided over each arm for pedestrians and cyclists.

Section C: Cabinteely Park plus connection north to the N11 via Clonkeen Road

The existing park entrance on Glen Drive will be closed. A new entrance to Cabinteely Park will be established on the north side of the stream (adjacent the Glen Drive roundabout), along with a second new entrance adjacent the Old Bray Road / Glen Drive junction. The route will largely follow the existing path alignment along the northern side of the park and connect to Brennanstown Road. The path will be upgraded to provide a 5.0 m wide segregated path (2.0 m footpath and 3.0 m two-way cycle track). This section of the route also includes a connection to the N11 via the new park entrance and Clonkeen Road, which will be converted to a shared street.

Section D: Brennanstown Road to the northern end of the Cherrywood Green Routes Network

A new entrance will be created into the park on Brennanstown Road. Where the route crosses Brennanstown Road, a one-lane two-way shuttle system is introduced for vehicular traffic. This facilitates a safe crossing point for pedestrians and cyclists. The route continues as a shared path through the woodland area south of the Carraig Glen estate. The shared path will be 3.0 m wide at the entrance to this woodland area, widening back to 4.0 m once it passes through the ecologically sensitive zone. This path follows the eastern side of Cabinteely Stream, with a new zebra crossing over Brennanstown Avenue. A new pedestrian / cyclist bridge is proposed to cross over to the western side of the Cabinteely Stream facilitating direct connections to the Cherrywood Green Routes network.

The complete removal of Cherry Laurel will be carried out in the area along the greenway immediately south of Brennanstown Road.

Lighting will be installed along the greenway route, including within Cabinteely Park and between Brennanstown Road and Brennanstown Avenue, to the following specifications:

- 123. no. lighting units will be installed as part of this development. Figures 2 and 3 below give an overview of how and where the new lighting/lighting upgrades, will be installed.
- Light spill at the path under the lighting columns will be 5 lux, reducing to <0.5 lux at the edge of the lit zone. The warmth of the bulbs will be set to 2,200 K.
- The lighting plan details the location and light spill along the entire route; however, the lighting plan drawing files are too large to include in this report but have been included with submitted Part 8 documentation. Maps indicating the locations of the lighting columns associated with this project, and the light spill as mentioned above, are provided in Appendix C.
- All newly installed lighting – that within Cabinteely Park and c.130 m along the section east of the Brennanstown Road – will be turned off from 22:00 every evening, until 06:00 the following morning.

The main characteristics of the Construction Phase of the Proposed Scheme are:

- Site preparation and clearance

- Access and travel on/off site, including temporary access routes for construction vehicles
- Removal of existing pavements, lighting columns, boundaries, trees and vegetation
- Protection and/or diversion of buried services
- Reconfiguration of traffic lanes, junction/roundabout modification, pavement reconstruction and kerb improvements
- Laying of path material (tar and aggregate)
- Provision of new structures (e.g. bridge over Cabinteely Stream at south end, reconstruction of existing retaining wall to the east of Brennanstown Road, construction of new entrances to the park)
- Movement of materials to/from or within a site
- Property boundary reinstatement, signage replacement, relocation of and/or installation of lighting columns
- Ground excavation, infilling, landscaping and tree planting
- Ancillary works (storage of soil, materials and plant)

Most of the new pathways will be constructed where there are existing pedestrian and vehicle routes, with some sections requiring the laying of a mix of new footpaths and cycle lanes through grassland and woodland within and adjoining Cabinteely Park. Works activities will include:

- Access and travel on/off-site, including temporary access routes for construction vehicles and vessels
- Areas for plant maintenance and for storage of oils, fuels and chemicals
- Setup and subsequent removal of site offices/compounds and final site clearance after construction
- Movement of materials to/from or within a site
- Stripping of topsoil
- Ground excavation, infilling and landscaping
- Laying of path material (tar and aggregate)
- Construction of bridge over the Cabinteely Stream at south end to allow the Greenway to join onto the new development at Cherrywood.
- Removal of several trees
- Planting of new trees and associated landscaping
- Installation of lighting columns and cabling
- Construction of new entrances in the park
- Ancillary works (storage of soil, materials and plant)

The ongoing maintenance of the greenway will include the following:

- The maintenance regime through the park, along the green space at Glen Lawn Drive and from Brennanstown Road to Brennanstown Avenue will not change because of the greenway.

- A 1-1.5 m mown/managed strip on either side of the greenway will be required along the Brennanstown Road to Brennanstown Avenue section. This will be mowed every six weeks and will be managed as a short meadow.
- The greenway space will be maintained at a clear unobstructed head height of 2.7 m. In the case where branches begin to overhang below that height, they will be pruned by light, hand-held pruning equipment.
- The greenway will require a mini sweeper to clean off the surface of the hard standing areas. The exact details of this are to be agreed with the cleaning staff of DLR Parks.

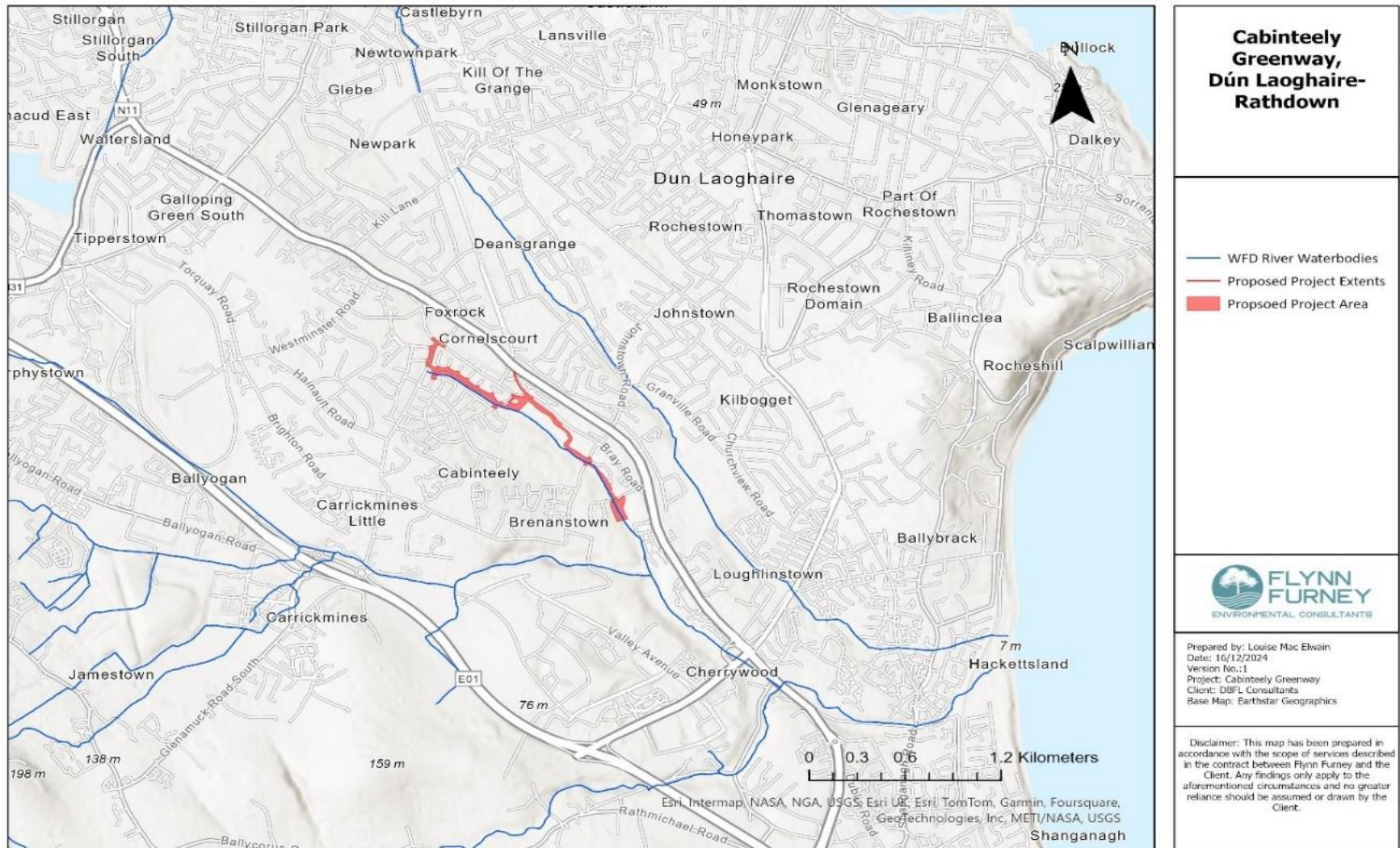
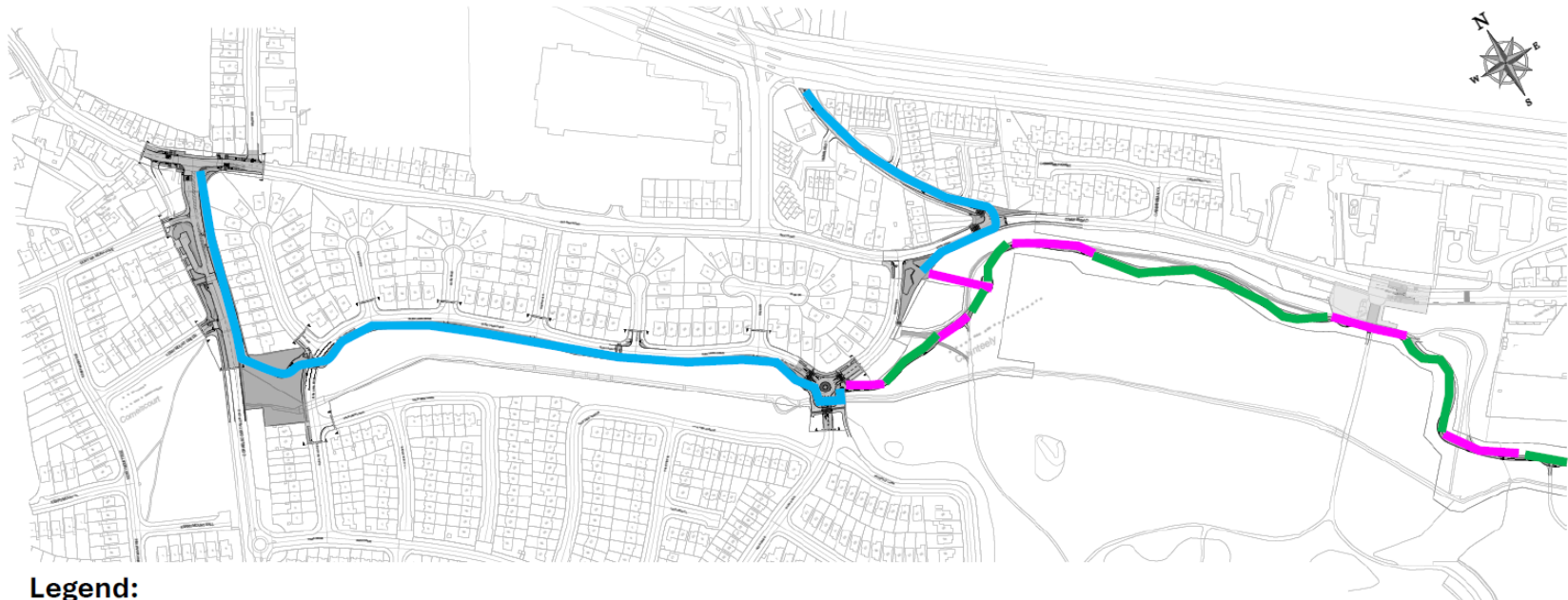


Figure 1: Location and footprint of the proposed project.

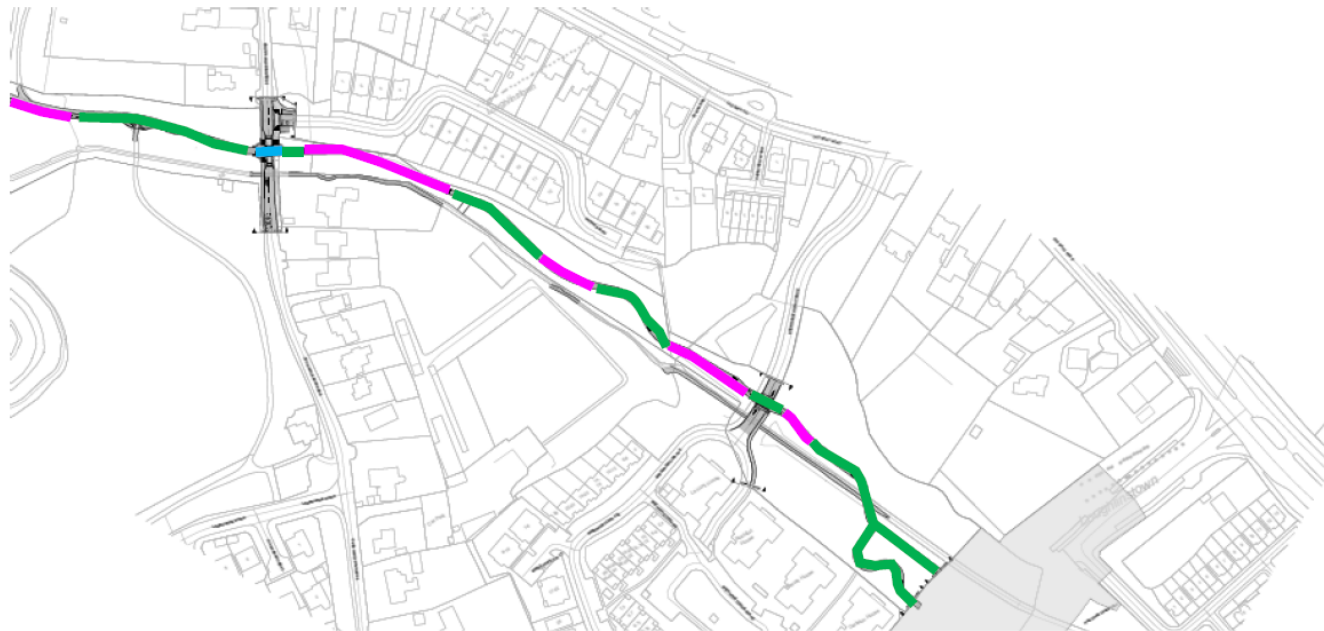
**Legend:**

Existing public lighting in place: Proposed scheme will upgrade luminaires. Cabling will be routed through existing ducting where possible, if ducting is to be renewed then this will be along existing ducting location. Some minor relocation of existing column positions to ensure adequate spacing. Connections will be made into existing electrical supply points and feeder pillars.

New public lighting (no-dig): Ducting will be installed using no-dig construction method, contained within the build-up of the proposed path to minimise surface disturbance. Where cables to new lighting columns are required, hand-dig methods will be used to protect existing tree roots and surrounding sensitive areas. New lighting columns will be installed in pre-determined locations on suitable foundations, with cabling connected through column bases to the electrical network. Locations of feeder pillars or designated supply points will be determined at detailed design stage, however these will be cognisant of Root Protection Areas and surrounding sensitivities.

Proposed public lighting: Installation of new public lighting infrastructure using conventional open-trench construction methods. Excavations will be carried out along the designated cable routes to install ducting and draw pits as required. Suitable bedding and surround will be provided for the ducts before backfilling and reinstatement of the trench tie into the proposed path. New lighting columns will be installed in pre-determined locations with suitable foundations constructed. Cables will be pulled through the ducts and terminated at column bases and feeder pillars or other designated supply points.

Figure 2: Overview of where and how new lighting will be installed along the route (1/2).



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Figure 3: Overview of where and how new lighting will be installed along the route (2/2).

2 Legislation and Planning Policy

2.1 European Council Directives

2.1.1 Council Directive on the conservation of Natural Habitats of Wild Fauna and Flora

The main aim of the 'Habitats' Directive is to promote the maintenance of biodiversity through the conservation of natural habitats and wild species listed on the Annexes of the Directive. Member States are required to take measures to maintain or restore, at favourable conservation status, biodiversity, whilst taking account of economic, social, cultural requirements and regional and local characteristics.

It gives effect to site and species protection measures through establishment of the Natura 2000 network and designation of Natura 2000 Sites including Special Areas of Conservation (SACs). It also establishes a list of species (other than birds) whose habitats must be protected to secure their survival. These priority species and habitats are subject to a higher level of protection.

The Directive also requires Appropriate Assessment of any plan or project not directly connected with or necessary to the management of a European Site, but likely to have significant effects upon a European site, either individually or in combination with other plans or projects.

2.1.2 Council Directive on the Conservation of Wild Birds

The 'Birds' Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It makes provisions for the maintenance of the wild bird populations across their natural range; conserves the habitats for rare or vulnerable species listed in Annex I and of migratory species through the classification of Special Protection Areas (SPAs) and provides protection for all wild birds.

2.2 Irish Legislation

2.2.1 The European Communities

The European Communities (Birds and Natural Habitats) (Amendment) Regulations state that the following shall be construed together as one:

- Wildlife Act 1976
- Wildlife (Amendment) Acts of 2000, 2010, 2012 and 2023
- European Communities (Birds and Natural Habitats) (Restrictions of the Use of Poison Bait) Regulations 2010
- European Communities (Birds and Natural Habitats) Regulations 2011
- European Communities (Birds and Natural Habitats) (Amendment) Regulations of 2013, 2015, 2021
- Wildlife Amendment Bill 2016 (proposed legislation)

2.2.1.1 European Communities (Birds and Natural Habitats) Regulations 2011 to 2021

The Regulations give effect to requirements relating to the designation of protected sites under the Birds Directive and Habitats Directive. The Regulations provide for the protection and management of Natura 2000 Sites and place obligations on all public authorities to have regard to the requirements of the Habitats Directive beyond the realms of planning related consents issued under the Planning and Development Act (the PDA) 2000, as amended. The Regulations also provide for the protection of species of European importance.

2.2.1.2 Wildlife Acts 1976 to 2023

The Acts provide for, *inter alia*, the protection of wildlife. The Acts prohibit the intentional killing, taking or injuring of certain wild birds or wild animals; or the intentional destruction, uprooting or picking of certain wild plants.

2.2.1.3 Wildlife Amendment Bill 2016

The purpose of the Bill is to provide for the implementation of a reconfiguration of the Raised Bog Natural Heritage Area Network arising from (i) the proposals from the Review of Raised Bog Natural Heritage Area Network published in January 2014; (ii) an assessment of the effects on the environment of the proposals arising from the Review and, if required, any other screening for an assessment or as the case may be, assessment, including public consultation undertaken and (iii) observations or submissions received during the course of public consultation.

Taken as a whole, nature conservation legislation is of key importance in undertaking an EclA for proposed development as it shapes planning policy.

2.3 Planning Policy

2.3.1 National Planning Policy

2.3.1.1 Project Ireland 2040 – National Planning Framework (Updated Draft - Revised Nov 2024)

The National Planning Framework (NPF) provides a strategic vision for the growth and development of Ireland up to 2040, with a strong emphasis on sustainable development across the country's rural and urban areas. While its core objectives include facilitating residential development and urban regeneration, the NPF also highlights the importance of enhancing Ireland's natural and cultural heritage to support tourism and outdoor recreation. It sets the direction for fostering a vibrant tourism sector by encouraging the development of outdoor amenities, such as walking trails, heritage sites, and recreational infrastructure, especially in rural areas. Through the NPF, local planning documents such as the Regional Spatial and Economic Strategy (RSES) and the County Development Plans are shaped to ensure that tourism and recreation are integrated into regional growth plans, promoting environmental stewardship alongside economic development.

Several NPF objectives can guide this proposed development, ensuring it aligns with national sustainability, climate, and biodiversity goals, while supporting the local economy and tourism.

Objective 12 aims to ensure the creation of attractive, liveable, well-designed, high-quality urban places that are home to diverse and integrated communities that enjoy a high quality of life and well-being.

Objective 14 promotes the regeneration and rejuvenation of cities, towns, and villages of all types and scales as environmental assets, that can accommodate changing roles and functions, increased residential population and employment activity, and enhanced levels of amenity and design quality.

Objective 20 encourages developments that generate more activity and jobs: ‘In meeting urban development requirements, there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns, and villages, subject to development meeting appropriate planning standards and achieving targeted growth.’

Objective 34 supports the facilitation of tourism development and in particular the Strategy for the Future Development of National and Regional Greenways, and a Blueways and Peatways Strategy, which prioritises projects on the basis of their environmental sustainability, achieving maximum impact and connectivity at national and regional level while ensuring their development is compliant with the National Biodiversity Action Plan, the national climate change objective and requirements for environmental assessments.

Objective 37 promotes the integration of safe and convenient alternatives to the car into the design of our communities, by prioritising walking and cycling accessibility to both existing and proposed developments and integrating physical activity facilities for all ages.

Our urban and rural ecosystems provide a range of ecosystem services, such as increasing shelter and providing cooling for urban areas, reducing the frequency and severity of flooding events, and contributing to the physical and mental well-being of communities. As such, the provision of well-designed spaces, the rejuvenation of urban areas, the provision of jobs and the development of sustainable travel and tourism infrastructure should not come at the cost of biodiversity.

2.3.1.2 Regional Spatial and Economic Strategy and County Development Plan

The Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Region, which encompasses Dún Laoghaire-Rathdown, provides a framework for sustainable development that promotes economic growth, quality of life, and environmental protection. The proposed development of a Greenway in this area aligns with several strategic objectives outlined in the RSES and the Dún Laoghaire-Rathdown County Development Plan (2022–2028).

A core goal of the RSES is to enhance regional connectivity and encourage sustainable mobility, particularly through the development of active travel infrastructure. Greenways are specifically recognised as key assets in fostering sustainable tourism, promoting healthy lifestyles, and improving accessibility to natural and cultural amenities. The proposed Greenway between Cornelscourt and Cherrywood via Cabinteely Park reflects these objectives by creating a high-quality, accessible route for walkers and cyclists while leveraging the area’s natural and recreational resources.

2.3.2 Local Policy

2.3.2.1 The Greater Dublin Area Cycling Network Plan

The Greater Dublin Area Cycling Network Plan (GDA CNP), developed by the National Transport Authority, aims to establish a safe, accessible, and integrated network of cycling routes to promote cycling as a sustainable transport mode and reduce car dependency. The proposed Greenway between Cornelscourt and Cherrywood via Cabinteely Park aligns with the GDA CNP by improving connectivity between residential areas, amenities, and employment hubs, encouraging active travel, and supporting climate action goals. The Greenway integrates with existing and planned cycling infrastructure, enhances accessibility for all users, and contributes to sustainable mobility and reduced greenhouse gas emissions, aligning with both regional and local strategies.

2.3.2.2 County Development Plan 2022-2028

DLR County Development plan states 'Public open space shall be provided throughout DLR on a hierarchical basis, ranging in descending order from Regional Parks with Countywide importance, to small incidental spaces. This hierarchy is underpinned by the Greenways Network, which seeks to encompass and connect the parks and open spaces and other green infrastructure, to enable enhanced connectivity to wider strategic networks, across the County.'

2.3.2.3 Policy Objective OSR8: Greenways and Blueways Network

It is a Policy Objective to develop a comprehensive network of County Greenways linking parks and public open spaces and to liaise with adjoining local authorities and other stakeholders to achieve and improve wider external linkages and corridors, to enable enhanced connectivity to wider strategic networks, and to allow for the long-term strategic expansion of urban areas (consistent with NPO 62 of the NPF).

Dún Laoghaire-Rathdown County Council prioritises biodiversity protection, requiring Ecological Impact Assessments, mitigation measures, and, where necessary, Appropriate Assessments for projects affecting protected areas (pNHA, SPA, SAC). A precautionary approach applies to environmentally sensitive areas to ensure conservation objectives are not undermined. There are many policies within the plan which protect local biodiversity and ecology. Including the following:

2.3.2.4 Policy Objective GIB22: Non-Designated Areas of Biodiversity Importance

It is a Policy Objective to protect and promote the conservation of biodiversity in areas of natural heritage importance outside Designated Areas and to ensure that notable sites, habitats, and features of biodiversity importance - including species protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979, the Habitats Directive 1992, Birds and Habitats Regulations 2011, Flora (Protection) Order 2015, Annex I habitats, locally important areas, wildlife corridors, and rare species - are adequately protected.

Ecological Impact Assessments will be carried out for all developments in areas that support, or have the potential to support, features of biodiversity importance or rare and protected species, and appropriate mitigation or avoidance measures will be implemented.

In implementing this policy, regard shall be had to the Ecological Network, including the forthcoming DLR Wildlife Corridor Plan, and the recommendations and objectives of the *Green City Guidelines* (2008) and *Ecological Guidance Notes for Local Authorities and Developers* (Dún Laoghaire-Rathdown Version, 2014).

2.3.3 DLR County Biodiversity Action Plan 2021 -2025

The plan recognises that the urban environment poses a challenge to biodiversity and that in order to improve the landscape's resilience to climate change the provision of natural solutions to reduce carbon emissions and manage flood risk, and to sustain vital ecosystems, clean water and clean air will be necessary. Forwarded within the plan is the aim of 'reconnection' which implies the reconnection of people with nature. Proposed actions include the development of best practice guidelines for Greenway Developments (Action 2.9) and the development of guidelines managing artificial lighting (Action 2.11) which are applicable to the proposed development.

3 Methodologies

3.1 Desk Study

Prior to the main fieldwork contributing to this assessment, a desktop survey of available information sources was carried out. These included:

- The National Biodiversity Data Centre Online Database
- The National Biodiversity Network Online Atlas
- The OSI Geohive Database
- The NPWS Protected Species Database and Online Mapping and
- The Environmental Protection Agency Database

Designated sites were identified using the current boundary shapefiles (SAC 2023, SPA 2023, NHA 2019/06, pNHA 2015), downloaded from the NPWS website. Other online mapping reviewed included Geohive maps, All Ireland Wetland Survey maps, aerial photography and EPA shapefile datasets. Habitat mapping reviewed included the Irish Semi-Natural Grassland Surveys (ISGS), the National Survey of Native Woodland (NSNW) and the Ancient and long-established Woodland (NPWS shapefiles).

To provide further information to support impact assessment of the development, Dún Laoghaire-Rathdown County Council granted access to their internal records. These records were reviewed to determine if any protected species or habitats of conservation concern overlapped with the proposed project footprint.

The records reviewed included:

- GIS data on Light-bellied Brent Geese (University of Exeter, 2022)
- GIS data of otter records (Triturus, 2020).

- GIS data for tufa spring records (Denyer Ecology, 2023).
- Rare Plant Survey Report (Reynolds & Nash, 2009).

3.2 Zone of Influence

Following the guidance set out by the (NRA, 2009b), the proposed development has been evaluated based on an identified zone of influence (ZOI) with regard to the potential impact pathways to ecological feature (habitats, flora and fauna). The ZOI for terrestrial habitats is limited to the footprint of the proposed development. Hydrological linkages between the proposed development and aquatic habitats/species can occur over significant distances; however, the significance of the impact will be site specific depending on the receiving water environment and nature of the potential impact. Adopting a precautionary approach, the distance over which surface water discharges could have a significant impact on receiving watercourses is considered to extend downstream of the proposed development site to the Irish Sea. The ZOI for significant impacts to breeding birds is considered to extend no more than 100 m from the proposed development to take account of disturbance during construction. The ZOI for mammals such as bats, badgers and otters may extend over larger distances due to the fact that they can commute and forage many kilometres from their breeding sites. In this case the entire footprint of the route as well as connected natural spaces, woodlands, river corridor, etc., will be considered so as to incorporate potential impacts of Greenway construction and operation upon flight paths and foraging routes. ZOIs for each species surveyed are given in Section 3.3.

3.3 Field Surveys

An initial walkover survey was carried out in February 2024. The main field surveys were carried out in April 2024. A further walkover survey was carried out in December 2024. The primary floral and habitat walkover survey was undertaken in June 2024. Mammal surveys were undertaken in January 2024. A wintering bird survey was undertaken in January 2025. Separate bat surveys cited in this report were undertaken in September and August 2023.

The primary aims of the field surveys were to:

- Identify habitat types within the study area
- Assess for the presence of protected species of flora and fauna
- Identify ecological and environmental constraints to the construction of this residential development
- Identify ecological sensitivities around and within the study area
- Identify any protected fauna species that may be present.

These surveys considered a broad survey area to ensure all other important features that could be impacted by the development due to connectivity to the proposed development site were considered. These included significant treelines and hedgerows, mammal paths, streams and other watercourses

feeding and surrounding parts of the application site. Habitat mapping was carried out and is presented in Appendix A. Surveys were carried out for mammals, birds, invertebrates, mature and veteran trees, habitats, bat roosting habitats and botanical features where considered necessary. The surveys and impact assessment have been carried out in accordance with the following guidelines:

- Habitat survey and mapping was carried out as per Smith *et al* (2011).
- Habitats were classified according to *A Guide to Habitats in Ireland* (Fossitt, 2000).
- Mammal survey methodology followed NRA (2008) and NRA (2005).
- Bat surveys methodology followed Collins (2023) and classification of bat roost potential followed Billington & Norman (1997).

3.3.1 Ecological Constraints or Limitations

The ecological surveys were conducted across various months, each with seasonal limitations and advantages. Mammal surveys, conducted in January 2024, took place during a period of reduced terrestrial mammal activity due to hibernation or decreased movements in winter. However, the reduced vegetation during this time provided an increased ability to detect and access mammal refuges, such as burrows and dens, which might otherwise be obscured during the growing season. The February and December 2024 walkover surveys occurred outside the peak growing season, limiting the identification of some plant species. Nonetheless, these surveys provided sufficient baseline habitat information for the assessment. The April 2024 surveys coincided with the transitional period when some plants and nesting birds become more active, providing useful, though seasonally limited, data on biodiversity. The primary floral and habitat walkover survey conducted in late June 2024 aligned well with the optimal period for identifying many plant species, though some early spring flowering species may have already senesced.

The wintering bird survey was carried out in January, the optimal time for this survey type, during high tide when birds are more likely to be found inland. While multiple wintering bird surveys are usually preferred, one was considered sufficient given the current level of disturbance, frequency of records from the park, and type of habitat available.

Bat surveys cited in this report were undertaken in September and August 2023 covering key periods such as the maternity season (June to August) or autumn swarming (August to October), it provides a good understanding of bat activity in the area during critical life stages (Keely, 2023). Surveys are typically considered valid for up to 2–3 years if there have been no significant changes in land use, habitat conditions, or nearby developments that might alter bat activity or populations.

3.3.2 Flora

Habitats on site were classified using *A Guide to Habitats in Ireland* (Fossitt, 2000) and mapped in accordance with the *Best Practice Guidance for Habitat Survey and Mapping* (Smith, O'Donoghue, O'Hara, & Delaney, 2011). The classification is a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. The classification is hierarchical and operates at three levels, using codes to

differentiate habitats based on the plant species present. Species recorded in this report are given both their Latin and common names, following the nomenclature as given in the *New flora of the British Isles* (Stace, 2010).

Invasive species listed on Schedule 1 of the Birds and Natural Habitats Regulations 2011 were also recorded during site visits and findings are discussed in this report. The classification of invasive species in Ireland under the European Communities (Birds and Natural Habitats) Regulations 2011 (The Third Schedule of Regulation (EU) No 1143/2014, which originally listed invasive alien species of EU concern, has been superseded by the First Schedule under S.I. No. 374/2024 – the European Union (Invasive Alien Species) Regulations 2024. The First Schedule specifically identifies species of national concern for Ireland, reflecting the need for tailored management and control measures. Species previously listed in the Third Schedule, including *Fallopia japonica* (Japanese knotweed) and *Neovison vison* (American mink), remain subjects of intensive management programs due to their significant ecological and economic impacts. These species are now managed in alignment with updated national legislation, which enforces stringent measures such as the prohibition of introduction, transport, and release into the environment. Continued monitoring and control of these species are crucial for maintaining biodiversity, particularly in sensitive habitats and protected areas, such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), where their spread could compromise native ecosystems).

3.3.3 Terrestrial Fauna

The site survey included a comprehensive assessment of the presence, or potential presence, of rare or protected fauna species. Habitats were evaluated for field signs and evidence of fauna usage, such as well-worn pathways, droppings, shelters, and areas or features likely to serve as valuable foraging resources. Zones of Influence for each species were surmised and assessed.

A targeted search for Otter (*Lutra lutra*) was conducted within the proposed development site following TII/NRA (2009) guidelines, along all riverbanks, as well as 150 m up and downstream of the project area, where possible. The Cabinteely/St. Bride's Stream was surveyed along its entire length within the project boundary from the riverbank, with a focus on identifying otter signs such as slides, prints, spraint, and holts.

As part of the mammal survey, a Badger (*Meles meles*) assessment was carried out, also in line with TII/NRA (2005) guidelines, to determine the presence or absence of Badger activity within the project area as well as into some of the connected natural areas, though these were limited by the urban nature of the surrounding landscape. This involved searching for characteristic signs, including latrines, pathways, and setts. Any setts encountered were classified according to established conventions (e.g., main, annex, subsidiary, or outlier). The survey covered the entire project footprint (extending 5 m either side of the proposed route) and relevant connected habitat features.

In addition to these species, signs and tracks of other protected mammals, such as Pine Marten (*Martes martes*) and Red Squirrel (*Sciurus vulgaris*), were also examined during the ground surveys.

3.3.4 Bat Surveys

The ZOI of the project upon bat species will vary for different bat species and their usage of the larger area. For example, the ZOI for loss of roost due to removal of trees will be different to the ZOI for lighting impacts on commuting/foraging areas. Therefore, while the footprint of the proposed Greenway route is the ZOI for direct impacts on bat roosts, a wider area has been considered for indirect impacts upon all suitable bat commuting/foraging areas. It is acknowledged that the proposed Greenway route is situated within a 'green corridor' that is likely to be of higher importance to bat communities than most of the surrounding built up areas.

[From the supplied bat survey, carried out by Brian Keeley (BSc.)] The proposed route was examined for bat activity on the following dates to assess the site for bat usage:

- 10th, 11th August 2023
- 4th, 5th, 13th, 14th September 2023
- and ending on 21st September 2023.

On the 16th of August and up to dawn on the 17th of August 2023, a static monitor recorded on the western gate of Cabinteely Park. The bat detector assessment that commenced prior to sunset was undertaken equipped with an Echometer Touch 2 Pro (EMT) full spectrum receiver with a smartphone screen displaying the ultrasonic signals received and also recording all ultrasonic signals received to phono storage for later analysis with Kaleidoscope Pro. The surveyors walked around the perimeter of all fences, treelines, watercourses and followed all paths within the footprint of the proposed Greenway commencing prior to sunrises and continuing for a minimum of 1.5 hours and then re-commencing 1.5 hours prior to sunrise. hours). A second detector type, an Anabat Walkabout, was held by the second surveyor who covered other areas at the same time. Where a third surveyor was present, a second EMT or Walkabout was employed.

Another detector type, a static monitor - Songmeter Mini BAT (Mini), was positioned within the site and remained here until surveying ceased at sunrise. The detector was placed at mature trees, streams, gateways or bridges where there were opportunities to hide it from view. The trees within the footprint were examined for bat roost potential both within Cabinteely Park and within the lands to the north and south of the park. Data from previous surveys within the area were also considered for the bat species composition and any roost data.

Table 1: Impacts on Bats (Bat Conservation Trust, 2023).

Impacts on bats that can arise from the proposed activities		
Bats	Roosting habitats	Commuting and foraging habitats
• Physical disturbance • Noise disturbance through, for example, increased	• Modification of access points to roost either physically or through, for example, lighting or	• Modification of commuting or foraging habitats either

human presence or the use of noise-generating equipment. • Lighting disturbance. • Injury/ mortality (e.g. in roost during destruction or collision with traffic.	removal of vegetation. • Modification of roost either physically, for example by roof removal, or through, for example, changed temperature, humidity, ventilation or lighting regime. • Loss of roost.	physically or through disturbance, e.g. light spill/ noise. • Severance of commuting routes (fragmentation). • Loss of foraging habitats.
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3.3.5 Birds

3.3.5.1 Wintering birds

The grasslands on site were assessed for their suitability as feeding grounds for wintering birds and were found to be moderately suitable for some species. Records from Dún Laoghaire-Rathdown County Council (DLR CoCo) were reviewed to determine the proximity of the site to known feeding grounds for Light-bellied Brent Geese. These records identified nearby locations such as Seapoint Rugby Club and Kilbogget Park as key foraging sites for the species.

While there is some potential for geese to occasionally forage in Cabinteely Park, their preference for short, regularly maintained sward lengths and fertilised grasslands, coupled with seasonal variations in grassland management within the park, renders it only marginally suitable as a foraging habitat.

A wintering bird survey was conducted in January 2025 at four locations across the project footprint (see Figure 4). The survey was timed to cover two hours either side of high tide to maximise detection of species using the site. Although this provides only a snapshot of bird activity, it offers insights into the types of species utilising the grasslands in what is primarily a high-disturbance recreational area.

Following the desk study, which found that the park was largely unsuitable for foraging migratory birds, coupled with an assessment of available DLR biodiversity data, this site was decided to be of relatively low importance for protected bird species. As such, a single vantage point survey for each location was deemed sufficient by project ecologists to ground-truth the findings of previous wintering bird surveys in the area.



Figure 4: High-tide survey VP Locations.

3.3.5.2 Breeding birds

The hedgerows, woodlands, and grasslands on site have the potential to support bird species during the nesting season. While a dedicated breeding bird survey was not conducted, this decision was informed by the minimal anticipated removal of tree and shrub habitats and the high level of recreational disturbance already present in the area. Birds observed and heard during ground surveys were recorded.

3.3.6 Amphibians

3.3.6.1 Common Frog and Smooth newt

The ecological survey included the assessment of the site for drains, pools and ponds which may contain protected species. The Common frog (*Rana temporaria*) is found in a wide range of damp habitats but will typically breed in small shallow ponds. They are, however, opportunistic breeders and will also use lake margins, ditches, puddles and slow-flowing water (Inns, 2009). Smooth newts (*Triturus (Lissotriton) vulgaris*) can be found in a diversity of terrestrial and aquatic habitats including uplands, woodlands, marshland, farmland, open moorland and urban areas. Smooth newts hibernate on land during the winter months (under logs, hedgerows, or other well-hidden sites), returning to wetlands sites to breed in February and March, remaining there until June (O'Neil *et al.*, 2004; Inns, 2009). Breeding habitats are

also variable, but typically include waterbodies with still or very slow-flowing water and range from large lakes to small and medium ponds and densely weeded ditched (O'Neil *et al.*, 2004; Buckley, 2012).

3.3.7 Reptiles

3.3.7.1 Viviparous lizard

Viviparous lizard (*Lacerta (Zootoca) vivipara*) thrives in various habitats. They are often active during warmer parts of the day, especially in spring and early summer, and are commonly found basking. This survey was carried out in daylight hours to look out for live sightings of lizards and habitat suitable for hibernacula.

3.3.8 Invasive Species

Field surveys for invasive species were conducted systematically across the site, focusing on identifying First Schedule invasive species, as well as low to high impact species, as listed by the National Biodiversity Data Centre. Surveys were carried out during the optimal growing season to maximise detection, with specific attention given to disturbed areas, riparian zones, and other high-risk habitats for invasive colonisation. Key features recorded included species presence, extent of infestation, growth stage, and proximity to sensitive habitats. The survey methodology incorporated walkover assessments and habitat-specific searches, with GPS mapping and photographic records used to document findings.

3.4 Statement of Authority of the Ecology Team

Flynn Furney Environmental Consultants have more than 20 years of experience in ecological surveying and management. The company has detailed knowledge on the principles and implementation of both Irish and European environmental legislation. FFEC has worked closely with statutory bodies including the National Parks and Wildlife Service and Waterways Ireland on habitat management and protection projects. Other expertise includes Ecological Impact Assessment, Habitat and Floral Surveys, Bird Surveying, Bat Surveying, Fish and Waterways surveys.

The surveying for this project was carried out by Christopher Doyle (PGDip), Louise MacElwaine (MSc., MCIEEM) and Marco Ragusa (MSc.). This report was compiled and written by Christopher Doyle and Louise Mac Elwain & reviewed by Billy Flynn (BSc, MSc (Agr.), HDip, Dip Ind., MIBiol, MCIEEM, MIEEnvSc. CEnv).

3.5 Ecological Impact Assessment Methodology

This ecological impact assessment has been prepared in accordance with relevant legislation and best practice guidance including:

- The Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment in the UK and Ireland: terrestrial, freshwater and Coastal 2nd Edition. CIEEM (2018, v1.3, updated 2024).

- The EPA's Draft Advice Notes on Preparing Environmental Impact Statements (EPA, 2015a).
- The EPA's Draft Revised guidelines on Information to be Contained in Environmental Impact Statements (EPA, 2015b).
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009).

Ecological features (habitats and species) were evaluated for their conservation importance according to the National Roads Authority's scheme (NRA 2009). For habitats or species, significance of effects was assessed with reference to their conservation status, abundance and distribution. Description of significant effects follows guidance outlined in the EPA Draft Revised Guidelines on the Information to be Contained in EIS (EPA, 2015b). The term **significant effect** as used in this report follows guidance (CIEEM, 2018) and is **an effect that either supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general**. In the case of designated sites, a negative significant effect would be one that undermines the conservation objectives and targets for that site. The significance of impacts on habitats was determined with reference to the value of the feature being affected and the magnitude of the impact. Impacts are considered ecologically significant at a stated geographic scale or are considered not significant.

3.5.1 Introduction and Context

The impacts which may be expected from the development of the proposed Greenway are assessed below. These possible impacts have been assessed under the CIEEM (2018 v1.3 updated September 2024,) and the National Roads Authority guidelines (NRA, 2006). Criteria for assessment of duration of impacts used (EPA 2002). These provide guidance on assessing impact significance upon features of sites proposed for works. Impact significance must be given in context of their respective ecological value of the site and features under study.

3.5.2 Assessing Ecological Value

The ecological value of an area or feature is defined with reference to geographical context. That is, whether it is of value locally, regionally, nationally or internationally. This is assessed by ecologists on reviewing survey outcomes. Key criteria are the presence of European Sites, the site or feature containing protected species, or areas of high biodiversity. The criteria for ecological value are given in the table below.

Table 2: Table for assessing ecological value.

Ecological Value	Criteria
International	• European Sites including Special Areas of Conservation (SAC) & Special Protection Areas (SPA). • Sites that satisfy the criteria for designation as a European Site (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000

	Network. Sites containing ‘best examples’ of the habitat types listed in Annex I of the Habitats Directive. - Resident or regularly occurring populations (assessed to be important at the national level) of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. - Ramsar Sites - World Heritage Sites (Convention for the Protection of World Cultural & Natural Heritage, 1972). - Sites hosting significant species populations under the Bonn Convention - Sites hosting significant populations under the Berne Convention
National	- Areas of Special Scientific Interest (ASSI) or Natural Heritage Area (NHA). National Nature Reserves (NNR). - Marine Nature Reserves (MNR). - Area of Outstanding Natural Beauty (AONB). - Refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended). - Undesignated sites fulfilling the criteria for designation as an ASSI; NNR; MNR; and/or refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended). - Resident or regularly occurring populations (important at the national level) of the following: - Species protected under Wildlife (Northern Ireland) Order 1985 or Wildlife Act 1976, as amended); and/or - Species listed on the relevant Red Data list. - Sites containing ‘viable areas’ of the habitat types listed in Annex I of the Habitats Directive.
Regional	- Sites of Local Nature Conservation Importance (SLNCI). Areas subject to a Tree Preservation Order. - Resident or regularly occurring populations (assessed to be important at the Regional level) of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive. - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife

	(Northern Ireland) Order 1985 (as amended); and/or ○ Species listed on the relevant Red Data list. • Sites containing areas of the habitat types listed in Annex I of the Habitats Directive that do not satisfy the criteria for valuation as of International or National importance. • Regionally important populations of species or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP), if this have been prepared. • Sites containing semi-natural habitat types with high biodiversity in a regional context and a high degree of naturalness, or populations of species that are uncommon within the region. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local	• Locally important populations of priority species or habitats or features of natural heritage importance identified in the Local BAP, if this has been prepared; Resident or regularly occurring populations (assessed to be important at the Local level) of the following: ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive. ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife (Northern Ireland) Order 1985 (as amended); and/or ○ Species listed on the relevant Red Data list containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality. • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value. • Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. • Sites or features containing non-native species that are of some importance in maintaining habitat links.

These values are then qualified as either **low**, **medium** or **high**, depending on their relative importance within their setting. For example, a wetland in an urban area may have high local importance, whereas an

area of amenity grassland may be considered of low ecological local importance.

Table 3: Explanation of qualifiers assigned to habitats and species.

Qualifier	Description
Low	A habitat that supports few species, niches and ecosystem services, or a species that plays a minor role in its ecosystem.
Moderate	A habitat that supports a significant number of species, niches and ecosystem services, or a species that plays a more important role in its ecosystem.
High	A habitat that supports many species, niches and ecosystem services, or a species that plays a very important role in its ecosystem, i.e. a keystone species.

Ecological Impact Assessment must also consider the significance of effects that may be expected arising from a proposed development. CIEEM guidelines (2018, v1.3 updated September 2024) define a significant effect as:

‘...an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’... or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide- ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local.’

It also states that:

‘...an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to authorise a project: it can influence whether permission is given or refused and, if given, whether the effect is important enough to warrant conditions, restrictions or further requirements such as monitoring.’

3.5.3 Assessing Significance of Effects

The criteria for assessment of significance of effects is given in the following table. It should be noted that significant effects may also include beneficial effects.

Table 4: Table for assessing the significance of effects.

Impact		Criteria
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Significance		
Significant Negative Effect	Major Adverse	• Loss of, permanent damage to or adverse impact on any part of a site of international or national importance; • Loss of a substantial part or key feature of a site of regional importance; • Loss of favourable conservation status (FCS) of a legally protected species; • Loss of or moderate damage to a population of nationally rare or scarce species.
	Moderate Adverse	• Temporary disturbance to a site of international or national importance, but no permanent damage; • Loss of or permanent damage to any part of a site of regional importance; • Loss of a key feature of local importance; • A substantial reduction in the numbers of legally protected species such that there is no loss of FCS but the population is significantly more vulnerable; • Reduction in the amount of habitat available for a nationally rare or scarce species, or species that are notable at a regional or county level.
No Significant Effect	Minor Adverse	• Temporary disturbance to a site of regional value, but no permanent damage; • Loss of, or permanent damage to, a feature with some ecological value in a local context but that has no nature conservation designation; • A minor impact on legally protected species but no significant habitat loss or reduction in FCS; • A minor impact on populations of nationally rare or scarce species or species that are notable at a regional or county level.
	Negligible	• No impacts on sites of international, national or county importance; • Temporary disturbance or damage to a small part of a feature of local importance; • Loss of or damage to land of negligible nature conservation value; • No reduction in the population of legally protected, nationally rare, nationally scarce or notable (regional level) species on the site or its immediate vicinity.

		Beneficial and adverse impacts balance such that resulting impact has no overall affect upon feature.
	Minor Beneficial	A small but clear and measurable gain in general wildlife interest, e.g. small-scale new habitats of wildlife value created where none existed before or where the new habitats exceeds in area that habitats lost.
Significant Positive Effect	Moderate Beneficial	Larger new scale habitats (e.g. net gains over 1 ha in area) created leading to significant measurable gains in relation to the objectives of biodiversity action plans.
	Major Beneficial	- Major gains in new habitats (net gains of at least 10 ha) of high significance for biodiversity being those habitats, or habitats supporting viable species populations, of national or international importance cited in Annexes I and II of the habitats - Directive or Annex I of the Birds Directive.

3.5.4 Impact Duration and Likelihood

The duration of impact must also be considered when assessing overall ecological impacts. Criteria for assessment of duration of impacts used (EPA 2002), the following terms when quantifying duration:

Table 5: Impact Duration and Timescales.

Impact Duration	Timescale
Temporary	Up to 1 year
Short-term	1-7 years
Medium-term	7-15 years
Long-term	15-60 years
Permanent	Over 60 years

The likelihood of impacts should also be defined. Assessment of likelihood of impact followed CIEEM guidelines. The assessed likelihood are as follows:

Table 6: Likelihood and Probability of Impacts.

Likelihood	Probability
Almost Certain	Probability estimated at greater than 95%
Probable or Likely	Probability estimated between 50% and 95%
Unlikely	Probability estimated between 5% and 50%
Extremely Unlikely	Probability estimated at less than 5%

3.6 Water Framework Directive

The potential for the proposed development to impact upon water quality is assessed in the context of the EU Water Framework Directive (Directive 2000/60/EC). The WFD established a framework for the management of water resources throughout the EU. The WFD overarching goal is to achieve at least good ecological status and good chemical status for all surface waters by 2015, or by 2021/2027 via extended deadlines. It aims to progressively reduce pollution from priority substances and ceasing or phasing out emissions, discharges and losses of priority hazardous substances. In addition, the WFD requires achievement of compliance with any standards and objectives for protected areas set by other legislation i.e. designated under the Bathing Water Directive, the Shellfish Water Directive, the Drinking Water Directive, the Urban Wastewater Treatment Directive and the Habitats and Birds Directives. A pressures and impacts assessment of human activity on surface waters (and groundwater) was conducted under Article V of the WFD to identify those water bodies that may be at risk of failing to meet the Directive's environmental objectives.

4 Results

4.1 Designated Areas

The proximity of the proposed development area to European sites, and Qualifying Interests (QIs)/ Special Conservation Interests (SCIs) of European sites, is of importance when identifying potentially likely significant effects. Mobile species have 'range' outside of the European site in which they are QI/SCI. The range of mobile QI/SCI species varies considerably, from several meters (e.g. in the case of whorl snails *Vertigo spp.*), to hundreds of kilometres (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have zones of interest (Zois) within proximity of the proposed development, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source. Hydrological linkages between the proposed development and European sites (and their QIs/SCIs)

can occur over significant distances; however, any effect will be site specific depending on the receiving water environment and nature of the potential impact. A reasonable worst-case Zol for water pollution from the proposed development is considered to be the ground and surface water, wherein the proposed works are to be located. The likely effects of the proposed development on European sites have been appraised using a source-pathway-receptor model, where:

- A 'source' is defined as the individual element of the proposed development that has the potential to impact on a European site, its qualifying features and its conservation objectives;
- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor;
- A 'receptor' is defined as the Special Conservation Interests of Special Protection Areas (SPA) or Qualifying Interests (QI) of Special Areas of Conservation (SAC) for which Conservation Objectives have been set for the European sites being screened.
- A source-pathway-receptor model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The source pathway-receptor model was used to identify a list of European sites, and their QIs/SCIs, with potentially links to European sites. These are termed as 'relevant' European sites/QIs/SCIs throughout this report

4.1.1 European Sites

A separate Appropriate Assessment Screening report has been prepared for this project which arrived at the following conclusion:

'It is the conclusion of this report that, on the basis of objective information and in view of best scientific knowledge, while applying the precautionary principle, the proposed development, either individually or in combination with other plans or projects, and without relying on any mitigation measures, is not likely to have a significant effect on any European Sites, in view of each site's conservation objectives. There is no reasonable scientific doubt in relation to this conclusion.'

4.1.2 Nationally Designated Sites

Natural Heritage Areas (NHAs) are sites deemed to be of national ecological importance and are afforded protection under the Wildlife (Amendment) Act 2000. Many NHA boundaries overlap with European sites. The proposed NHAs (pNHAs) have not been statutorily proposed or designated under the Wildlife Act (as amended). However they are afforded some protection under planning legislation and objectives are included in the current County Development Plan specifically aimed at protecting pNHAs or providing complimentary protective measures that enhance the network of pNHAs.

The Cabinteely/St. Bride's Stream follows much of the proposed route, linking various habitats along its course. It emerges from underground at Glen Lawn Drive, flows southward through Cabinteely Park, continues along a riparian corridor at Carraig Glen, and joins the Carrickmines River at Bride's Glen, where

it becomes the Loughlinstown River approximately 400 meters from the route's end. From this point, the river flows south for about 1 km through a combination of urban and semi-natural landscapes before transitioning into the Shanganagh River. At this juncture, it enters Loughlinstown Wood pNHA, traversing 1 km of this protected area before ultimately discharging into Killiney Bay.

Loughlinstown Woods (pNHA: 001211) is currently designated as a pNHA. Little information could be found on this site (no site synopsis available), however it is described in a 1973 report by The National Institute for Physical Planning and Construction Research as follows:

‘This is chiefly an amenity woodland giving the first illusion of being in the country to the traveller going south from-Dublin and a fine outlook for the hospital and other housing development on Commons Road. It also has some ecological interest in its structure which is briefly outlined above and serves as an important refuge area in a zone of pasturage. Many organisms which feed in the surrounding fields are totally dependent on such a refuge for shelter and consequent survival. Vulnerability: As with any area of woodland, felling or reafforestation with coniferous species are the most serious threats.’

A 2012 study by Denyer Ecology titled ‘Assessment of the nature conservation value of Loughlinstown Wood’. The report mentions the presence of an active badger sett, the presence of at least 4 bat species; Common Pipistrelle, Soprano Pipistrelle, Daubenton’s and Myotis species. Evidence of Otter from other surveys cited and wet Willow-Alder-Ash Woodland with a ‘moderate’ conservation value as assigned under the National Survey of Native Woodlands 2010.

This pNHA is not considered to fall within the zone of influence of the proposed project due to the minor scale of the works. Best practice construction measures will be implemented to prevent pollution of nearby watercourses during the construction phase. While potential impacts could include the spread of invasive species downstream if disturbed or dislodged during construction, invasive species surveys have been conducted, and appropriate mitigation measures are detailed in this report. Giant Hogweed was noted as abundant within the wet woodland in Loughlinstown woods (Denyer, 2012), it is likely seeds are prevalent within the area.

All other sites are more distant and lack identifiable connections to the proposed works. Given the nature and magnitude of the project, there is no known route for impacts between the proposed works and the remaining Natura 2000. As a result, the proposed works are deemed highly improbable (NRA, 2009) to cause significant direct or indirect effects on any other protected sites, and they are not further considered in this assessment.

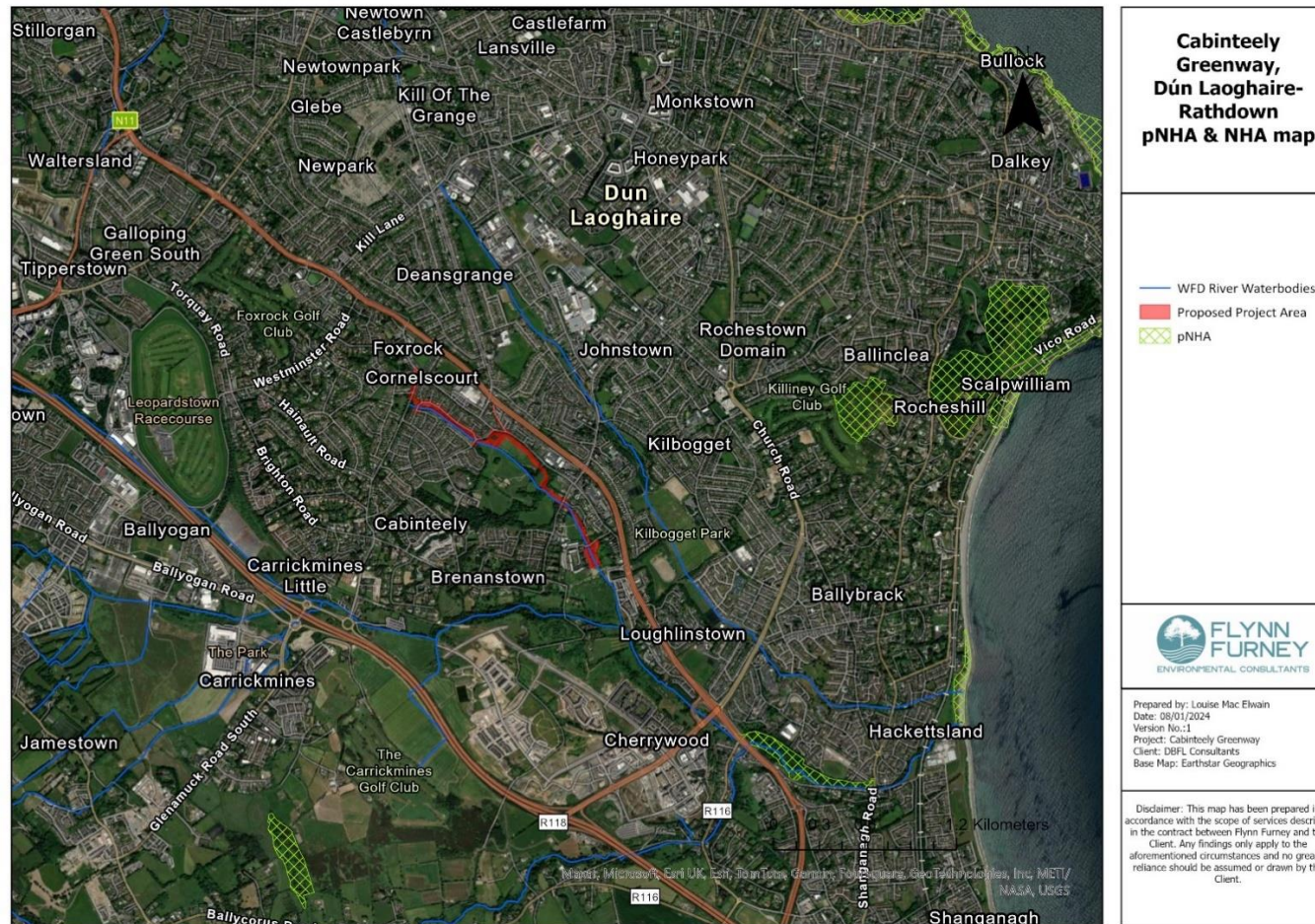


Figure 5: pNHAs and NHAs within the ZOI

4.1.3 All Ireland Wetlands Survey

Wetland is a collective term for ecosystems (habitats and their associated species) whose formation has been dominated by water, and whose processes and characteristics are largely controlled by water. A wetland is a place that has been wet enough for a long enough time to develop specially adapted vegetation and other organisms (Maltby, 1986). They occur where the water table is at or near the surface of the land, or where the land is covered by a layer of shallow water, either throughout the entire year or seasonally.

The All-Ireland Wetland Survey In conjunction with Foss Environmental Consulting, Wetland Surveys have developed an online map of all known wetlands in the Republic of Ireland. This map was investigated to identify any wetlands which may be affected by the proposed development.

Cabinteely Park Pond is listed on the AIWS map viewer, described as:

‘Ornamental pond in former demesne, with exotic planting along edge. Wildflower meadow planted to north of pond with numerous trees of 6 types of apple, and various pear and plum varieties. Tall herb swamp and reed swamp occur in the margins of the pond. Open to public.’

It has been assigned low conservation value. The proposed route will run within c. 45 m of this pond. Impacts upon the pond are not predicted, however appropriate water protection measures will be followed, as outlined in Section 7.

4.2 Biodiversity Records

4.2.1 National Biodiversity Data Centre Records

Records from the National Biodiversity Data Centre (NBDC) for 2 km grid square SO22H were downloaded. The results are presented in Table 7.

Table 7: NBDC records of protected species in proximity to the proposed project site.

Species	Record Count	Date of last record	Title of Datasheet	Protection
Common Frog (<i>Rana temporaria</i>)	22	20/04/2020	Amphibians and reptiles of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
Barn Swallow (<i>Hirundo rustica</i>)	1	06/07/2010	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Black-headed Gull (<i>Larus ridibundus</i>)	12	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Brent Goose (<i>Branta bernicla</i>)	1	10/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Coot (<i>Fulica atra</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kestrel (<i>Falco tinnunculus</i>)	1	28/12/2010	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kingfisher (<i>Alcedo atthis</i>)	1	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Linnet (<i>Carduelis cannabina</i>)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Coot (<i>Fulica atra</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation

				Concern >> Birds of Conservation Concern - Amber List
Common Kestrel (<i>Falco tinnunculus</i>)	1	28/12/2010	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kingfisher (<i>Alcedo atthis</i>)	1	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Redshank (<i>Tringa totanus</i>)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Starling (<i>Sturnus vulgaris</i>)	11	24/04/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Swift (<i>Apus apus</i>)	1	06/07/2010	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Wood Pigeon (<i>Columba palumbus</i>)	16	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Eurasian Oystercatcher (<i>Haematopus ostralegus</i>)	3	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Eurasian Teal (<i>Anas crecca</i>)	5	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III,

				Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Eurasian Wigeon <i>(Anas penelope)</i>	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
European Golden Plover <i>(Pluvialis apricaria)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Great Black-backed Gull <i>(Larus marinus)</i>	2	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Greater Scaup <i>(Aythya marila)</i>	1	23/11/2010	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Herring Gull <i>(Larus argentatus)</i>	3	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

House Martin (<i>Delichon urbicum</i>)	2	02/05/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
House Sparrow (<i>Passer domesticus</i>)	7	24/04/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Little Egret (<i>Egretta garzetta</i>)	13	27/02/2023	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species
Mallard (Anas platyrhynchos)	17	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Mediterranean Gull (<i>Larus melanocephalus</i>)	3	14/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mew Gull (<i>Larus canus</i>)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mute Swan (<i>Cygnus olor</i>)	3	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Northern Lapwing (<i>Vanellus vanellus</i>)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Peregrine Falcon (<i>Falco peregrinus</i>)	1	23/11/2010	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species
Red Kite (Milvus milvus)	1	26/05/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Rock Pigeon (<i>Columba livia</i>)	2	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Tufted Duck (<i>Aythya fuligula</i>)	1	29/12/2010	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Water Rail (<i>Rallus aquaticus</i>)	2	16/01/2023	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Brown Long-eared Bat (<i>Plecotus auritus</i>)	4	06/05/2017	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Daubenton's Bat (<i>Myotis daubentonii</i>)	2	06/05/2017	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Eurasian Badger (<i>Meles meles</i>)	1	13/10/2011	Road Kill Survey	Protected Species: Wildlife Acts
European Otter (<i>Lutra lutra</i>)	1	05/05/1980	Otter Survey of Ireland 1982	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Lesser Noctule (<i>Nyctalus leisleri</i>)	6	06/05/2017	National Bat	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts

			Database of Ireland	
Natterer's Bat (Myotis nattereri)	1	17/09/2005	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Soprano Pipistrelle (Pipistrellus pygmaeus)	8	06/05/2017	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
West European Hedgehog (Erinaceus europaeus)	3	20/04/2021	Hedgehogs of Ireland	Protected Species: Wildlife Acts

4.2.2 NPWS Records

A search was made of the NPWS Flora Protection Order map viewer which shows all the current list of plant species protected by Section 21 of the Wildlife Act, 1976 is set out in the Flora (Protection) Order, 2022, which supercedes orders made in 1980, 1987, 1999 and 2015.

Two instances of Red Hemp-nettle (*Galeopsis angustifolia*) were recorded in Cabinteely in 1856.

4.2.3 DLR County Council Biodiversity Records

4.2.3.1 Protected Species

To support this impact assessment, Dún Laoghaire-Rathdown County Council (DLR CoCo) granted access to their internal biodiversity records. These records were reviewed to determine whether any protected species or habitats of conservation concern have been previously identified within, or with connection to, the proposed development area. It is noted that, as per their terms for use of this data, DLR CoCo makes no guaranteed as to the accuracy, timeliness or completeness of any of the data. DLR CoCo shall have no liability for the data (or lack thereof), for any decisions made, or actions taken (or not taken) based upon any of the data provided.

Some of the provided ecology datasets have been collated since 2008, with desktop review and some ground truthing, providing ecological updates in more recent years. However, these datasets are **not exhaustive** and ecological surveys/data collection are ongoing across the County. Therefore, care has been taken to ensure that the most up-to-date ecological data collection and field surveys relevant to the requirements of this project have also been carried out.

Data on protected species such as Badger setts, Otter holts, rare plants etc., will be kept confidential and is provided only for the purposes of understanding where protected species require consideration in the plan or project, the details of which will not be shared publicly or with others.

The records reviewed included:

- GIS data from a study on Light-bellied Brent Geese (LBBG) by the University of Exeter (2020) showed feeding grounds within nearby Clonkeen College pitches and Seapoint Rugby club but no evidence of use of grasslands within the project footprint. This study was not exhaustive however, and lack of evidence does not mean that no LBBG are present within Cabinteely Park, only that feeding was confirmed at Clonkeen and Seapoint.
- GIS data of otter records from a survey by Triturus (2022) show evidence that otter is using the Cabinteely stream and Cabinteely Park Pond.
- GIS data for tufa spring records in DLR by Denyer Ecology (2023) showed no overlap of known tufa spring locations and the project footprint, however Cabinteely Park was not surveyed as part of this study. Field surveys carried out to support this report looked for signs of tufa forming/petrifying spring, though none were found within the zone of influence of the proposed project.

Given the sensitive nature of the aforementioned species and habitats all the data will not be shared in this report but has contributed to the assessment of impacts and analysed on GIS mapping systems for overlap.

4.2.3.2 Other non-protected species data

The project scheme overlaps with a number of areas which have been designated by DLR CoCo as 'Parks Pollinator Sites.' These sites are currently being managed as pollinator-friendly areas with reduced cutting and other forms of meadow management. Shapefiles as provided by DLR did not include areas within Cabinteely Park and so these have been added based on survey data (figure 4). The proposed route passes through four of these sites, however in all but one instance there is an existing path already running through the site, which will be built upon.

Only in the rectangular area at the southeast end of Cabinteely Park (figure 4) will some pollinator habitat be lost, approximately 400 m², however it is not known that this area is a DLR Pollinator Site or not, as Cabinteely Park was not included in the DLR Pollinator Site shapefiles. This area has been marked as a pollinator site in this report as it was currently under management as a long meadow and had a 'NBDC Managed for Wildlife' sign at the time of survey.



Figure 6: DLR CoCo pollinator sites. The proposed route passes through four of these sites, mostly clustered around Brennanstown Avenue.

4.2.4 Invasive Species Records

4.2.4.1 NBDC Records

Records from the National Biodiversity Data Centre (NBDC) for 2 km grid square SO22H were downloaded and reviewed for invasive species records. The following invasive species have been previously recorded in these squares:

Table 8: Invasive species records withing grid square SO22H (NBDC).

Species	Record Count	Date of last record	Title of Datasheet	Protection
American Skunk-cabbage (<i>Lysichiton americanus</i>)	2	04/04/2021	National Invasive Species Database	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Butterfly-bush (<i>Buddleja davidii</i>)	1	17/02/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Cherry Laurel (<i>Prunus laurocerasus</i>)	2	20/02/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species
Floating Pennywort (<i>Hydrocotyle ranunculoides</i>)	1	18/01/2018	National Invasive Species Database	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Giant Hogweed (<i>Heracleum mantegazzianum</i>)	1	14/05/1985	National Invasive Species Database	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Himalayan Honeysuckle (<i>Leycesteria formosa</i>)	2	16/08/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Nuttall's Waterweed (<i>Elodea nuttallii</i>)	6	31/12/2007	National Invasive Species Database	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)

Three-cornered Garlic (<i>Allium triquetrum</i>)	4	03/05/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Traveller's-joy (<i>Clematis vitalba</i>)	1	31/12/1969	BSBI tetrad data for Ireland	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Brown Rat (<i>Rattus norvegicus</i>)	3	12/04/2017	National Invasive Species Database	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Eastern Grey Squirrel (<i>Sciurus carolinensis</i>)	36	16/01/2023	Mammals of Ireland 2016-2025	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)

Based on the reviewed records, a search of the NBDC (National Biodiversity Data Centre) maps was conducted to identify any overlaps with invasive flora within the project area. The search revealed that only two invasive species, Three-cornered Leek and American Skunk Cabbage, were present within the project footprint.



Figure 7: Locations of Three-cornered leek (purple) and American skunk cabbage (yellow). (NBDC maps 2024).

4.2.4.2 DLR Records

DLR Records provided maps of previous invasive species surveys in the area which identify Giant Hogweed as prevalent just south of the project site.



Figure 8: DLR Invasive species records.

4.3 Water Framework Directive

The proposed route alignment runs along Cabinteely Stream (EPA: Cabinteely Stream; IE_EA_10C040350) over which it will cross at least once. This stream drains the Dargle sub catchment, which is a part of the larger Ovoca-Vartry catchment and empties into the Loughlinstown River (EPA: Carrickmines Stream; IE_EA_10C040350) which in turn empties into the Shanganagh River (EPA: IE_EA_10S010600). This flows into Killiney Bay. Under the Water Framework Directive (WFD) status assessment 2016-2021, the three streams have been classed under the not at risk status. Low, medium or high probability of fluvial flooding are not noted by the Catchment Flood Risk Assessment and Management programme (CFRAM).

5 Field Survey Results

5.1 Habitats

5.1.1 Overview of Habitats and Habitats Classification

Habitats within the study area were mapped according to Level 3 of the Heritage Council classification

(Fossitt, 2000) following the Heritage Council's *Best Practice Guidance* (Smith et al., 2011) and the Joint Nature Conservation Committee's (JNCC) *Handbook for Phase 1 Habitat Survey – a technique for environmental audit* (JNCC, 2010). The Heritage Council's *A Guide to Habitats in Ireland* (Fossitt, 2000) is the standard habitat classification system used in Ireland. Habitats were also assessed for correspondence to the Habitats Directive Annex I habitat types (European Commission, 2013).

The following section describes the habitats found within the proposed project area. Habitats described are shown in figures 9-12. Pictures of the habitats present are available in Appendix II.

5.1.2 FW2 - Lowland River/Riparian Vegetation

This category includes watercourses, or sections of these, where fine sediments are deposited on the riverbed. Depositing conditions are typical of lowland areas where gradients are low, and water flow is slow and sluggish. In a natural state these rivers erode their banks and meander across floodplains. Because of this, most have been modified to some extent to control water flow, facilitate navigation or prevent flooding and erosion. The Cabinteely/St. Bride's Stream has been heavily modified and has lost a lot of its riparian zone, which has largely been reduced to just the slopes of the riverbank. Beyond common field species, aquatic species such as Water Cress (*Nasturtium officinale*), Wild Angelica (*Angelica silvestris*) and Flag Iris (*Iris pseudacorus*) were occasional.

5.1.3 FW4 – Drainage Ditches

A small drainage ditch can be found at the eastern end of Cabinteely Park, where the route enters the woodland area. This flows into the Cabinteely/St. Bride's Stream. It had a very low flow at the time of surveying. Typical field species (Docks, Nettles, Grasses, etc.) were present with the addition of Water Cress.

5.1.4 WD1 - Mixed Broadleaved Woodland

Several pockets of mixed broadleaved woodland can be found throughout the site, ranging several square metres in the plot of trees at the Cornelscourt Junction, to the much larger woodland found within Cabinteely Park. These were mostly composed of Beech (*Fagus sylvatica*), Oak (*Quercus robur*), Ash (*Fraxinus excelsior*), with occasional Elm (*Ulmus sp.*), Lime (*Tilia spp.*) and Sycamore (*Acer pseudoplatanus*) appearing occasionally. Poplars (*Populus spp.*) and Hawthorn (*Crataegus monogyna*) are more common within the park than in other areas along the route, and Alder (*Alnus glutinosa*) is prevalent in wetter areas, such as along the riverbanks. Birch (*Betula pendula*) becomes more common at the southern end of the survey area, beyond the park. A single large Horse Chestnut (*Aesculus hippocastanum*) is present in the western part of the park, in an island of woodland within the grassland. Ivy (*Hedera helix*) was present in the understory of every area of woodland.

The understory generally consists of common herb and woody species that can be found mostly at woodland edges, such as Hogweed (*Heracleum mantegazzianum*), Blackberry (*Rubus fruticosus agg.*), Nettle (*Urtica dioica*), Cleavers (*Gallium aparine*), Privet (*Ligustrum vulgare*), Wood Avens (*Geum*

urbanum), Ivy (*Hedera helix*), Sedges (*Carex spp.*).

5.1.5 WD2- Mixed broadleaved/Conifer woodland WD2.

Conifers were uncommon but present in some areas, with only a few Pines (*Pinus spp.*) near the junction at Cornelscourt. The stretch of trees along the Cabinteely/St. Bride's Stream at Glen Lawn Drive is similarly classified as woodland as, though the fringe vegetation along the banks of the river holds some aquatic plants, much of the wooded area here, including the understory, most resembles this habitat type. Cherry Laurel (*Prunus laurocerasus*) is occasional along the route, except within the park, where it makes up a significant part of the northern woodland area and dense stands near Carraig Glen.

5.1.6 WD5 – Scattered Trees and Parkland

This category can be used in situations where scattered trees, standing alone or in small clusters, cover less than 30% of the total area under consideration but are a prominent structural or visual feature of the habitat. Small pockets of trees can be found in sections of amenity grassland throughout the route which contain Monterey Pine (*Pinus radiata*), Sessile Oak (*Quercus petraea*), Holly (*Ilex aquifolium*), Hawthorn, Beech, Sycamore and Birch.

5.1.7 WS2- Immature Woodland

This habitat designation has been used for the planted trees to the north of Cabinteely Pond. There are over six types of Apple (*Malus spp.*), and various pear (*Pyrus spp.*) and plum (*Prunus spp.*) varieties. Hazel has also been planted.

5.1.8 WL1 – Hedgerow

A very moderate amount of hedgerow is present at the edges of some housing estates. These were mostly composed of the non-native invasive species Cherry Laurel.

5.1.9 WL2 – Treeline

Many of the treelines in residential areas were of typical species, predominantly Whitebeams (*Sorbus spp.*) and Sycamore. A large multi-species semi-natural treeline can be found running along the northern bank of the river within the park. This had a mix of the species listed above in WD2, with a denser hedgerow layer of Hawthorn, Blackthorn, Privet and Elm.

5.1.10 GA2 - Amenity Grassland

The most common habitat type by area, amenity grassland can be found along the entire length of the route. While grasses dominate, occasional other common species like Dandelion (*Taraxacum officinalis*), Clovers (*Trifolium spp.*), Docks (*Rumex spp.*) and Daisies (*Bellis perennis*) were frequent. Some areas appear to have been left to grow long and have not been mowed in more than one year. Some of these areas tend more towards neutral grassland (below).

5.1.11 GS1 - Neutral & Calcareous Grassland

Dry calcareous and neutral grassland may comprise a wide range of grasses and broadleaved herbs. Species richness varies and can be high. Typical grasses recorded include bents (*Agrostis spp.*), meadowgrasses (*Poa spp.*), Meadow Foxtail (*Alopecurus pratensis*), Cock's-foot (*Dactylis glomerata*), Yorkshire-fog (*Holcus lanatus*) and Perennial Ryegrass (*Lolium perenne*) may also be present but should not dominate the sward. The herb community included Clovers, Yarrow (*Achillea millefolium*), Common Knapweed (*Centaurea nigra*), Selfheal (*Prunella vulgaris*), Plantains (*Plantago spp.*), Common Bird's-foot Trefoil (*Lotus corniculatus*), Hairy Bittercress (*Cardamine hirsuta*) in wetter areas, and Oxeye Daisy (*Leucanthemum vulgare*).

The area of grassland north of the pond has been planted with a wildflower mix and had a higher diversity than other areas, including Field Scabious (*Knautia arvensis*) as well as several Apple (*Malus domestica*) trees. Certain areas of amenity grassland have been left for long enough that they have fallowed and grown tall, with a herb make-up suggesting neutral grassland (and sometimes more calcareous) in several areas within the park.

On the south side of the stream within the park, many Orchids were found within the grassland that had been left to grow, including Heath Spotted Orchid (*Dactylorhiza maculata*), possibly other *Dactylorhiza* species, and a type of Marsh Orchid (*Dactylorhiza sp.*), though ground conditions were largely dry. Presence of Marsh Orchid can also indicate Wet Grassland (GS4), however ground conditions were dry at the time of survey. The grassland here can occasionally hold water when it rains. Calcareous grasslands with either high numbers or diversity of orchids correspond to the priority habitat, 'semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometea*) (*important orchid sites) (6210)'. This grassland is outside of the project footprint and has not been mapped in habitat maps.

5.1.12 GS2 - Dry meadows/Grassy verge

This category has been used for unmown sections of rank grassland that contain a high proportion of tall, coarse and tussocky grasses such as False Oat-grass (*Arrhenatherum elatius*) and Cock's-foot (*Dactylis glomerata*). Broadleaf herbs include Creeping Cinquefoil (*Potentilla reptans*) and clovers (*Trifolium spp.*), Hogweed (*Heracleum sphondylium*), Nettle (*Urtica dioica*) and Common Knapweed (*Centaurea nigra*).

5.1.13 FL8 - Artificial Lakes and Pond

This category is used for artificial or ornamental bodies of standing water that found in parks, demesnes, gardens or golf courses. Cabinteely Park Pond falls into this category of a mesotrophic waterbody, with small patches of algae and waterweeds visible. Tall herbs like Wild Angelica, Flag Iris and Bulrush (*Scirpoides holoschoenus*) were all present at the fringes of the pond, thus the fringes perhaps align more with tall herb swamp, as it is classified on the All-Ireland Wetland Survey Maps.

Cabinteely Park Pond is listed on the AIWS map viewer, described as:

‘Ornamental pond in former demesne, with exotic planting along edge. Wildflower meadow planted to north of pond with numerous trees of 6 types of apple, and various pear and plum varieties. Tall herb swamp and reedswamp occur on the margins of the pond. Open to public.’ It has been assigned low conservation value.

Tall-herb swamps can include pockets of the annexed habitat ‘hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430)’. However, this habitat does not contain any of the indicator species for this Annex habitat.

A second pond is present towards the eastern end of the route where the greenway meets Brennanstown Avenue. This pond could not be fully surveyed as it is surrounded by a dense ring of woodland. This pond is not in the direct route of the greenway; however the route does run within c. 10 m of the edge of the woodland.

5.1.14 Significance of Habitats

The majority of the habitat types found surrounding the site are those associated with urban areas and of low ecological significance (low local). No species listed on the Flora (Protection) Order 2022 were present. The patch of grassland within the park, south of the stream may correspond with ‘semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometea*) (*important orchid sites) (6210)’. This area will not be impacted by the development and is well separated from the proposed works at the far side of the stream.

Table 9 below shows the habitats found during the survey along with their evaluation of ecological importance on an international to local scale, as per tables 2 and 3 in Section 3. A map of habitats encountered is included below the table in figures 9-12. An assessment of potential impacts these habitats is presented in Section 6.1.1.

Table 9: Significance of habitats found within the proposed development footprint.

Ecological Feature	Evaluation
Amenity Grassland (GA2)	Low Local. Grasslands generally support few species, though do provide forage for some migratory birds. Those present with the survey area were largely maintained as lawns, with two areas in the park managed as playing fields and several areas that are being managed as meadows, though these are addressed as Calcareous/Neutral Grassland below. Those of Annex importance have been ruled out by the AA Screening, however.
Dry calcareous and neutral grassland (GS1)	High Regional Provides a more diverse mix of species, including two orchid species. This

	habitat has links to Annex I orchid-rich calcareous grasslands [6210]. Though in the park, these orchid-rich sites are not within the footprint of the development.
Grassy verges (GS2)	Low Local Similar to amenity grassland, though can support significant invertebrate communities if let grow long.
River (FW2)	High Regional/ Moderate International The river is of significant regional importance, being one of the larger rivers in the area, connecting several habitats, including pNHAs and European Designated Sites. The river may also support Otter, which is an Annex species of international importance. Impacts upon the river habitat may also present as impacts upon this species.
Drainage Ditches (FW4)	Moderate Local These connect to the local river and provide important areas of standing water.
Artificial Pond (FL8)	High Local This pond is the largest area of standing water in the vicinity. It may support water birds, Otter (international significance), and many invertebrates.
Broadleaved woodland (WD1)	High County Areas of woodland habitat, including linear corridors such as hedgerows and treelines are of significant county importance, adding to the tree cover, carbon sequestration and habitat connectivity.
Mixed broadleaved/ Conifer woodland (WD2)	High County Areas of woodland habitat, including linear corridors such as hedgerows and treelines are of significant county importance, adding to the tree cover, carbon sequestration and habitat connectivity.

Scattered trees/ Parkland (WD5)	High Local Trees provide a similar function to woodland cover, albeit less dense. Undisturbed parkland provides a less disturbed refuge from the urban environment.
Immature woodland/ Orchard (WS2)	High Local Again, provide a similar benefit to woodland. Immature woodland required to replace and expand existing mature woodland.

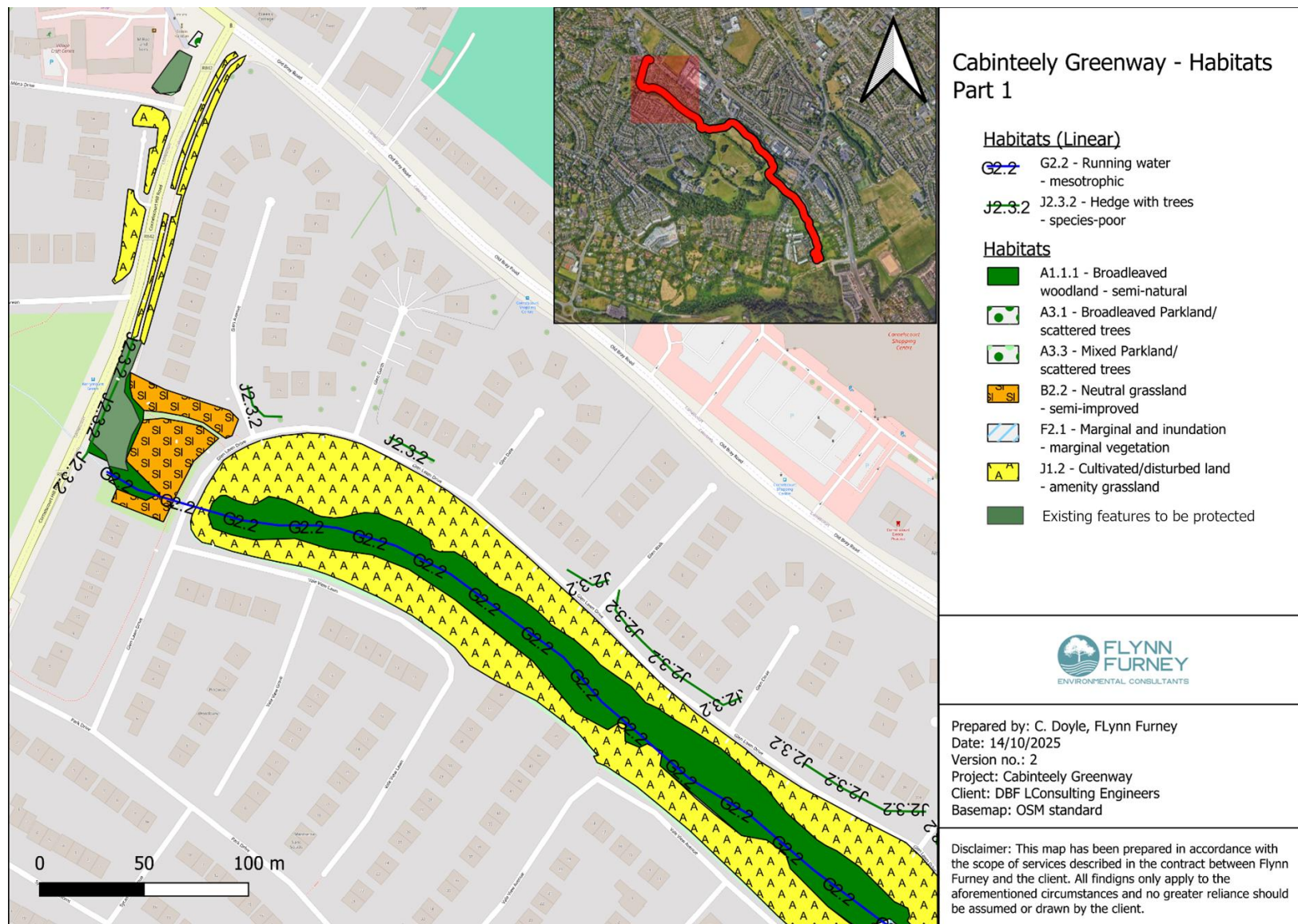


Figure 9: Overview of habitats along the greenway route (1/4).

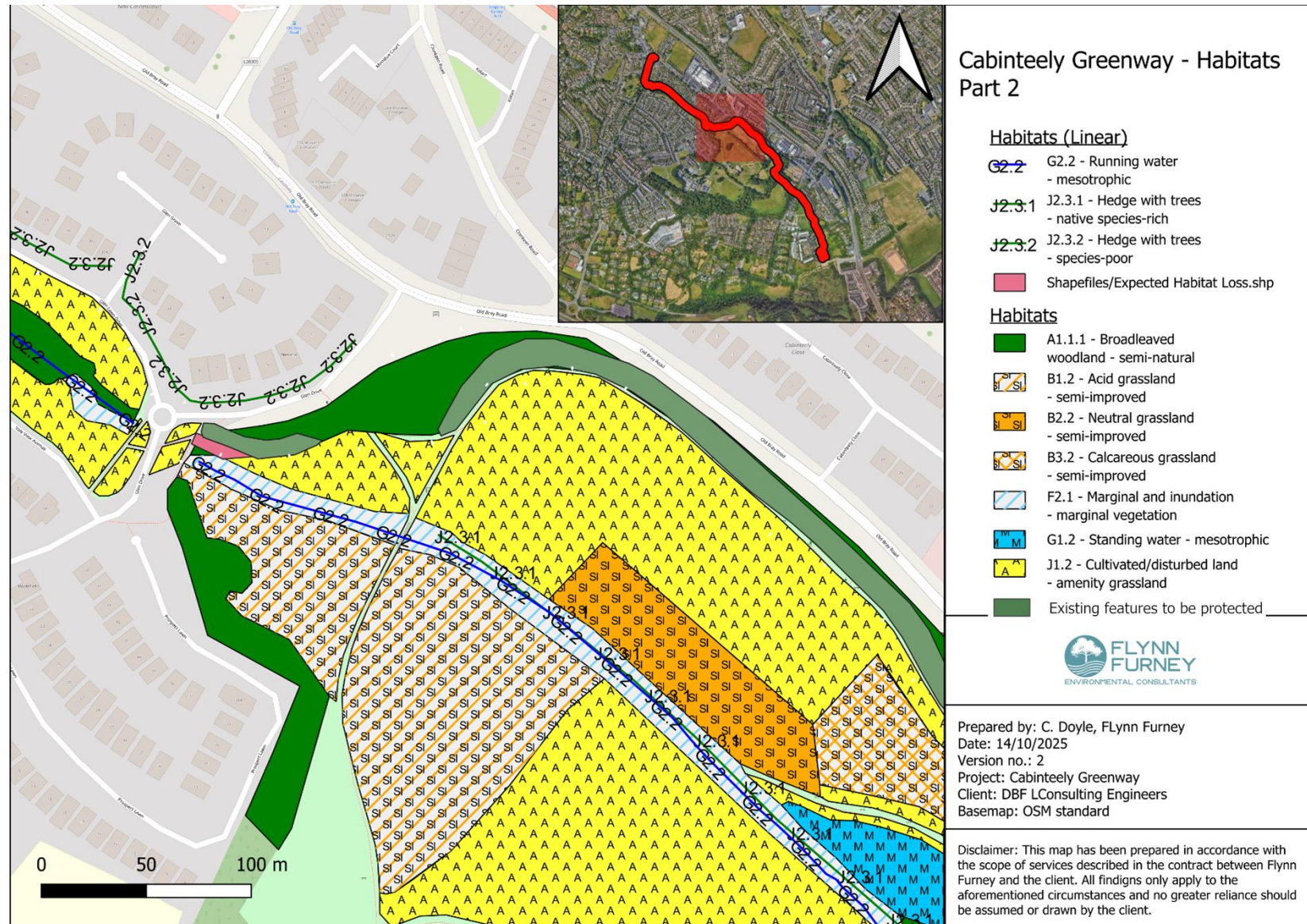


Figure 10: Overview of habitats along the greenway route (2/4).

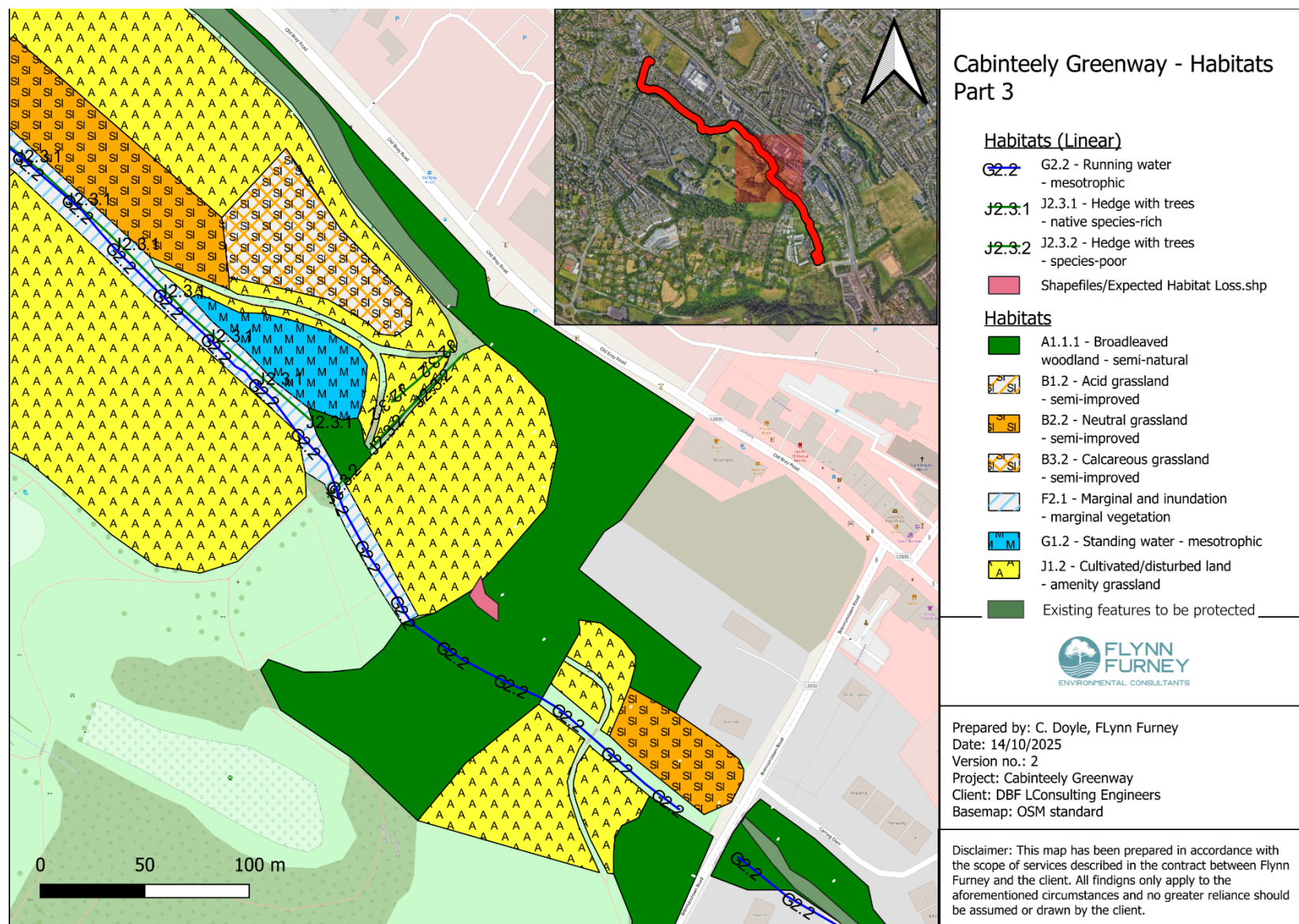
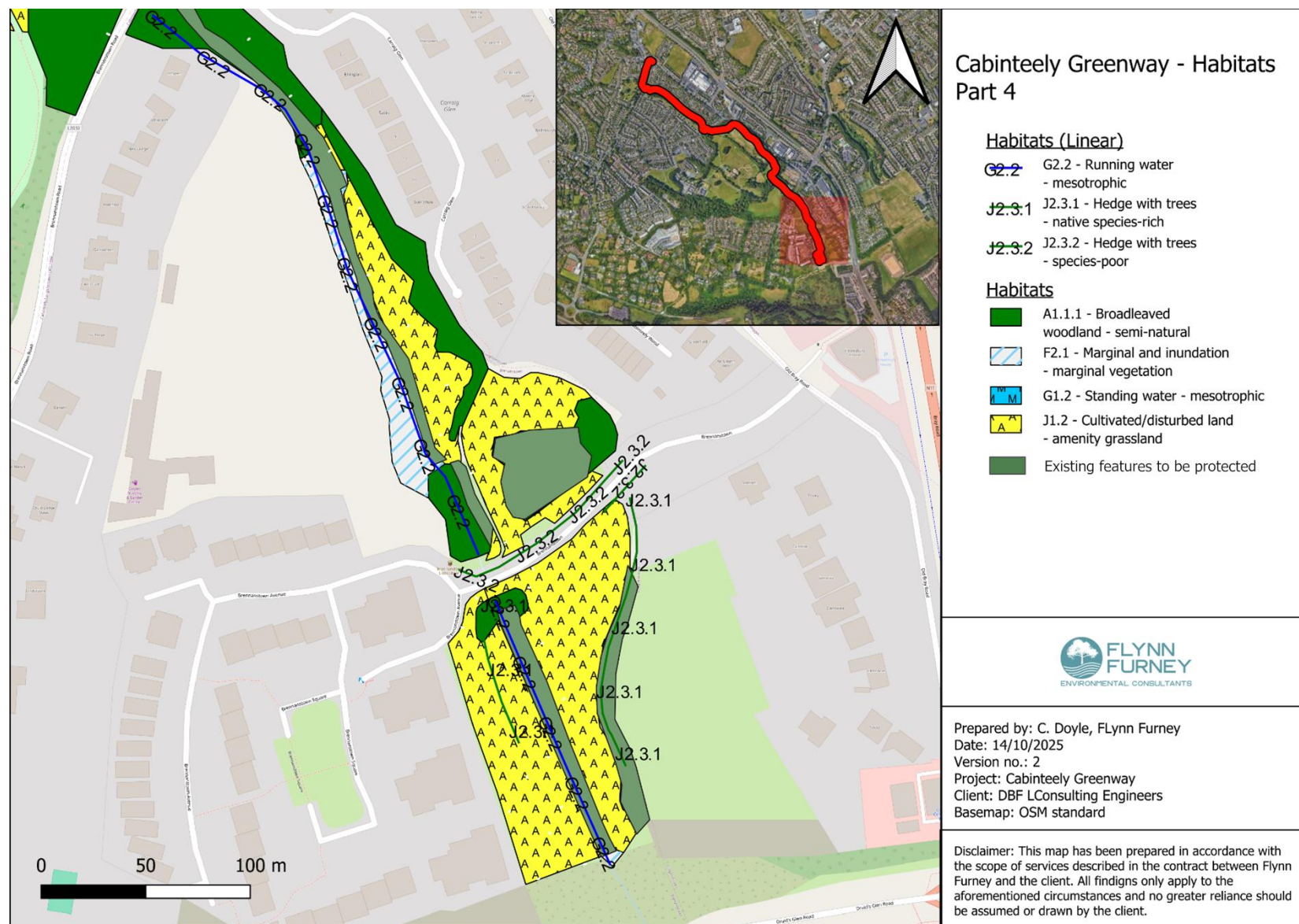


Figure 11: Overview of habitats along the greenway route (3/4).



5.1.15 Invasive Species

Several invasive plant species were encountered during the survey. One low-impact species, New Zealand Flax (*Phormium tenax*) was noted. Those of medium impact include Winter Heliotrope (*Petasites pyrenaicus*), Montbretia (*Crocasmia x crocosmiiflora*), and Himalayan Honeysuckle (*Leycesteria formosa*). One High impact but non-regulated invasive species, Cherry Laurel, is also present throughout. Alexanders is another species, known to be invasive but yet to be assigned an invasive species rating which was prevalent and has been recorded on IAS (invasive Alien Species) mapping.

Those listed on the First Schedule of the Wildlife Acts (amended), meaning INNS of high impact and significant concern and subject to legal controls include Giant Hogweed (*Heracleum mantegazzianum*), and Three-Cornered Leek (*Allium triquetrum*), and American Skunk Cabbage (*Lysichiton americanus*). Of these, Winter Heliotrope (medium-impact) was the most abundant and widespread. Butterfly Bush and Montbretia (both medium impact) occurred occasionally throughout. Old man's beard (medium-impact) was found outside the project footprint on Carrig Glen Road. It easily spreads by seed and would likely spread into the project footprint when soil is exposed. Cherry Laurel (high-impact) can be found in the woodland areas throughout, in particular in a large hedge along the north side of the park.

First Schedule invasive species, American Skunk Cabbage and Three-cornered Leek, were concentrated in the area of Glen Lawn Drive. Evidence of Giant Hogweed (*Heracleum mantegazzianum*) was identified at the southeastern end of the proposed route, marked by a sign indicating prior chemical treatment. While no new leaves or emerging plants were observed in the vicinity of the treatment site, it is highly likely that the soil remains contaminated due to the plant's prolific seed production and the long viability of its seeds in the soil. Anecdotal evidence of Japanese Knotweed (*Fallopia japonica*) was given prior to the survey, however no records of Japanese Knotweed in the immediate area were found during the desk study and no evidence of the plant was found during the field survey.

Appropriate management of these species will be required where the route intersects with their distribution. This can be included as an INNS Management Plan, as a part of the project-specific Construction Environmental Management Plan (CEMP). All invasive species have been mapped and can be seen on maps below. The approximate locations of these have been recorded, but maps do not show extent.



Figure 13: Invasive Alien Species present along the proposed route (1/2).



Figure 13: Invasive Alien Species present along the proposed route (2/2).

5.2 Fauna

5.2.1 Mammals

5.2.1.1 Badger

No evidence of badger was found along the survey area. Several mammal trails were observed within the woodland at the eastern end of the park, though no burrows, scat, or other identifying features were found. It is still possible that this species passes through the area, but activity or refuges have not been recorded. Trails are likely that of Foxes (*Vulpes vulpes*), or domestic pets.

5.2.1.2 Otter

Otters are known to be common in streams characterised by 'good' water quality. The Cabinteely/St. Bride's stream however does not have good quality riparian habitat, in particular within the park grounds, where there is little to no vegetative cover, with amenity grassland coming right to the top of the bank. South of the park, along the river by Carraig Glen between Brennanstown Rd. and Brennanstown Ave., the habitat becomes more suitable for Otters as there is more vegetative cover and lower levels of human presence.

Despite this, no signs of Otter presence were observed in the nearby watercourse during ground surveys. The NBDC does not have any recent records of Otter activity around the proposed route area. However, DLR Biodiversity records show some Otter activity within the park (Triturus, 2020). The council has also received recorded footage of Otter using the Cabinteely Pond. Otters are an Annex species listed on the Habitats Directive, and as such are of international importance. As such, it can be assumed that the Cabinteely Stream remains viable Otter habitat, and may currently, or in the future, be home to a population of Otters.

5.2.1.3 Pine Marten & Red Squirrel

No evidence of Pine Marten or Red squirrel was found within the project site or the surrounding woodland. There are no recent records of these species in the immediate area, though it does not mean they have never visited the site nor that a population will not exist in the future. The nearest NBDC record was Red Squirrel in 2012, just under 1 km to the northeast.

5.2.1.4 Other Terrestrial Mammals

Other mammal species, such as Red Fox, Stoat (*Mustela erminea*) Western European Hedgehog, Mice (*Apodemus sylvaticus* and *Mus Musculus*), Shrews (*Crocidura russula* and *Sorex minutus*) and Rats (*R. norvegicus* and *R. rattus*) may all be found both within the park and along the greenway route. Records of some of the above species were noted in the general area during the desk study, though no direct

evidence of any beside Red Fox¹ was found on site. These species each have important niches within the ecosystem, from scavenging to providing food for larger predators. Despite a lack of evidence, any or all of these mammals may be found to use habitats along the route. All of these species have some general protection under the Wildlife Acts, with the exception of the Hedgehog which is afforded the same specific protection as the likes of Badger and Pine Marten.

5.2.2 Bats

The 2003 survey did not observe bats emerging from the trees within the footprint of the site during the survey. It recorded that there are numerous trees with bat roost potential, in particular within Cabinteely House Park but also towards Cornelscourt Hill Road. All trees within the footprint of the proposed route were assessed from the ground with binoculars for bat roosting potential in 2024, however none were found with significant potential roosting features. This does not preclude the existence of bat roosting features, as they may not have been observable from the ground, or have formed since. The woodland area within Cabinteely Park where the proposed route will pass from amenity grassland, through the trees, and connect with the existing path on the southeast side, has many trees of varying ages and species. Not all of these trees could be practically assessed for bat roosting features, so all of the trees that are likely to be removed were surveyed in detail. Fortunately, these were all immature specimens with a stem diameter or < 20 cm, which produce fewer features suitable for bats – lifting bark, large holes in the wood etc. – and so are easier to survey, and again no signs of roosting were observed. It remains possible that roosts may be present in within some larger trees elsewhere in the wooded area or in the greater Park area.

2023 Survey Results:

- There was a minimum of five bat species noted within the route proposed for the Greenway. The most widespread species was the Common Pipistrelle (*Pipistrellus pipistrellus*) but there was also a high level of Soprano Pipistrelle (*Pipistrellus pygmaeus*) activity noted. Where Soprano Pipistrelles were present, there were commonly high levels of activity concentrated into one area.
- Leisler's Bats (*Myotis leislerii*) were noted to avail of trees as perches at Cabinteely Park to call in August and September. The males of this species land on mature trees and emit loud ultrasonic and audible calls to attract females. Mature Beech, Oak, Horse Chestnut, Poplar and Ash have all been used by this species in the Dublin area.
- Daubenton's Bat (*Myotis daubentonii*) activity and *Myotis* signals (possibly a second species of *Myotis* or possibly Daubenton's signals of a different make-up) were noted along the Cabinteely Stream north of the park, within the Park and south of the Park. Very high levels of activity were recorded on one night (13th September) by a static monitor to the south. This is not explicable

¹ A recently deceased Fox was observed within the park during one of the field surveys.

based on the habitat as the lands are not especially rich for bat foraging, and this species favours watercourses (of which type Cabintelly/St. Bride's Stream is very small).

- Very low numbers of Brown Long-Eared Bats (*Plecotus auritus*) were noted within Cabintelly Park. This species has been recorded at Lehaunstown Park and Glen Druid Mews previously.

5.2.3 Amphibians

5.2.3.1 Common Frog and Smooth Newt

There is some suitable amphibian spawning habitat within the project footprint such as the Cabintelly Park Pond and the ditch that runs along the eastern woodland in the park (figure 8). Any drain or pool within the development corridor of the proposed route may be considered as an actual or potential breeding site for frogs/newts.

5.2.4 Reptiles

5.2.4.1 Viviparous lizard

The scale of vegetation loss will not have significant impacts on this species. Dry stone walls provide significant habitat for lizards and impacts may occur during their dismantling. No stone walls or terrestrial habitat that would be suitable for this species are expected to be damaged or lost during the project.

5.2.5 Birds

5.2.5.1 Breeding Bird Surveys

The following species were recorded during ground surveys in April and June.

Table 10: Bird Survey Results. Species cell colours indicate green, amber, or red listed status as per BOCCI 2020-2026. * denotes an Annex II species of the Birds Directive.

Species observed	Notes
Bullfinch (<i>Pyrrhula pyrrhula</i>)	Individual in tree in Cabintelly Park.
Starling (<i>Sternus vulgaris</i>)*	Several seen on resting on wires and foraging along the route.
Grey Wagtail (<i>Motacilla cinerea</i>)	Observed multiple times in Cabintelly/St. Bride's Stream.
Woodpigeon (<i>Columba palumbus</i>)	Observed and heard in Cabintelly Park
Rook (<i>Corvus frugilegus</i>)	Present at various locations on site
Jackdaw (<i>Corvus monedula</i>)	Present at various locations on site
Hooded Crow (<i>Corvus cornix</i>)	Present at various locations on site
Magpie (<i>Pica pica</i>)	Present at various locations on site
Blackbird (<i>Turdus merula</i>)	Recorded at various locations on site, mostly within the park.
Goldfinch (<i>Carduelis carduelis</i>)	Multiple seen and heard
Blue Tit (<i>Cyanistes Caeruleus</i>)	Multiple seen and heard

Great Tit (<i>Parus major</i>)	Multiple seen and heard
Mallard (<i>Anas platyrhynchos</i>)*	3 no. seen in Cabinteely Pond
Moorhen (<i>Gallinula chloropus</i>)*	2 no. seen in Cabinteely Pond
European Herring Gull (<i>Larus argentatus</i>)*	Multiple seen and heard across grasslands within project footprint, mostly foraging.

Multiple species of birds are likely breeding in hedges and treelines throughout and around the site. Care should be taken during construction to avoid disturbance of any bird species, particularly during their breeding season. Observations of a Grey wagtail (*Motacilla cinerea*), Red-listed, were made along the Cabinteely Stream. Grey wagtails are a riparian species that depend on clean waterways for foraging and breeding. Again, maintaining a robust buffer zone between the Greenway development and the river will be essential to minimise impacts on this species and protect the stream's ecological integrity.

The expected amount of habitat loss due to the project is unlikely to significantly affect bird populations if appropriate mitigation measures are implemented. Any vegetation clearance should be confined to the period outside the breeding season (March to August inclusive). Tree and shrub removal should be carried out between September and February to reduce the risk of disturbing nesting birds and ensure compliance with wildlife protection regulations. Where possible, hedgerows and treelines should be retained and enhanced to support breeding and foraging bird species.

5.2.5.2 Wintering Birds

High-tide surveys were carried out across 2 no. days in January (13th and 14th) across 4 no. locations within the park. Conditions were clear and sunny (12-15 C), wind 5 knt SE. Results of species observed are provided in Appendix B.

Though all birds have some measure of protection in the wild and general guidance is given on avoiding impact to their nesting habitat, particular attention is given to amber-listed and Annex species below.

5.2.5.3 Red Listed Species

Grey Wagtail is red listed on RSPB's *Birds of Conservation Concern in Ireland 2020-2026* (Gilbert, Stanbury & Lewis, 2021). The criteria used to assess whether a species is red listed are as follows:

- Any species classified as Globally Threatened (as per the IUCN 2020 list) being Red listed. These species are recognised as the highest priorities for action at a global scale and are thus priorities at an Ireland level.
- Species of global conservation concern (including those classified as Near Threatened), as assessed by BirdLife International in 2017.
- Historical decline in breeding population. Species that declined severely in the historic past (since 1800) but have not subsequently recovered are classified as red listed.
- Breeding population decline over short and longer time periods. Severe decline in breeding

population size (>50%) over 25 years which in effect was 'as close as possible' to 25 years and mainly 1998-2018. The longer term, was defined as the entire period used for assessments since the first review, starting c. 1980.

- Non-breeding population decline by short and longer time periods. Severe decline in non-breeding population size (>50%) over the approximate 20-year period 1994 to 2015/16 (WDp1) or the longer-term approximate 30-year period from the 1980s to 2015/16.
- Breeding range decline by short and longer time periods. Severe declines in breeding range of 70% or more over a short time period of about 20 years, comparing the recent Bird Atlas (2007–11) with the preceding Bird Atlas (1988–91) and a longer time period of about 40 years, comparing the most recent Bird Atlas (2007–11) with the first Bird Atlas (1968–72) (Sharrock 1976). As measured by the change in the number of occupied 10 km squares.

Table 11: Red listed species observed during the survey and the interaction of the proposed development with their breeding sites.

Species	Breeding site(s)	Does the proposed development connect to any breeding sites?
Grey Wagtail (<i>Motacilla cinerea</i>)	Breeds on fast-flowing watercourses with plenty of exposed rocks with trees along the bank; also, lake shores and rivers. Nest in rock crevice, cavity in stone bridge, mill foundations etc. beside water.	Proposed greenway route runs along and crosses the Cabinteely Stream, which is suitable breeding habitat for this species. No trees will be removed along the riverbanks, new trees will be planted along the river in some areas and may improve habitat suitability, in particular at the Brennanstown end where the new greenway path will be screened by planting along the river bank.

5.2.5.4 Amber Listed Species

European Herring Gull, European Black-headed Gull, Starling, and Mallard are all amber listed species. The criteria used to assess whether a species is amber listed are as follows:

- Categories that depict an unfavourable conservation status in Europe, but not necessarily global concern.
- Moderate breeding population decline over short and longer time periods.
- Moderate non-breeding population decline in abundance of 25% to 49% over the same short and longer time periods.
- Moderate breeding range decline over short and longer time periods.
- Breeding rarity: A population of fewer than 100 breeding pairs in Ireland.
- Localised breeding or non-breeding populations. Species were considered localised if more than

50% of the population was found at ten or fewer sites in either the breeding or the non-breeding season. Rare breeders were not assessed against this criterion, as their small population sizes predispose them to be restricted to a small number of sites.

- Internationally important breeding or non-breeding population. Where the Irish population represents more than 20% of the European population in either the breeding or non-breeding season, then the species is of international importance and qualifies for the Amber list.

Table 12: Breeding and feeding sites for amber listed bird species in relation to the proposed development.

Species	Breeding site(s)	Does the proposed development connect to any breeding sites?
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	Breeder at lakes in vast reedbeds or marshy areas, also on ponds near coasts.	Two small ponds are present adjacent to the greenway route, one in Cabinteely Park and one further southeast towards Brennanstown. The proposed development will not interfere with either pond.
Common Starling (<i>Sturnus vulgaris</i>)	Breeder in farmland, suburban areas, and woodland (particularly Oak).	The route of the proposed development moves between urban and sub-urban areas. It is not expected to result in significant losses of nesting sites for this species.
House Sparrow (<i>Passer domesticus</i>)	Well-habituated to humans. Breeds in both rural and urban areas. Nests under roof tiles, in air ducts, recesses and occasionally trees.	Proposed development is not expected to interfere with this species ability to breed, nest or forage as it will not reduce the size of habitat associated with either.
Mallard (Anas platyrhynchos)	Breeds in parks, by canals, on eutrophic lakes, woodland marshes, seashores, and will use very small waters such as pools and ditches. Nests under bushes, in tree holes, and near or on buildings.	Two small ponds are present adjacent to the greenway route, one in Cabinteely Park and one further southeast towards Brennanstown. The proposed development will not interfere with either pond.

5.2.5.5 Birds Directive Annex Species

Black-headed Gull and Little Egret are an Annex Species listed on the Birds Directive. Black-headed Gull is a Qualifying Interest of the South Dublin Bay and River Tolka Estuary SPA [004024]. The Appropriate Assessment Screening report for this project found no likelihood of significant effects upon this species.

Table 13: Breeding and feeding sites for Birds Directive Annex bird species in relation to the proposed development.

Species	Breeding site(s)	Does the proposed development connect to any breeding sites?
Black-headed Gull (Chroicocephalus ridibundus)	Breeder at lakes in vast reedbeds or marshy areas, also on ponds near coasts.	Two small ponds are present adjacent to the greenway route, one in Cabinteely Park and one further southeast towards Brennanstown. The proposed development will not interfere with either pond.
Little Egret (Egretta garzetta)	Nests colonially in dense trees and bushes at shallow marshy lakes, rivers and coastal lagoons.	Some vegetation removal is planned but will not occur during the breeding season. The areas with trees to be removed did not show signs of a previously existing heronry. Two small ponds are present adjacent to the greenway route, one in Cabinteely Park and one further southeast towards Brennanstown. The proposed development will not interfere with either pond.

6 Impact Assessment

6.1 Impacts Associated with the Proposed Development - Habitats

6.1.1 Loss or Degradation of Habitats within the Project Footprint

Several habitats within the proposed development footprint will experience some degree of loss or fragmentation, though it is relatively limited in most instances. The loss of several trees within the woodland areas in the park will constitute minor loss, and the construction of a new pathways here will effectively lead to habitat fragmentation of the forest floor.

Minor change to the drainage ditch in the same area within the Park will also result, however this will occur from the culverting to allow the path to pass over. While the flow of the drain will remain open from the culverting, a 3-4 m section of the drain will be shaded from the culvert. While this is not exactly habitat

loss, and the shade may even improve shelter for amphibian spawning, it is still noted as change to a habitat type that supports protected species (frogs and newts).

There are several areas around the park which are managed to provide habitats for flowering plants and their associated pollinators. Though the proposed greenway development does not overlap with any areas designated as pollinator-friendly sites by DLR CoCo within Cabinteely Park, from the map created from DLR data, it appears as though the route runs through 500 m of an area designated for pollinators between Brennanstown Road and Brennanstown Avenue (figure 15). There is already a path that runs through this area, worn by regular walkers and bordered by short cut amenity grassland. The proposed Greenway Route will follow this route and so habitat loss in this area will be limited to c. 1,500 m² of amenity grassland².



Figure 15: The proposed route in relation to areas designated by DLR as a pollinator sites.

² (c. 500 m track length from) x (3 m wide path) = 1,500 m² of track between Brennanstown Road and Druids Glen Road.

6.1.2 Impacts on the Riparian Corridor and Cabinteely Stream

Construction and operational activities within close proximity to the Cabinteely Stream could disrupt the riparian habitat. Disturbances to the stream's bank, alteration of vegetation, and changes to the hydrology from increased foot traffic and infrastructure could lead to degradation of water quality and aquatic habitats. Light pollution falling on the riparian zone may also reduce the quality of this habitat.

Protecting the riparian corridor will be crucial, as any significant alteration to this area could harm the ecological integrity of the stream and its associated habitats, potentially leading to water quality decline and disruption of wildlife dependent on the stream. There are three locations where the proposed route will be below the minimum 10 m separation distance of the stream, where the proposed route enters the northwest of the Park, where it runs through the woodland area within the Park, and where for the length of the Brennanstown section, as such, the potential for impacts will be highest in these areas.

The drainage ditch in Cabinteely Park will require culverting for 3-4 m of pathway. This ditch is approximately 1 m wide. If culverting is done correctly, the habitat loss here will be negligible. If the culvert is too narrow, or blocks the ditch in any way, this may result in habitat loss.

6.1.3 Loss or Degradation of Habitats Outside the Project Footprint

While direct impacts on lands outside the footprint are expected to be minimal, though there is still potential for indirect habitat loss or degradation outside of the proposed greenway footprint, particularly through increased foot traffic and construction activities. The trampling of floral species, particularly south of the Cabinteely/St. Bride's Stream in the park, could significantly impact delicate habitats. Additionally, any disturbances outside the working area may alter the condition of grassland habitats, especially those close to sensitive areas. The increased footfall and machinery use during both the construction and operational phases could further exacerbate this issue in the absence of careful planning of compound locations and access routes, leading to direct damage to vegetation and soil compaction.

There are some areas of grassland within the park, on the south side of the river, that are linked to the Annex Habitat *Orchid-rich grassland of 6210*, which could be indirectly affected. Significant disturbance to the surrounding areas could lead to soil erosion or the introduction of invasive species, indirectly impacting these ecologically valuable grasslands. However, as the construction area is positioned relatively far (c. 50 m) from these sensitive habitats, the direct impacts on this grassland are expected to be minimal and can be avoided entirely if all works are kept north of the river.

6.1.4 Machinery and Works Area Impacts

Construction activities could lead to disturbance of surrounding habitats through the movement of machinery and equipment. The use of machinery and vehicles, especially when operating close to sensitive habitats, can disturb soils and increase the risk of invasive species introduction. Similarly, the running of generators and illumination of works areas may add to the temporary noise and light pollution of the construction phase. To prevent unnecessary habitat disruption, it will be important to clearly

demarcate the working corridor. Fencing such as heras-style barriers can help minimise disruption, the local terrain may necessitate adjustments, especially in woodland sections where alternative barriers or soil compaction measures (e.g. bog mats) may be required.

6.1.5 Tree Protection and Root Zone Damage

Beyond the trees that will require removal, the development could affect trees in the vicinity, especially through root zone damage e.g. compaction of the rooting area by heavy plant, damage to bark, breaking of branches – all of which can compromise tree health. Root protection areas (RPAs) of all trees must be clearly defined and respected, with specialists marking trees for retention and implementing appropriate measures to protect these areas. Failure to do so could lead to long-term degradation of local ecosystems that depend on these mature trees for habitat and environmental services.

6.1.6 Ineffective Screening and Planting Along the Greenway

The potential for noise and light spill from the greenway could have adverse effects on the surrounding habitats. The appropriate native hedgerow and tree planting for screening purposes can mitigate some of these impacts by reducing light intrusion and providing better habitat connectivity. However, if plantings are not dense enough, or if they are not infilled when individual trees may die, they will fail to serve their purpose as effective barriers. Additionally, if non-native species were inadvertently introduced or spread (e.g. Cherry Laurel) during planting, they could outcompete indigenous species, further degrading the local ecosystem.

6.1.7 Invasive Species Spread During Construction

The risk of invasive species introduction is one of the most significant environmental impacts of greenway development. Construction machinery, equipment, and imported materials such as soil or aggregates can introduce non-native plant species like Winter Heliotrope, American Skunk Cabbage, and Giant Hogweed. These invasive species could spread and establish themselves in woodlands and along the riparian corridor, leading to a long-term loss of biodiversity. Invasive species alter local habitats and outcompete native vegetation, significantly diminishing the health of the local ecosystem. A dedicated Invasive Species Management Plan will be a requirement of this project, once the full construction methodology is confirmed.

Table 14: Impact Assessment for Habitats Before Mitigation.

Impact Assessment: Habitats				
Ecological Feature	Evaluation	Nature of Impact	Significance of impacts	Duration & Likelihood
Amenity Grassland	Low Local. Grasslands generally	Minor loss and alteration of habitat within the	Negligible	Permanent/ Almost certain

	support few species, though do provide forage for some migratory birds. Those of Annex importance have been ruled out by the AA Screening.	Greenway footprint.		
River	High Regional/Moderate International The river is of significant regional importance, being one of the larger rivers in the area, connecting several habitats, including pNHAs and European Designated Sites. The river may also support Otter, which is an Annex species of international importance. Impacts upon the river habitat may also present as impacts upon this species.	The proposed route will fall below the recommended minimum 10 m separation distance from the stream (as per IFI guidelines) at three specific locations due to physical constraints, including one bridge crossing. This may result in minor habitat loss of riparian vegetation.	Moderate Adverse	Permanent/Almost certain
Drainage Ditches	Moderate Local These connect to the local river and provide important areas of standing water.	The proposed route will cross one wet ditch/ drain. Culverting or bridging and water protection will be required.	Negligible (potential to be Minor Adverse if culvert is not designed carefully).	Permanent/Almost certain
Broadleaved woodland	High County Areas of woodland habitat, including linear	Some habitat loss will require removal to facilitate the new Greenway both at	Moderate Adverse	Permanent/Almost certain

	corridors such as hedgerows and treelines are of significant county importance, adding to the tree cover, carbon sequestration and habitat connectivity.	the northwest end of Cabinteely Park where the proposed route will cut through established linear woodland, and at the southwest end of the Park where the route will to cut through the larger area of broadleaf woodland.		
Mixed broadleaved/ Conifer woodland	High County Areas of woodland habitat, including linear corridors such as hedgerows and treelines are of significant county importance, adding to the tree cover, carbon sequestration and habitat connectivity.	No impact predicted.	Negligible	Unlikely
Scattered trees/ Parkland	High Local Trees provide a similar function to woodland cover, albeit less dense. Undisturbed parkland provides a less disturbed refuge from the urban environment.	Some sections of grassland within this habitat may be removed but they will be minor.	Minor Adverse	Permanent/ Likely
Immature woodland/ Orchard	High Local Again, provide a similar benefit to woodland. Immature woodland	No impacts to this woodland are predicted.	Negligible	Unlikely

	required to replace and expand existing mature woodland.			
Calcareous/ Neutral grassland	High Regional Provides a more diverse mix of species, including two orchid species. This habitat has links to Annex I orchid-rich calcareous grasslands [6210].	No areas of this habitat are to be impacted.	Negligible	Unlikely
Dry Meadows and Grassy verge	Moderate Local Similar to amenity grassland, though can support significant invertebrate and vertebrate communities if let grow long.	Some sections may be impact during works, other sections may be removed permanently, including the fallow grassland at the southeast end of the site, which may be a pollinator site.	Minor Adverse	Permanent/ Likely
Artificial Pond	High Local This pond is the largest area of standing water in the vicinity. It may support water birds, Otter (international), and many invertebrates.	No areas of this habitat are to be impacted.	Negligible	Unlikely

The overall impact on habitats along the Cabinteely Greenway range from being negligible to minor adverse. Minor impacts are associated with losses of some areas of amenity grassland, drainage ditches, scattered trees, grassy verge and dry meadow, which are of moderate local importance (varying depending on their mowing regime).

The number of trees lost in the woodland habitats may be compensated by replanting as part of the

landscaping. Moderate adverse impacts are also foreseen at the river habitat, as the proposed route will fall below the recommended minimum 10 m separation distance from the stream (as per IFI guidelines) at three specific locations due to physical constraints. Additional measures must be implemented in these areas to minimise potential impacts, including ensuring no significant light spill onto riparian habitats and preserving as much riparian vegetation as possible.

6.1.8 Impact Assessment: Fauna

The Cabinteely Greenway project is anticipated to have varying levels of impact on local wildlife.

Minor adverse impacts are associated with the **loss of some locally important supporting habitat** along the proposed route, including:

- c. 4 m of drainage ditch which may be suitable for amphibian breeding
- Portions of amenity grassland where the existing footpath will be widened
- c. 400 m² of dry meadow which may support small rodents and invertebrates

Other impacts stem from the proposed **addition of new lighting** in Cabinteely Park and along the Brennanstown Rd.-Ave. section. These two areas have not been lit up to this point, and so new light levels will be unfamiliar to the area although it is likely given the wider context of the urban area that some species may be somewhat habituated to artificial street lighting, though this does not mean it is harmless, as artificial night at night (ALAN) remains a significant threat to biodiversity. The new lighting in Cabinteely Park and c.130 m of the section east of the Brennanstown Road will be turned off from 22:00 until 06:00 each night but will still contribute to light pollution of previously unlit areas. Moderate impacts relate to disturbance from light pollution of birds, Otters and bats. However, none of the impacts of Moderate Adverse significance will have effects on any species that are of greater than local or county importance.

Finally, the **increased anthropogenic disturbance** along the route, in particular in previously undisturbed areas, may add extra pressure on species already present in the area. Risks of increased anthropogenic disturbance resulting from the operational phase of project are difficult to quantify, as changes in user numbers will likely increase – that is after all the aim of the proposed development – however the degree of change is not known at this point. The urban areas and the park already receive cyclists, runners, walkers and their dogs, however, the frequency of users along the route, in particular the riparian area from the Brennanstown Road to Brennanstown Ave. section, is likely to increase as a result of this project. This riparian zone is currently used by some walkers, though appears to receive markedly fewer than the park, based on the width and wear of the dirt track here. On both survey days, no walkers were encountered here, whereas pedestrians were a common sight along the rest of the route, indicating that they may be more established walking areas. This may be in part due to the fact that this section does not currently connect to Cabinteely Park, instead its northern end comes out onto Brennanstown Road, opposite an existing wall at the south end of the Park, which will be removed as a part of the proposed greenway in order to connect the two areas. The south end of this dirt track connects to a small tarmac path connecting Carrig Glen housing estate to Brennanstown Avenue.

6.1.8.1 Otters

Quiet riparian areas are very important to Otters, which use them to travel, rest, breed, and forage. No holts, slides, spraint or tracks were found here during the field surveys, but Otters range can be several kilometres long in rivers and so this does not mean that they may not use this area either now or in the future.

Otters are unlikely to suffer from the habitat loss associated with the project, the main issues here will be the increased number of users and in particular an increase in dogs, and the illumination of the riparian zone. No areas of riparian habitat that would be supporting habitat to Otters using the stream within the route footprint will be lost, however the increase in pedestrians, cyclists and dogs passing through the area may tip disturbance above a critical threshold, reducing the likelihood that an Otter would forage in the area. Otters are largely crepuscular and so are most active at dawn and dusk but will still hunt at night. One of the aims of the proposed Greenway is to provide a new route for commuters who would otherwise drive, take the bus, or walk/cycle an alternate route. This would have the effect of bringing more users into the area at typical commuting hours of 7:00-09:00 and 16:00-18:00. In summertime, these hours are not likely to coincide with dawn and dusk, but they will from October to March. In winter, Otters can supplement their diet of fish with amphibians, small mammals, and eggs, and so extra disturbance around their active hours may reduce foraging success.

Similarly, the addition of lighting in previously unlit areas (Cabinteely Park and along the route between Brennanstown Road and Brennanstown Avenue) may contribute to disturbance, stress and habitat fragmentation. Lighting has been shown to negatively impact the movement of terrestrial mammals (Sordello, et al. 2025). However, there are many records of Otter activity – including breeding – in areas where artificial lighting has been installed over or close to watercourses and water bodies (e.g. the River Dodder, authors' own records and Grand Canal Basin, Triturus, 2022). Impacts of lighting upon nocturnal and crepuscular animals are assessed further in Section 7.2.4.

6.1.8.2 Badgers

No evidence of Badgers was found along the route, however it is known from previous Flynn Furney work in the area and from publicly available NBDC data that populations are present around south Dublin and DLR and so Badgers could in time travel into the parkland, woodland and grassland associated with development footprint in time, if they are not already present in the area. Urban Badgers require grassland and gardens for foraging and scrub and vegetated areas for commuting (Davison et al. 2008) and so the proposed greenway may act as a habitat corridor, connecting Badgers south of Cabinteely Park with the open grassland of the park. Unlike Otters, Badgers habituate reasonably well to urban spaces, provided that they have enough available supporting habitat, urban sett density can compare to rural sett density (Huck et al. 2009), with decreased ranges when compared to rural populations due to the increased availability of food (Davison et al. 2008). Despite this, there remains a limit to which Badgers will tolerate anthropogenic disturbance. Given that the main usage of the proposed route will largely be during daylight hours, it is not foreseen that increased usage would also increase the impacts on Badgers, provided that future usage at night remains similar current usage. In this regard it is noted that the Park

will close to the public at night and the lights in the park and to the east of Brennanstown Road will turn off from 22:00 until 06:00 which will deter nighttime human usage.

Impacts that may have more significant effects on Badgers are more related to lighting and increased presence of dogs. Lighting will be switched off late at night but as mentioned earlier there is still a window in the winter months where there will be some light pollution, which can deter Badgers from crossing certain areas (Lordello et al. 2025). It is noted that the lighting has been designed under guidance given by the Bat Conservation Trust and Dark Sky Ireland.

Very limited studies on the relationship between domestic dogs and European Badgers could be found, but drawing on wider studies, dogs can increase the predator stress response in mammals above normal levels, which can decrease long-term survivability (Bateman & Gilson 2025) and even the scent of dogs can deter mammals such as Red Fox and Bobcat (Lenth et al., 2008). This is challenging to mitigate as it relies upon strict leash laws, which can be marginally effective in some areas (Waldstein Parsons et al., 2016), but if not enforced, will have reduced effectiveness. Cabinteely Park is a dog-on-leash area; however, this does not always result in dogs always being on their leashes.

6.1.8.3 Other Terrestrial mammals

Most other terrestrial mammals will be similarly impacted by the light pollution, and increased human and dog disturbance. As mentioned, there will be some changes to existing habitats, including the removal of several trees within the park to create a new entrance and where the proposed route cuts through the woodland, as well as the loss of some amenity grassland, mostly where a 2 m wide path is widened into a 3 or 4 m wide path. While the extent of grassland and several trees lost is not likely to impact on habitat suitability for the terrestrial mammals along the route, the loss of some meadow habitat in the southeast end of the park (where it borders Brennanstown Road) may negatively impact smaller terrestrial mammals such as mice and shrews, as the proposed greenway route will bisect this meadow with c. 4 m width of tarmac surface (figure 15). This area also does not currently receive pedestrians or cyclists, as it is effectively a 'dead end' – the existing path veers away from it and it is separated from the road by a wall. This added disturbance from humans and dogs, the newly proposed lighting (see Section 7.2.4.), as well as the soft-habitat fragmentation (smaller mammals may be less likely to cross the greenway, especially in the window between the lighting coming on and turning off, thus reducing connectivity between these two spaces) has the possibility to reduce the suitability of this habitat for smaller mammals. Stoat and Hedgehogs were not recorded within the park but if present can be assumed to be similarly impacted.

Mitigation and minimisation measures to address the above impacts have been incorporated into the current design of the project, including adjustments to lighting regimes and planting of native species for compensation of habitat loss. These are detailed further in Section 8 of this report.



Figure 16: Where the proposed route passes through dry meadow at the southeast end of Cabinteely Park and crosses Brennanstown Road.

6.1.8.4 Bats

While no sign of roosting was found within the development footprint, impacts upon bat species are still worth considering. The main issues associated with this project from the perspective of bats is still the light pollution, though impacts from roost disturbance are also possible. Lighting can not only disorient bats, or disrupt emergence if roosts are illuminated, but if it is significant enough, lead to a decline in local moth populations, which are an important food source for bats in Ireland. Designing the lighting to incorporate bat sensitivities will be the best way to mitigate impacts here. Reducing noise near areas where bats may be active during construction will also help to reduce risks of impact e.g. not running a generator through the night beside the river. It is not expected that there will be significant impacts from human use of the greenway during the operational phase as use at night will be significantly reduced after dark, especially at the Park where the gates will be shut, and along the Brennanstown section where the lighting will be turned off.

No roosts were identified within the ZOI of the project, as defined in Section 3.3.4. Furthermore, there are no records of roosts within the established ZOI. The Cherrywood Biodiversity Plan (2012) records bat roosts within 1 km of the southern extent of the proposed route. No records of more recent roost locations have been found at the time of writing.

Active bat roosts may form in the interim in the ZOI of the proposed route, as such, resurveying the route

for bats prior to commencement of the start of the construction phase will be essential in identifying whether further action is required at that stage to prevent any impacts upon bats or their supporting habitats.

6.1.8.5 Birds

As will all developments, there will be risks to wild birds from the removal of vegetation during the nesting season (March to August). Increased anthropogenic activity, including simply walking through an area, in the ZOI of the route may increase bird vigilance and threat response, resulting in an increased expenditure of energy, which can reduce long-term survivorship (Price, 2008) and species abundance (Bötsch et al., 2017). Given the urban context of much of the route, it is not expected that increased numbers of pedestrians or cyclists would raise disturbance levels more than the already existing noise from vehicles. However, increased numbers of humans in the Park and along the Brennanstown section of the route may lead to impacts on species that are nesting/foraging in this location due to their lower levels of disturbance than the surrounding urban area. As mentioned previously, increased numbers of dogs, resulting in more scent marking, barking, chasing and possibly even attacks on bird species, may compound these impacts, especially if dogs are allowed off leash (Bateman & Gilson, 2025) (Banks & Bryant, 2007).

Disturbance to sleep and diurnal cycles are also possible due to light pollution associated with the project, in particular during winter months when food is less available and expenditure of energy (lack of sleep, being active too early due to lighting coming on before sunrise) is more costly.

Beyond restricting vegetation clearance to outside the nesting season, these impacts are difficult to avoid, as lighting of dark areas for human use, and increased use of the area by pedestrians, cyclists and dog walkers are all inherent parts of the proposed project. Minimisation may come in the form of having a dog on leash policy for the Brennanstown section (there is already a leash bylaw for the Park), and reduction of light spill to only illuminate the path, though full mitigation of impacts may not be achievable. A full discussion on residual impacts is given in Section 7.

6.1.8.6 Amphibians

The projected loss of habitat is small and will likely not affect the conservation condition of these species at any geographical scale, and therefore the effects of this habitat loss are not likely to be significant. However, mitigation measures to prevent any impacts to this protected species will be outlined in this report

6.1.8.7 Freshwater Species

As noted above, the lighting plans show that the light spill (depicted as contours at given lux levels on the ground – see Appendix C) from the new luminaires installed by the river will end just before the top of the riverbank for the greater majority of the proposed route. An exception to this is at the proposed new bridge at the southern extent of the route, where the Greenway will cross the stream. Here, cowls will be required to prevent light spill upon exposed riparian habitat.

Design drawings for the remainder of the proposed route indicate that light levels falling on the stream will not change, though this may not be the case once the lighting is installed, as it could contribute to local skyglow on a misty night.

No studies comparing before and after impacts of lighting on watercourse could be found, though the negative impacts of ALAN on freshwater ecosystems are known to be proportional to the amount of light pollution falling on these freshwater ecosystems (Hölker et al., 2023). As the lighting along the river will be switched off from 22:00 to 06:00 each night, the potential for impacts from light pollution have been significantly decreased when compared with the constant night lighting scenario as originally proposed.

6.1.8.8 Impacts on Fauna - Table

The potential impacts on the fauna within and surrounding the proposed development site is provided in the table below. Significance of impacts is based upon the definitions given in Table 4.

Table 15: Impact Assessment for Fauna Before Mitigation.

** denotes a Habitats Directive Annex species, ^w denotes a Wildlife Acts Article 12 species*

Impact Assessment: Fauna				
Species/Group	Evaluation of Importance	Nature of Impact	Significance	Duration & Likelihood
Badger ^w	National	Increased anthropogenic disturbance may reduce the usability of foraging areas. Light pollution can disorient wildlife, disrupt their natural behaviours.	Minor Adverse	Permanent, Likely
Otter ^{*w}	International	Decreases in water quality of removal of riparian habitat could impact Otter species. Light pollution can disorient wildlife, disrupt their natural behaviours. Anthropogenic disturbance, in particular where the southern section of the route will come within 10 m of the Cabinteely	Moderate Adverse	Permanent, Likely

		River after Brennanstown Road.		
Other terrestrial mammals including Stoats ^w , Hedgehogs ^w , Shrews, Mice, and Foxes.	National	Loss and fragmentation of some of the grassland habitat may negatively impact smaller mammals such as mice and shrews. The presence of stoats within the park is unconfirmed, as they are a difficult species to survey for, and their distribution in Ireland is unknown. Foxes generally habituate well to urban areas, and the greenway may facilitate movement of this species between different areas. In general, increased anthropogenic disturbance may reduce the usability of foraging and breeding areas. Light pollution can disorient wildlife, disrupt their natural behaviours.	Minor Adverse	Permanent, Likely
Bats ^w	National	Construction noise, vibrations, and lighting during trail installation could disrupt bat foraging and roosting near the site. Commuting will likely be impacted by permanent lighting installed.	Moderate Adverse	Permanent, Likely
Birds ^w	International	Construction noise, vibration, and lighting can impact upon breeding and foraging success. Permanent operational phase lighting installed could result in sleep disturbances or disrupt	Moderate Adverse	Permanent, Likely

		feeding and breeding times. Removal of vegetation during the bird nesting season could impact breeding birds. Poor water protection could lead to pollution of the watercourse Increased anthropogenic disturbance may negatively impact breeding and foraging space.		
Amphibians ^w	National	There is potential for a minor loss of breeding habitat (c. 4 m) from the culverting of a drain in Cabinteely Park where the route crosses from open grassland into the woodland. No amphibian presence was confirmed at this location during any of the surveys, but it is likely that they are in the area and may use this drain for spawning, as it has ideal conditions – slow moving/standing water near open grassland and shaded woodland. A section the width of the path will be culverted – this will allow continued stream flow but will darken this area. Incorrect installation of the culvert may negatively impact these species.	Minor Adverse	Unlikely
Viviparous Lizard ^w	National	No Impacts Predicted.	Negligible	Unlikely
Freshwater Species	National	Light pollution may impact the habitat quality of the stream; however, the lighting plan maps	Minor Adverse	Permeant, Likely

		reviewed as part of this assessment show that the light spill will drop to 0 lux by the top of the stream bank. Poor water protection could lead to pollution of the watercourse.		
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6.2 Cumulative and In-Combination Impacts

6.2.1 Regional and Local Plans

The Dún Laoghaire – Rathdown County Development Plan 2022-2028 interactive map was also reviewed for potential cumulative or in-combination effects. The route falls exclusively with Objective F zoning – ‘to preserve and provide for open space with ancillary active recreational amenities.’

Zone F permits the following development: Community Facilities, Cultural Use, Open Space, Sports Facilities, and Traveller’s Accommodation.

It also allows consideration of the following development: Allotments, Carparks, Cemeteries, Craft Centre/Craft Shop, Childcare Services, Crematoriums, Education, Garden Centres/Plant Nurseries, Golf Facilities, Guest Houses, Place of Public Worship, Public Services, Tea Rooms/Cafés.

‘Where lands zoned F are to be developed then: Not more than 40% of the land in terms of the built form and surface car parking combined shall be developed upon. Any built form to be developed shall be of a high standard of design including quality finishes and materials. The owner shall enter into agreement with the Planning Authority pursuant to Section 47 of the Planning and Development Act 2000, as amended, or some alternative legally binding agreement restricting the further development of the remaining area (i.e. 60% of the site) which shall be set aside for publicly accessible passive open space or playing fields. Said space shall be provided and laid out in a manner designed to optimise public patronage of the residual open space and/or to protect existing sporting and recreational facilities which may be available for community use.’

The Dún Laoghaire - Rathdown Biodiversity Plan 2021-2025 was reviewed for any possible actions in the local area that may interact with this project regarding impacts to any European Sites. The Plan is a high-level document that aims to restore and enhance biodiversity around the county and recognises that the urban environment poses a challenge to biodiversity and that in order to improve the landscape’s resilience to climate change the provision of natural solutions to reduce carbon and manage flood risk, and to sustain vital ecosystems, such clean water and clean air will be necessary. One of the aims of the plan is ‘reconnection,’ which implies the reconnection of people with nature. Proposed actions under this

aim include the development of best practice guidelines for Greenway Developments (Action 2.9) and the development of guidelines managing artificial lighting (Action 2.11) which are applicable to the proposed development.

These actions support this development, and it is not believed that they will lead to changes to the proposed project or the environment around it in a way that would lead to cumulative or in-combination effects.

Dún Laoghaire-Rathdown County Council Climate Action Plan 2024-2029 has similar high-level goals, such as the reduction of carbon emissions and the building of resilience in new and existing developments. It too supports the proposed development as it will promote low-carbon active travel for people of all ages by connecting residential neighbourhoods to a high-quality recreational destination in Cabinteely Park as well as will providing a safe route to St. Brigid's school. As with the Biodiversity Action Plan, this plan is not expected to lead to changes that would cause in-combination or cumulative effects upon European Sites with the proposed greenway.

The BusConnects Dublin Network Redesign and the Greater Dublin Area Cycle Network Plan 2022 were also considered and were also found to support the proposed Greenway for similar reasons; each aims to enhance the public transport and active travel network around the Greater Dublin Area and reduce reliance on personal vehicles. They are not expected to lead to environmental changes that would have cumulative, or in-combination knock on effects with the proposed scheme.

6.2.2 Larger-scale Local Projects

Carrickmines Shanganagh River Flood Relief Scheme (ABP Case Ref. JA06D.321937): This proposed development is for flood defences at key locations along the Carrickmines and Shanganagh rivers including new walls/raised existing walls, culverts, localised screens upgrades and localised works in the river. It is expected to reduce the likelihood of flood damage along this river and is expected to have an overall positive impact on the area, reducing the likelihood of flooding, which may aid the longevity of the proposed landscaping around the river from the Cabinteely Greenway.

Cherrywood Green Routes Network (PC/CSDZ/013/2022): This proposed new Greenway will eventually connect on the south end of the proposed project. The two routes, taken in combination will create a longer active transport network, extending as far south as the Bride's Glen Luas Stop and the Bride's Glen Road. Potential impacts due to this project alone will be assessed in its own Appropriate Assessment, EclA, but it is not believed that it will magnify the potential impacts of the Cabinteely Greenway in a way that would lead to cumulative or in-combination impacts.

6.2.3 Smaller-scale Local Projects

The online planning system for Dún Laoghaire-Rathdown County Council was consulted on 19/10/2024, and relevant projects within the vicinity of the proposed greenway were reviewed. These include:

Doyle's Nursery Development (ABP30585919 & ABP30585919/E (Extension of Duration)): This project involves the construction of 234 residential units across three blocks (ranging from 1–8 stories) with associated facilities, including open space, a gym, a crèche, and a foyer. Although construction has not yet begun, the site is located several meters from the proposed greenway route near Carraig Glen, on the opposite side of the river.

Site at Ards, Cartref, and lands to the rear of Foxley (ABP30367519): Approximately 0.2 km south of the greenway's endpoint, this project includes 72 dwellings comprising 46 apartments across two 3-5 storey buildings, along with 26 terraced, semi-detached, and detached houses.

Cherrywood Heights Apartments (DZ24A/0017): Located around 2 km from the greenway, this development proposes 200 apartments across three blocks ranging from 4–5 stories.

Winterbrook and Barrington Tower Development (ABP31328122): Approximately 2.4 km away, this large-scale project includes the restoration of Barrington Tower and the construction of eight blocks of Build to Rent apartments.

Proposed Development at Cabinteely Park PC/PKS/02/24: The development of a single-story changing pavilion of c. 50 m², the restoration of the existing gate lodge, and a general upgrade of the entrance to include paving, planting, seating, bike stands, drainage and all ancillary works.

DZ20A/0491: Amendment to permitted residential scheme, Beechpark.

DZ24A/0621/WEB: Amendment to a previously permitted residential scheme in Brennanstown.

ABP31213221: Permission for a strategic housing development consisting of 419 no. Build to Rent residential units comprising: 412 no. apartment units on the Old Bray Road.

D18A/0402: Permission for modifications to approved Planning Permission Reg. Ref. D15A/0395 (scheme of 19 Residential dwellings) in Killart on the Clonkeen Road.

D18A0763: Permission for construction of a 34 no. unit residential development on the western side of the junction of Old Bray Road and Brennanstown Road.

DZ25A/0325/WEB: The development proposed consists of a residential development consisting of 121no. residential apartment units (total c. 11,291sqm GFA) accommodated in 2no. blocks, ranging in height from 3 – 5 storeys. The overall development proposed comprises of the following: 121 no. apartment units in 2 no. blocks.

Although these developments have been assessed individually and are not directly connected to the proposed development, they collectively contribute to:

- **Impact:** Reduction in green space.
Effect: The cumulative loss of semi-natural habitats across these projects reduces foraging, nesting, and sheltering opportunities for wildlife, especially in urbanised areas where green space is already limited.
- **Impact:** Increased Lighting
Effect: The combined increase in artificial lighting, particularly in the Brennanstown/Carraig Glen section of the greenway, represents a potential pressure on local wildlife. Light pollution can disrupt nocturnal species, impact foraging behaviours, and fragment habitats by creating areas avoided by sensitive fauna.

6.2.4 Conclusion

While no significant fragmentation of high-value habitats is anticipated, the cumulative reduction in green space and increased urbanisation highlight the importance of integrating wildlife-sensitive measures into the greenway design. Specifically, the anticipated increase in lighting emphasises the need to implement wildlife-sensitive lighting solutions, such as directional lighting, lower intensity lamps, and restricted operating hours, to minimise ecological impacts. The Lighting Plan that has been put forwards as mitigation is examined in detail in Section 7.1. Careful planning and mitigation during construction and operation will be critical to safeguarding the greenway's role as a biodiversity corridor amidst ongoing urban development.

7 Impact Mitigation

Mitigation measures to address the potential impacts from the proposed development on habitats and fauna within and surrounding the proposed developed (as required) are provided in the following sections.

To ensure compliance with biodiversity-related mitigation and measures, the Final Construction Environmental Management Plan (CEMP) will include provisions for an Ecological Clerk of Works (EcOW). The ECoW shall be a suitably qualified ecologist with experience in construction and ecological monitoring. Their name, qualifications, and experience will be submitted to Dún Laoghaire-Rathdown County Council (DLR) for approval prior to the commencement of works.

The responsibilities of the ECoW will include:

- Reviewing all relevant reports, licences, and drawings provided by the Project Ecologist.
- Consulting with any retained specialists (e.g., bat or otter specialists) and/or the Project Ecologist (PE) regarding wildlife licences and associated conditions.
- Consulting with the Invasive Species Specialist and/or PE regarding the Invasive Species Management Plan.
- Preparing and agreeing on a monitoring programme for all biodiversity-related mitigation

measures with DLR at least three weeks before construction begins.

- Acting as the primary point of contact with DLR Biodiversity during the construction phase, including agreeing on the frequency and number of site inspections and monitoring requirements for biodiversity-related mitigation, licences, and invasive species biosecurity protocols.
- Liaising with the PE, Principal Contractor (PC), and Site Manager (SM) to ensure the correct implementation of biodiversity-related mitigation measures.
- Monitoring compliance with all biodiversity-related mitigation measures and requesting relevant records and documentation from the SM as needed.
- Attending routine meetings with the SM to discuss biodiversity-related matters.
- Maintaining detailed records of ecological incidents, required remediation actions, and implementation outcomes, reporting these to the PE, PC, and DLR Biodiversity.
- Producing staged monitoring reports, in agreement with DLR, on the implementation of biodiversity mitigation measures. These reports will be submitted directly to DLR Biodiversity by the PE and shared with the PC.
- Providing technical guidance to the PC and SM regarding the implementation of biodiversity-related mitigation measures.

Compliance Assurance: No modifications to biodiversity-related mitigation measures shall be made post-Part 8 Process that would alter the ecological assessment outcomes, affect impact significance, or undermine the objectives of the Cherrywood SDZ Biodiversity Plan. Any proposed modifications must receive prior approval from DLR County Council and must not negatively impact biodiversity.

7.1 Mitigation Measures

The below tables detail the proposed mitigation measures for the construction and operational phases of the proposed development, that will reduce impacts, in line with the Mitigation Hierarchy – avoid, minimise, mitigate, compensate.

Table 16: Mitigation Measures and Ips for habitats during the construction phase post-mitigation.

Ecological Feature	Nature of potential Impact	Recommended Mitigation Measures	Impact after Mitigation
River & riparian zone	Moderate Adverse Light pollution of watercourse, increased human disturbance, potential reductions to water quality.	Construction Phase: • Ensure all works near Cabinteely Stream adhere to Inland Fisheries Ireland (IFI) guidelines to minimise disturbance. • Implement sediment and pollution control measures where necessary when constructing the bridge crossing, including silt fencing, biodegradable erosion control blankets, and buffer zones. Prohibit direct discharge of any construction-related materials into the watercourse. • An Ecological Clerk of Works (ECoW) will be present to supervise all instream works including the construction of the bridge crossing. Inland Fisheries Officers will be consulted at each stage of the process to approve proposed methodologies and ensure minimal impact on the aquatic environment. • Where the works will come within the 10 m buffer zone advised by IFI due to physical constraints, additional site-specific protective measures will be incorporated under the guidance of the ECoW,	Minor Adverse The proposed mitigation will decrease the likelihood of water pollution from physical materials as well as light pollution from impacting the watercourse.

		including but not limited to: ○ Ongoing ECoW presence during sensitive works. ○ Restricting works to daylight hours only to prevent light spill on the river. ○ Retention of the maximum amount of vegetation in the riparian zone. ○ Replanting of riparian areas that are disturbed as soon as possible for soil/habitat retention. Operational Phase: • Planting of new vegetation along the river between the river and the greenway route in certain areas to screen the river from increased noise and human presence. • New lighting, designed to reduce ecological impacts in accordance with Bat Conservation Trust/Institute of Lighting Professional and Dark Sky Ireland guidelines, will only be installed in Cabinteely Park and for the constrained c.130 m section east of Brennanstown Road and will be turned off between 22:00 and 06:00 every day to avoid light pollution between these hours. See next section for more detail.	
Dark areas (including treelines, hedgerows and any semi-natural habitats)	Moderate Adverse Light pollution in previously unlit areas may	Construction Phase: Works will not be carried out during nighttime hours, eliminating the need for ALAN during construction.	Moderate Adverse Controls put in place for lighting, namely

that have to this point been unlit.)	significantly impact the life cycles of species adjusted to regular darkness.	Operational Phase: Light pollution and the subsequent disruption to day-night cycles it causes, has been identified as a significant potential impact associated with this project. Much of these impacts stem from the addition of lighting of Cabinteely Park and the Brennanstown Section during the operational phase of this project. A lighting plan has been provided and reviewed for the purpose of this assessment. 123 no. lighting units will be installed as part of this development. Lighting will be installed along the greenway route, including within Cabinteely Park and between Brennanstown Road and Brennanstown Avenue, to the following specifications: • Light spill at the path under the lighting columns will be 5 lux, reducing to <0.5 lux at the edge of the lit zone. The warmth of the bulbs will be set to 2,200 K. • The lighting plan details the location and light spill along the entire route; however, the lighting plan drawing files are included in Appendix C. • All new lighting in Cabinteely Park and for the c. 130 m section from Brennanstown Road to Brennanstown Avenue will be turned off from 22:00 every evening, until 06:00 the following morning. These specifications are within the values recommended by the Bat Conservation Trust (ILP, 2023). No specific lighting guidance	cowling and changes to timing, warmth, and intensity, will significantly reduce the impacts associated with light pollution along the proposed greenway route. However, impacts will remain as a result of some ALAN persisting in terrestrial habitats and at the stream by the bridge crossing in autumn, winter and spring months.
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		could be found for any other species, apart from that issued by Dark Sky Ireland, which offers the same specifications as the ILP document. All columns, luminaires, cable and pillars, shall comply with Local Authority General Specification for Public Lighting. Lighting within the park will turn off completely at the park's closing times. The overall impact of the addition of lighting along the greenway is difficult to quantify, however based on the provided lighting plan, light spill is generally confined to the proposed route itself, with light intensity falling from 5 lux directly under the lighting columns down to 1 lux within 1 m of the edge of the path. With the exception of the new bridge crossing, the lighting plan shows that light intensity drops to 0.25 lux before it reaches the watercourse. At the new bridge crossing at the southern extent of the greenway (Appendix C, part 13), light spill of 3.0 lux and below will fall on the watercourse, illuminating c. 200 m² of riparian habitat, including the watercourse itself. This was communicated to the lighting design team, but they advised that no further cowling could be installed here to limit light spill more than the current designs. As such, the bridge will cause the illumination of the Cabinteely Stream for any hours between sunset and 22:00 and 06:00 and sunrise each day. There is expected to be no light spill on the river itself, however light spill of 0.3 lux and lower occurs on the top of the riverbank at six separate locations throughout the	
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		proposed route. These areas are shown on the light spill maps in Appendix C. Cowls will be fitted to lighting columns at each of these locations to further reduce light spill. Lighting in Cabinteely Park to the east of Brennanstown Road will be switched off from 22:00 to 06:00.	
Trees and woodland areas.	Moderate Adverse	Construction Phase: Prior to construction, and ecologist will visit the site with project engineer and mark RPZs along the route. Canopy protection measures can also be informed at this time. - Establish Root Protection Zones around each mature tree calculated as (12 x diameter of trunk at breast height). These zones should be clearly marked with protective fencing or barriers to prevent physical damage to tree roots, trunks, and branches during construction and trail use. Avoid excavation or any heavy machinery work within the root zone of mature trees. Bog mats will also be lain to spread the load if heavy machinery needs to pass through RPZs. Ensure that no materials or machinery are stored within the RPZ to prevent compaction of the soil and damage to the roots. Use no-dig construction techniques where feasible within RPZs. - Minimise ground disturbance within the root zones of trees by designing the trail and construction routes to avoid trenching or excavation near mature trees.	Minor Adverse as some trees will still be lost, though impacts beyond these trees may be avoided entirely if the proposed mitigation is adhered to. New planting will compensate the number of trees lost and contribute towards new habitat creation.

		• Install scaffolding or tree canopy protectors for any trees with low-hanging branches that may be at risk from construction activities. This will prevent physical damage to the canopy and protect against branch breakage during the construction of trails and other structures. If any tree branches must be pruned for safety or construction clearance, ensure pruning is carried out by a qualified arborist, following best practices. Pruning should be limited to what is necessary and conducted during the correct season to minimise stress on the trees. Other measures to be taken to protect habitats during construction: • Retain existing vegetation wherever possible to maintain habitat connectivity. Ensure that any areas cleared are as narrow as possible. Clearly define working corridors and limit disturbance outside these areas. Use temporary matting or designated access paths to prevent soil compaction and erosion. • Implement a replanting scheme using locally sourced native species to compensate for any habitat loss, particularly along the riparian corridor and in pollinator-friendly areas. Meadows will be allowed to develop using All-Ireland Pollinator Plan (AIPP) guidance through changing the cutting regime and management of these areas. Meadow areas to be seeded will be done so with species from DLR's	
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		'Local Soil Local Seed' project. A landscaping plan that has been developed in conjunction with this assessment for the proposed project has been provided that details the locations where new meadow management and tree planting will be located. Operational Phase: No significant impacts aren't foreseen to trees during the operational phase. Ongoing vegetation cutting (overhanging branches, brambles, etc.) will be carried out using hand tools by DLR Parks staff.	
Invasive species	Moderate Adverse Spread of invasive species.	Construction Phase: An Invasive Species Management Plan will be provided by a suitably qualified Invasive Alien Species Specialist in consultation with the DLR Biodiversity Officer during the detailed design phase. The IAS specialist will also provide input to the Final CEMP. This will be provided at least 5 weeks prior to the commencement of the proposed greenway. Operational Phase: Spread of invasive material is very hard to control on public routeways. Good control of invasive species in the area during the construction phase should significantly reduce the likelihood of future spread,	Minor Adverse Some risk of spread via shoes, boots, wheels and wind will remain for the greenway but good management at the construction phase should lower risk significantly.
Animal species sensitive to anthropogenic disturbance (e.g. increased noise, human	Moderate Adverse Presence of humans and dogs will deter wild	Construction Phase: Anthropogenic disturbance during construction will be inevitable. This will include: • Presence of workers • Movement of plant and machinery	Moderate Adverse These impacts are largely associated with

presence, dogs) during operation of greenway.	animal species from foraging/resting/breeding within the greenway footprint.	Excavation and installation of services (cabling etc.). Toolbox talks on minimising environmental impacts will be given to all site personnel, including measures to control noise and vibration. Working hours will be limited and will avoid works at dawn and dusk. The run-time of plant and machinery will be limited to that necessary. Acoustic barriers will be put in place to protect sensitive receptors, such as watercourses. The location of these will be determined at the detailed design phase. The use of rodenticides will not be employed as part of site maintenance. Operational Phase: Planting to screen sensitive areas, in particular the river, will help to reduce visual and noise disturbance from the greenway on surrounding areas. The degree to which this will help to screen human impacts is difficult to quantify, though vegetative barriers may reduce people from passing beyond the confines of the path in some areas. As such, some impacts will still remain, though they will largely be confined to daytime hours, which should reduce pressure on nocturnal and crepuscular species. While dog-on-leash bylaws exist for Cabinteely Park, they should be extended to the Brennanstown section to prevent dogs from running free here as they may disturb the river corridor, and deter/stress birds, fish and mammals. This is very hard to	the intended use of the greenway and so are difficult to avoid, mitigate, minimise or compensate for.
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		mitigate as part of this project as it is an element of the use of the greenway.	
Badger	Moderate Adverse Disturbance to foraging/breeding and loss of suitable habitat for resting breeding.	Construction Phase: Detailed pre-construction surveys will be carried out prior to construction to identify any Badger setts along the proposed route. Surveys should be carried out by licensed ecologists at the appropriate time of year (typically late winter or early spring) when badger activity is more detectable, no more than 1 year prior to commencement of construction. The surveys should identify any signs of Badger presence, including active setts, foraging areas, and latrines. If any active Badger setts are found within or near the trail route, these will be fully protected. Micro-siting of the proposed greenway route may be necessary in this instance. Ecologists will work with the design team to ensure that any setts will not be disturbed and no impediments to access by Badgers will be created. Setts will be clearly marked with signage or temporary fencing to ensure that construction activities do not directly impact them. It may also be necessary to establish buffer zones around the setts where no construction activity can occur, and should exclusion of setts be required, this is to be done so in consultation with NPWS. During works, the site will be kept in such a condition that no hazards to Badgers are created e.g. uncovered excavations, hazardous materials. Operational Phase: Minor impacts that may persist during the operational phase relate	Minor Adverse for the construction phase. Minor Adverse impacts may persist for the operational phase

		to indirect impacts from a level of disturbance that may occur from users of the Greenway.	
Otter	Moderate Adverse	Construction Phase: Conduct detailed pre-construction surveys to identify any active Otter holts along the proposed trail route. Surveys should be carried out by licensed ecologists, again, no more than 1 year prior to commencement of construction. If any active Otter holts are found within or near the trail route, these will be fully protected. Micro-siting of the proposed greenway route may be necessary in this instance. Ecologists will work with the design team to ensure that any holts will not be disturbed and no impediments to access by Otters will be created. Holts will be clearly marked with signage or temporary fencing to ensure that construction activities do not directly impact them. It may also be necessary to establish buffer zones around the holts where no construction activity can occur. During works, the site will be kept in such a condition that no hazards to Otters are created e.g. uncovered excavations, hazardous materials. Maintain or restore vegetated buffer zones along the lake and stream to filter runoff, provide cover for otters through planting, and protect their foraging habitats from disturbance. Operational Phase: Minor impacts that may persist during the operational phase relate	Minor Adverse for the construction phase. Minor Adverse impacts may persist for the operational phase.

		to indirect impacts from a level of disturbance that may occur from users of the Greenway.	
Bats	Moderate Adverse Loss of roosts, disturbance from construction activity. Disturbance from lighting and human activity at night.	Construction Phase: Pre-construction Ground Level Tree Assessment and Potential Roost Feature surveys will be carried out on all trees which will be impacted by route construction by a suitably qualified ecologist. Emergence surveys should be carried out during the bat activity season (typically from May to August). This will help determine the presence of any bat species and inform further mitigation efforts. All above surveys to be carried out as per Collins (2023) guidelines. Any tree containing potential roost features will be clearly marked and brought to the attention of site staff. No construction activities that may impact these trees will be permitted without guidance from an ecologist. Any tree felling required will be carried out between September 1st and October 31st (inclusive). This shall be carried out following NRA guidelines. Construction activities will conclude before dusk and will not be carried out under artificial lighting. The run-time of plant and machinery will be limited to that necessary. Operation Phase: Minor impacts that may persist during the operational phase relate to indirect impacts from a level of disturbance that may occur from users of the	Minor Adverse for construction phase. Minor adverse impacts may persist from human activity at night.

		Greenway.	
Nesting birds, including watercourse specialists like Red Listed Grey Wagtail.	Moderate adverse Impacts from light pollution on the stream and woodland/vegetated areas. Disturbance from increased human activity. Risk of water pollution from construction activities.	Construction Phase: A pre-construction survey to identify feeding areas and nest sites along the riparian corridor will be carried out by a suitably qualified ecologist, at least four weeks prior to construction. Water protection measures will be put in place, including but not limited to: • silt fencing • bunding of fuel-containing machinery/plant • limiting the spatial extent of works • no stockpiling of soil or storage of hazardous chemical within 50 m of watercourse. Anthropogenic disturbance during construction will be inevitable. This will include: • Presence of workers • Movement of plant and machinery • Excavation and installation of services (cabling etc.). Toolbox talks on minimising environmental impacts will be given to all site personnel, including measures to control noise and vibration. Acoustic barriers will be put in place to protect sensitive receptors, such as watercourses. The location of these will be determined at the detailed design phase. No work to be carried out near dusk, dawn, or at night to avoid disturbance during resting periods. The run-time of plant and	Minor Adverse Some noise will likely persist during construction, though it will be limited in duration. Minor impacts may persist for the operational phase (see above).

		machinery will be limited to that necessary. No vegetation removal or disturbance to vegetation (hedgerows, trees, scrub) will be permitted during the bird nesting season (March to August inclusive). If clearance is necessary, it should take place outside of the breeding season (September to February). Riparian vegetation will be protected from clearance or disturbance for the duration of the construction phase. Operation Phase: Minor impacts that may persist during the operational phase relate to indirect impacts from a level of disturbance that may occur from users of the Greenway.	
Freshwater Species	Minor Adverse Risk of water pollution from construction activities and habitat quality reduction from light pollution on stream.	Construction Phase: Adhere to Inland Fisheries Ireland (IFI) guidelines and conduct works within the recommended seasonal window (July–September). Maintain fish passage during bridge works to prevent fish stranding. All method statements and relevant sections of the Construction Environmental Management Plan that relate to works within 10 m of the river, as well as all water protection measures will be agreed upon with IFI. Measures may include: Coffer dams and pump-around systems to isolate work areas will be used where necessary for any in-stream works. Silt curtains or sediment traps will be implemented downstream of work areas where necessary to minimise fine sediment	Minor Adverse Good water protection measures should significantly reduce, if not remove, risk of long-term water pollution. Improved lighting measures will remove risk of illumination of the river for much of the route, however at the new bridge at the

		dispersal. The natural channel form will be restored using local gravels and cobbles to maintain appropriate substrate conditions for spawning fish. Introduce deflectors or flow-control structures where necessary to stabilise flow velocity and prevent bank erosion. Monitoring for signs of excessive erosion or habitat degradation will be carried out one year after works, adaptive management measures will be put in place if required. The construction methodology is to be agreed upon by IFI. Operational Phase: Reduction of light spill on river (detailed above) should ensure no artificial illumination on the river course.	southern extent of the proposed greenway, permanent direct light spill will result in the permanent illumination of c. 200 m² of the Cabinteely Stream during the dark hours from sunset to 22:00 and 06:00 to sunrise each day.
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7.2 Residual Impacts

An assessment of residual impacts identifies the impacts associated with a proposed project and the likely significance of impacts on the environment and its ecological features after the implementation of mitigation measures.

The mitigation measures detailed above will be sufficient to minimise the majority of the predicted impacts. Some of the mitigation is by avoidance, e.g. restricting working times, and will therefore remove any risk of impact. However, several predicted impacts may not be avoided but the significance of these impacts will be reduced through other mitigation, e.g. the use of acoustic barriers to limit impacts associated with noise. In some instances, even with the application of best practice mitigation, some residual impacts will likely remain. For example, the predicted increase in human activity along the proposed route, cannot be practically avoided or minimised, and so will remain an inherent disturbance impact of this proposed development.

The significance of these impacts after mitigation have been assessed as being Moderate Adverse (as

defined in Table 4.) at worst. Where the impact significance after mitigation has been assessed as Moderate Adverse, the ecological features are dark (previously unlit) areas and species sensitive to anthropogenic disturbance. It has been concluded that such impacts will be difficult to mitigate further given that the disturbance may arise from use of the Greenway. However, none of the impacts of Moderate Adverse significance will have effects on any species or habitat that are of greater than local or county importance. No significant residual impacts on any receptors of Regional, National or International importance are predicted.

The remainder of the impacts have been assessed as Minor Adverse after mitigation, meaning that no significant residual impacts will occur.

8 Biodiversity Enhancement & Compensation Measures

8.1 Barrier to Fish Passage Mitigation Feasibility Study

A barrier to fish passage is anything in a river that might stop a fish from passing or migrating or slow it down on the way up-river. Barriers can be natural or man-made and include weirs, bridges, waterfalls, culverts, debris blockages and hydroelectricity generating stations. Barriers can disconnect the natural flow of rivers and the sensitive ecosystems that exist in and around our rivers.

15 barriers to fish passage were identified along the proposed Cabinteely Greenway project area. This includes 12 weirs and 3 culverts. 15 of these structures are a complete barrier to adult trout. 14 are a complete barrier to cyprinids (minnow, stickleback) and one is a high impact partial barrier to cyprinids.

Removing these barriers would restore connectivity, re-establishing a continuous pathway from this section of the river to the sea. Carrying out barrier removal projects on man-made structures in river systems can be a complex process however, and therefore a feasibility study is needed to plan, research, survey, consult and identify the most appropriate management technique to adopt. This includes but is not limited to:

- The owners of any structure, fishery and associated landowners must be identified and consulted.
- Surveys must be carried out on existing natural environment including river flows, gradients, fish communities, sensitive species, underwater substrate, the wider riparian zone including potential upstream and downstream impacts.
- Studies should consider any potential impacts on safety, flooding, the environment, pollution, flood risk, archaeology, national monuments and on the social aspects of the river.
- Design options must be developed to find out what the most appropriate solution for fish passage is.
- Costing and prioritisation of projects

Barrier 'mitigation' can include many options, not solely the removal of a physical barrier, but examines

how connection can be achieved through various methods including fish passes etc. As such, a Fish Barrier Mitigation Feasibility Study for Cabinteely Stream is proposed to be undertaken as part of potential enhancement measures associated with the Cabinteely Greenway scheme. It is noted that the word mitigation here does not refer to mitigating effects from the proposed development but rather mitigating the existing fish passage barriers within the stream as an enhancement measure of this project.

This feasibility study will identify and assess barriers through surveys on the existing environment, hydromorphology, hydraulics, flooding and other aspects. It will assess the feasibility of barrier mitigation measures at the Cabinteely stream and identify any priorities for barrier mitigations measures. It will also include consultations with all relevant authorities and LA sections including in relation to flood schemes, water and drainage, pollution, heritage and ecology.

Any subsequent recommendations arising from the feasibility study regarding the appropriateness of carrying out barrier removal along the riparian corridor shall be discussed with the DLR Biodiversity Officer, DLR Parks Department and IFI. Any physical works to be undertaken would be subject to a scheme separate to the Cabinteely Greenway scheme and require its own process to obtain the necessary approvals and permissions.

8.2 Native Planting

Native plant species will be used for landscaping along the greenway to support local biodiversity, including wildflowers, shrubs, and trees. A landscaping plan has been provided that details the locations and areas that will be planted for biodiversity enhancement. This has been reviewed and will lead to a greater cover of new moderate-high ecological value habitat than that removed.

The landscaping plan will ensure that there is a net increase in the number of trees within the survey area following the completion of works. Therefore, if correctly implemented, this plan will ensure a net gain in native vegetation upon completion of works, however, this will be difficult to determine for some years to come. It will be ensured that all plants used are suited to the local soil and climate conditions. Suitable trees and shrubs are listed below.

Table 17: Native trees and shrubs proposed for planting along the greenway.

Common name	Latin name	Soil preference	Tolerates some shade	Tolerates exposure	Growth rate
Common	<i>Alnus glutinosa</i>	Grows in a wide variety of conditions including wet soils			F
Crab apple*	<i>Malus sylvestris</i>	Thrives in most fertile soils			S

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Blackthorn, sloe	<i>Prunus spinosa</i>	Grows in a wide variety of soils		Yes**	M
Wild Cherry*	<i>Prunus avium</i>	Prefers fertile, deep, well-drained soils	Yes		F/M
Dog rose	<i>Rosa canina</i>	Tolerates a wide range of soils			F
Elder	<i>Sambucus nigra</i>	Grows in a wide variety of soils (not acid)			F
Wych Elm*	<i>Ulmus glabra</i>	Prefers fertile free-draining soils	Yes		M
Common gorse	<i>Ulex europaeus</i>	Prefers dry and neutral to acid soils		Yes**	M
Guelder rose	<i>Viburnum opulus</i>	Prefers damp lime-rich soils	Yes		M
Hawthorn	<i>Crataegus monogyna</i>	Grows in a wide variety of soils	Yes	Yes	F/M
Hazel	<i>Corylus avellana</i>	Grows in a wide variety of soils (not acid)	Yes		F/M
Holly	<i>Illex aquifolium</i>	Grows in a wide variety of soils	Yes	Yes	M/S
Honeysuckle	<i>Lonicera periclymenum</i>	Prefers neutral to acid soils	Yes		M
Oak*	<i>Quercus spp.</i>	Grows in a wider variety of soils		Yes	S
Rowan *	<i>Sorbus aucuparia</i>	Grows in a wide variety of soils		Yes	F
Spindle	<i>Euonymus europaeus</i>	Prefers soils in damp lime-rich soils	Yes		M

Whitebeam *	<i>Sorbus aria</i> <i>Sorbus Hibernica</i> (endemic)	Prefers neutral to lime-rich soils	Yes	Yes**	M
Willows	<i>Salix spp.</i>	Generally prefer damp soils with heavy to medium texture		Yes	F

8.3 Long-Term Monitoring of Mitigation and Enhancement Measures

A net gain, or at the very least no net loss, of biodiversity is an aspiration of this proposed development, however this is a complex area as it requires detailed measuring and stock-taking of a set area, beyond the level of surveying carried out during the preparation of this report. Some habitat loss, changes in lighting levels, the installation of new artificial surface, and increased human presence will be primary impacts of this project, with new native planting and the creation of flowering meadows as secondary elements. Mitigation measures have been recommended to avoid, mitigate, minimise, and compensate for the impacts associated with this project; however not all impacts are entirely avoidable or can be compensated for e.g. the increase the human disturbance, the impacts of which are very challenging to assess without long-term baseline studies of animal activity before and after that were not within the scope of this assessment.

To establish whether the mitigation and enhancement measures proposed, have been effective, detailed monitoring will be required for several years after the completion of the greenway. Nature responds slowly to changes and so any monitoring programme must by necessity move at the pace of that which it aims to observe.

It is recommended that several sites around the project footprint be chosen by a team of ecologists, in conjunction with the DLR biodiversity officer, that are deemed representative of the habitats along the route corridor, including the landscaping measures. These will be subject to detailed floral studies to assess community diversity and how it is changing over time. The riverbanks should be prioritised here, as with the inclusion of riparian planting, some of the most drastic improvements arising from the greenway development may be seen here.

At the same time the site will be surveyed in line with the data collection required to carry out a biodiversity net-gain assessment. A standard net-gain assessment tool has been published in the United Kingdom, though a similar one does not yet exist in a published form in Ireland. Several state and semi-state organisations have developed their own, such as Uisce Eireann and Gas Networks Ireland. No specific tool is recommended here as this is still a relatively new area, and the landscape of what guidance is available may change by the time these surveys are carried out. As such, the net-gain assessment tool

used will be selected by DLR and the appointed ecologists closer to the date of the surveys, no more than one year prior to the commencement of the greenway construction.

Provisions will be made, that the resurvey sites and the net-gain assessment will be revisited at periods of one, three, five and ten years after the initial surveys, to be able to create a picture of how the ecosystems around the greenway route are changing over time. Several areas in the vicinity, but unconnected to the greenway, should also be assessed in the same way to provide a control to compare against those areas within the ZOI of the Greenway. This will be a long-term project, though is also relatively low-cost if good records are kept and will provide valuable insights into the effectiveness of mitigation and enhancement measures associated with active travel projects.

9 References

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Appendix A: Pictures



Amenity grassland and treeline at the Cornelscourt end of the route



Trees with moderate bat roosting potential where the route leaves Cornelscourt road and turns east



Three-cornered Leek in Cornelscourt flowerbed.



Riparian habitat along Glen Lawn Drive.



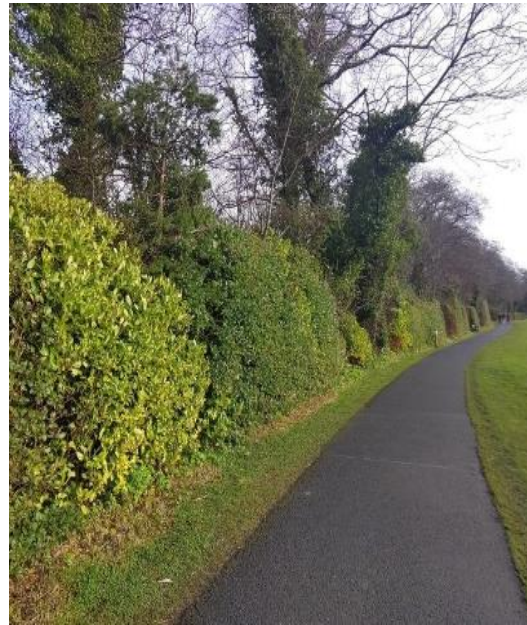
Amenity grassland along Glen Lawn Drive.



Section of wall which will be removed to facilitate route entrance to the park.



Large section of Winter Heliotrope along woodland edge. The route will run along this section.



Linear woodland section along Cabinteely Park contains high percentage of cherry laurel.



Woodland area by Carraig Glen. Proposed route will run along this footpath. Cherry Laurel is abundant.



Carrig Glen route section. The route runs closest to the river in this location.



Sign indicating treatment of Giant Hogweed at southeast end of route.



The most southern section of the proposed route between Brennanstown Rd and Bridge Gln Rd.

Appendix B: Wintering Bird Survey Results

Table 11: Location 1 results. Species cell colours indicate green, amber, or red listed status as per BOCCI 2020-2026. * denotes an Annex II species of the Birds Directive.

Species observed	BTO code	Number of individuals	Behaviour Code	Habitat	Notes
Black-headed Gull* (Chroiccephalus ridibundus)	BH	1	FL	Amenity Grassland, Treeline, Built Environment	Flying over meadow
Blackbird (Turdus merula)	B.	10	RE, FE, FL	Amenity Grassland, Treeline	Calls from the treeline, feeding on the meadow
Chaffinch (Frangilla coelebs)	CH	3	RE, FL	Amenity Grassland, Built Environment	Resting on tree and flying on the meadow
European Herring Gull (Larus argentatus)*	HG	4	RE, FL	Amenity Grassland, Built Environment	Flying over meadow
Hooded Crow (Corvus cornix)	HC	6	RE, FE, FL	Amenity Grassland, Treeline	mostly resting on the treeline
House Sparrow (Passer domesticus)	HS	2	CA, FL	Amenity Grassland, Treeline, Built Environment	Flying over meadow
Jackdaw (Coloeus monecula)	JD	6	CA, FL, RE	Treeline	Resting on tree and flying on the meadow
Magpie (Pica pica)	MG	6	CA, FE, FL, RE	Amenity Grassland, Treeline, Built Environment	Feeding on the meadow and flushed away by passing cars
Robin (Erithacus rubecula)	R.	4	CA, FL, RE	Amenity Grassland, Treeline	Calls from the treeline
Siskin (Spinus pinus)	SK	1	FL, RE	Treeline	Flying in and out the Ivy covering the tree

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Song Thrush (<i>Turdus philomelos</i>)	ST	1	FE, FL, RE, WA	Amenity Grassland, Treeline	Flying back and forth from the treeline to the meadow
Starling (<i>Sturnus vulgaris</i>)	SG	15	FL, FO	Amenity Grassland, Built Environment	Feeding on the meadow
Woodpigeon (<i>Columba palumbus</i>)	WP	6	DI, FE, FL, RE, WA	Amenity Grassland, Treeline, Built Environment	scared by passer-by with dog

Table 12: Bird survey results from location 2. Species cell colours indicate green, amber, or red listed status as per BOCCI 2020-2026. * denotes an Annex species of the Birds Directive.

Species Observed	BTO code	Number of Individuals	Behaviour Code	Habitat	Notes
Black-headed Gull (<i>Chroiccephalus ridibundus</i>)*	BH	22	AG, FE, FL, RE, WA	Amenity Grassland	Flocking and feeding in groups on the meadow on the other side of the stream. Chasing away two Song Thrushes.
Blackbird (<i>Turdus merula</i>)	B.	3	CA, FL, RE	Amenity Grassland, Treeline	Calls from the treeline
Blue Tit (<i>Cyanistes caeruleus</i>)	BT	3	CA	Treeline	Calls from the treeline
Herring Gull (<i>Larus argentatus</i>)*	HG	4	CA, FL	Amenity Grassland	Flying over meadow
Hooded Crow (<i>Corvus cornix</i>)	HC	8	CA, AG, FL, FO	Amenity Grassland	Mobbing against Sparrowhawk
Jackdaw (<i>Coloeus monedula</i>)	JD	20	CA, FE, FL, FO, WA	Amenity Grassland, Treeline	Flying over meadow and feeding.
Little Egret (<i>Egretta garzetta</i>)*	ET	1	PR, RE	Treeline	Resting on a tree while grooming feathers.
Magpie (<i>Pica pica</i>)	MG	6	CA, FE, FL, RE, WA	Amenity Grassland, Treeline	Different couples involved in different activities.
Robin (<i>Erithacus rubecula</i>)	R.	1	CA	Treeline	Calls from the treeline

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Song Thrush (<i>Turdus philomelos</i>)	ST	6	DI, FE, WA	Amenity Grassland	Feeding on the meadow until scared by a Sparrowhawk. Came back after 20 minutes. Kept on feeding until chased away by two Black-headed Gulls.
Sparrowhawk (<i>Accipiter nisus</i>)*	SH	1	DI, FL	Amenity Grassland	Mobbed by Hooded Crow
Starling (<i>Sturnus vulgaris</i>)	SG	1	FE, WA	Amenity Grassland	Feeding on the meadow among the Jackdaws
Treecreeper (<i>Certhia familiaris</i>)	TC	1	CA	Treeline	Calls from the treeline
Woodpigeon (<i>Columba palumbus</i>)	WP	6	FE, FL, RE, WA	Amenity Grassland, Treeline	Resting on a tree and feeding on the meadow.

Table 13: Location 3 results. Species cell colours indicate green, amber, or red listed status as per BOCCI 2020-2026. * denotes an Annex species of the Birds Directive.

Species Observed	BTO code	Number of Individuals	Behaviour Code	Habitat	Notes
Black-headed Gull* (<i>Chroicocephalus ridibundus</i>)	BH	5	FO	Amenity grassland	Flying from the artificial pond nearby
Blackbird (<i>Turdus merula</i>)	B.	5	CA, FE, FL, WA	Amenity grassland, Treeline	Calls between individuals and feeding on the meadow
Coal Tit (<i>Periparus ater</i>)	CT	1	CA	Treeline	Calls from the treeline
Hooded Crow (<i>Corvus cornix</i>)	HC	4	FL	Amenity grassland	Flying over the meadow.
Jackdaw (<i>Coloeus monedula</i>)	JD	3	FL	Amenity grassland	Flying over the meadow. Feeding until flushed away by a jogger.
Magpie (<i>Pica pica</i>)	MG	8	CA, FE, FL, WA	Amenity grassland, Treeline	Flying over the meadow.
Mallard (<i>Anas platyrhynchos</i>)	MA	3	FE, WA	Amenity grassland	Walking from the pond and entering the stream.

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Robin (<i>Erithacus rubecula</i>)	R.	3	CA	Treeline	Calls between individuals
Song Thrush (<i>Turdus philomelus</i>)	ST	2	FE, WA	Amenity grassland	Moving in pairs and flying back and forth from the wooded area
Woodpigeon (<i>Columba palumbus</i>)	WP	7	CA, FE, FL, WA	Amenity grassland, Treeline	Resting on trees and feeding on the meadow.

Table 14: Location 4 results. Species cell colours indicate green, amber, or red listed status as per BOCCI 2020-2026. * denotes an Annex species of the Birds Directive.

Species Observed	BTO code	Number of Individuals	Behaviour Code	Habitat	Notes
Blackbird (<i>Turdus merula</i>)	B.	8	CA, FE, RE	Amenity grassland, Hedgerow	Feeding on the meadow and coming back to the hedgerow.
Dunnok (<i>Prunella modularis</i>)	D.	2	CA, RE	Hedgerow	Calls coming from the hedgerow on the opposite side to the construction site.
Herring Gull (<i>Larus argentatus</i>)*	HG	3	FL	Amenity grassland	Flying over meadow
Hooded Crow (<i>Corvus cornix</i>)	HC	2	CA, FE, RE	Amenity grassland	Resting on a tree
Jackdaw (<i>Coloeus monecula</i>)	JD	5	FO	Amenity grassland	Flying over meadow
Magpie (<i>Pica pica</i>)	MG	10	CA, FL	Amenity grassland	Flying over meadow
Robin (<i>Erithacus rubecula</i>)	R.	4	CA, RE	Hedgerow	Calls coming from the hedgerow.
Woodpigeon (<i>Columba palumbus</i>)	WP	5	FE, FL, RE	Amenity grassland, Hedgerow	Flying over meadow and resting on a tree and the hedgerow. Feeding on the meadow.

Appendix C: Light Spill Maps

The following maps detail the location of all luminaires involved with this project, including new lighting columns that will be installed during the construction phase (see figures 1 and 2) as well as existing lighting columns that will be upgraded. Also included are the predicted light spill zones, with coloured bands indicating the changing lux levels (unit of illuminance) on the ground around the lighting towers.



Cabinteely Greenway - Light spill along route

- New lighting columns
- Proposed Route
- Lux 5.0
- Lux 3.0
- Lux 1.0
- Lux 0.5
- Lux 0.25
- Scheme Extents



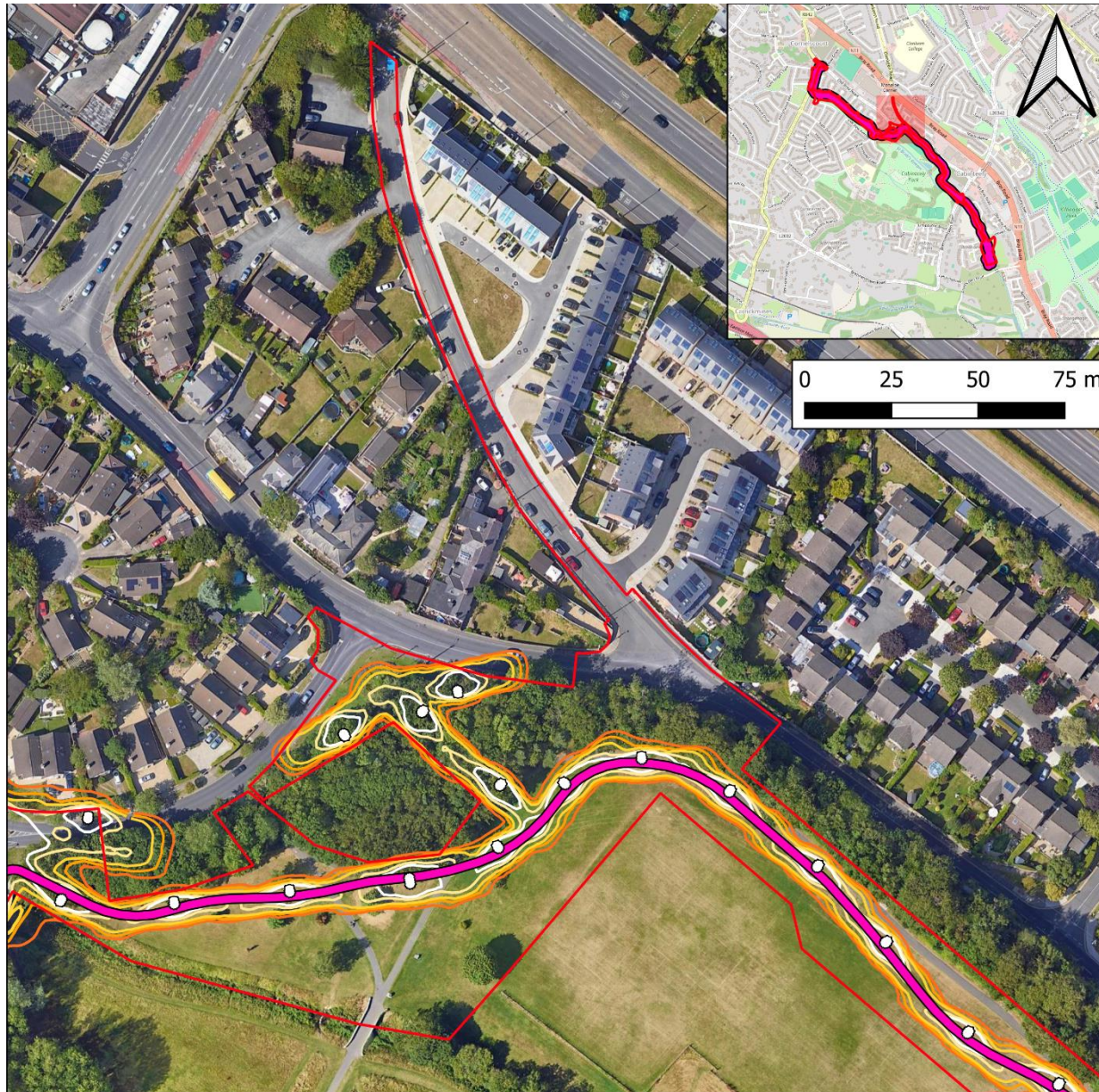
Cabinteely Greenway - Light spill along route

- New lighting columns
- Proposed Route
- Lux 5.0
- Lux 3.0
- Lux 1.0
- Lux 0.5
- Lux 0.25
- Scheme Extents



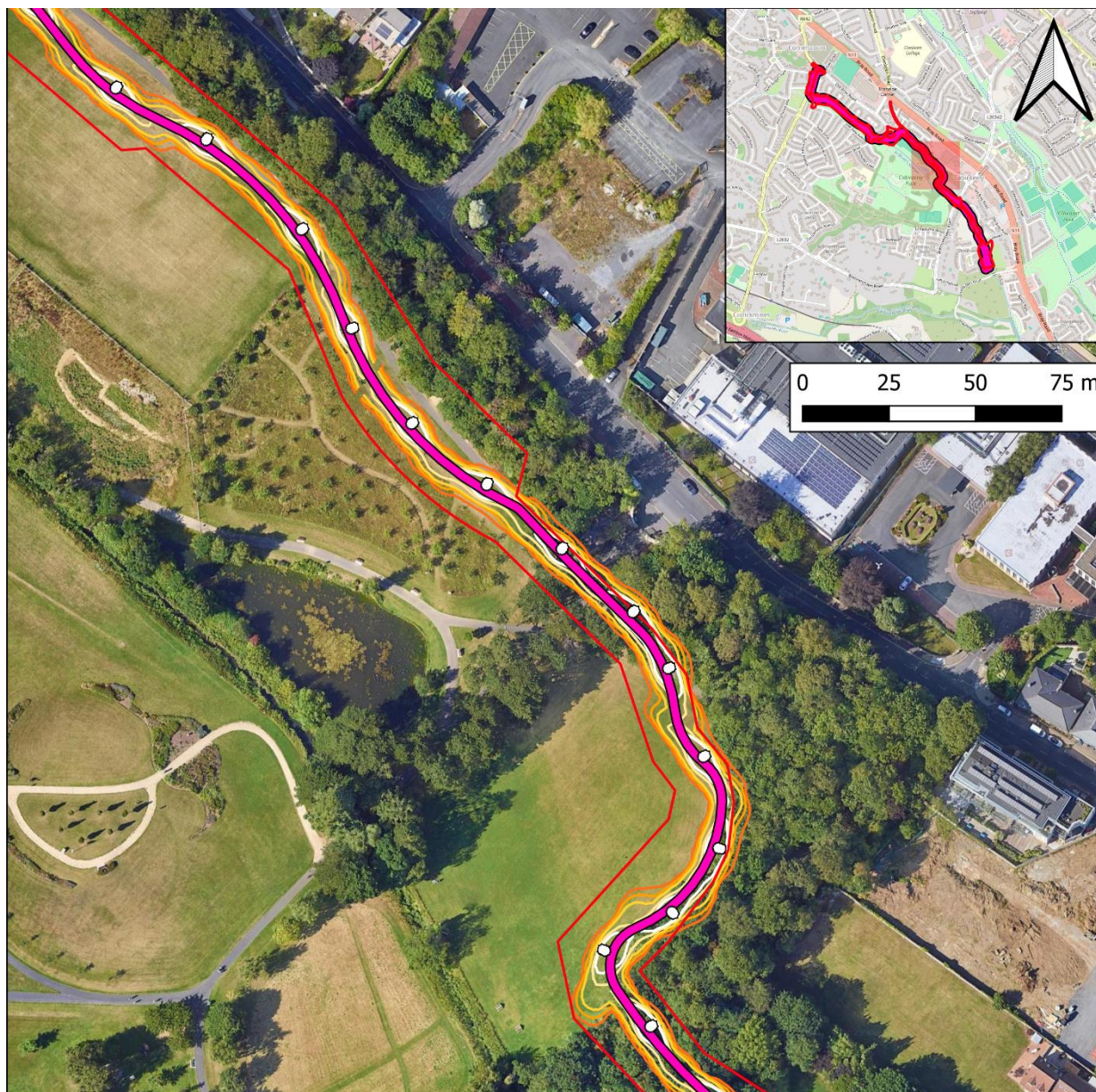
Cabinteely Greenway - Light spill along route

- New lighting columns
- Proposed Route
- Lux 5.0
- Lux 3.0
- Lux 1.0
- Lux 0.5
- Lux 0.25
- Scheme Extents



Cabinteely Greenway - Light spill along route

- New lighting columns
- Proposed Route
- Lux 5.0
- Lux 3.0
- Lux 1.0
- Lux 0.5
- Lux 0.25
- Scheme Extents



Cabinteely Greenway - Light spill along route

- New lighting columns
- Proposed Route
- Lux 5.0
- Lux 3.0
- Lux 1.0
- Lux 0.5
- Lux 0.25
- Scheme Extents



Cabinteely Greenway - Light spill along route

- New lighting columns
- Proposed Route
- Lux 5.0
- Lux 3.0
- Lux 1.0
- Lux 0.5
- Lux 0.25
- Scheme Extents



Cabinteely Greenway - Light spill along route

- New lighting columns
- Proposed Route
- Lux 5.0
- Lux 3.0
- Lux 1.0
- Lux 0.5
- Lux 0.25
- Scheme Extents



