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Biodiversity Enhancement Plan

PRESENTED TO

Malclose Limited
Proposed Development at Gowan House, Carriglea Business Park, Naas Road, Dublin 12, D12 RCC4

November 2023

Environmental Consultancy Services

DOCUMENT CONTROL SHEET

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1 INTRODUCTION

1.1 Background

Enviroguide Consulting was commissioned by Malclose Limited to prepare a Biodiversity Enhancement Plan (BEP) for a Large-scale Residential Development (LRD) (the 'Proposed Development') at Gowan House, Carriglea Business Park, Naas Road, Dublin 12, D12 RCC4 (the 'Site').

1.2 Quality Assurance and Competence

Synergy Environmental Ltd., T/A Enviroguide Consulting, is a multi-disciplinary consultancy specialising in the areas of the Environment, Waste Management and Planning. All our consultants carry scientific or engineering qualifications and have a wealth of experience working within the Environmental Consultancy sectors.

Professional memberships include the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM). All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. SOB and BT, Ecologists with Enviroguide, carried out the bat activity survey for this report. SOB and BMcC, Ecologists with Enviroguide, along with AA, an external consultant, undertook the bat emergence survey. SOB undertook the remaining ecological surveys and desktop research for this report.

SOB has a B.A. in Zoology from Trinity College Dublin and a M.Sc. Hons. in Wildlife Conservation and Management from University College Dublin, and has experience in desktop research, report writing, and literature scoping-review, as well as practical field and laboratory experience (Pollinator surveying, sampling and identification, habitat surveying, invasive species surveying, etc.). SOB has prepared Stage I and Stage II Appropriate Assessment (AA) Reports, Invasive Species Surveys, Ecology Statements, and Ecological Impact Assessments (EcIA).

BT has a B.Sc. in Environmental Biology (Hons) and a PhD in Marine Ecology from University College Dublin, and a wealth of experience in desktop research, literature scoping-review, and report writing, as well as practical field experience (Habitat surveys, intertidal surveys, winter bird surveys, bat surveys, vantage point surveys and fresh water macro-invertebrates etc.). BT has experience in compiling Biodiversity Chapters of EIARs, Appropriate Assessment (AA) screening and Natura Impact Statement (NIS) reports, and in the overall assessment of potential impacts to ecological receptors from a range of developments.

BMcC, graduate Ecologist and experienced Ornithologist, has 11 years surveying experience and is a longstanding and active member of Bird Watch Ireland. BMcC has provided a range of Ornithology survey work for ecological consultancies, e.g., Vantage point surveys of Gulls, Terns, Raptors, Waders and Wildfowl; hinterland surveys of the above as well as riverine species; and breeding waders and country birds. BMcC is highly experienced with all survey methodologies and with surveying all species groups of Irish birds and migrants.

AA holds a BSc in Environmental management, is a qualifying member of CIEEM, a member of the British trust for Ornithology and the botanical society of Britain and Ireland. AA has over

20 years experience of carrying out bird surveys for various organisations including ecological consultancies. These surveys include general breeding/wintering bird, hinterland, Vantage point, breeding waders/raptors and specialised surveys for hen harrier, merlin, barn owl and woodcock. All these surveys are completed using the most up to date survey methodologies with which AA is highly experienced.

AA is also experienced in habitat mapping using the Fossitt methodology and has experience completing AA Screenings and NISs for afforestation projects including mitigation measures following Department of agriculture, forestry and marine. He also carries out pollinator surveys and monitors rare plant populations for the national biodiversity data centre. AA also has experience supporting with dusk bat activity transect surveys.

2 PROJECT DESCRIPTION

2.1 Site Location

The Proposed Development Site is 0.962 Ha and is located along the Naas Road (R810), which abuts the north of the Site. The east and west of the Site are bound by commercial premises, with an apartment block to the southeast of the Site, and an active construction Site to the south. The surrounding landscape is predominantly urban in nature. The location of the Site is presented in Figure 1 below.

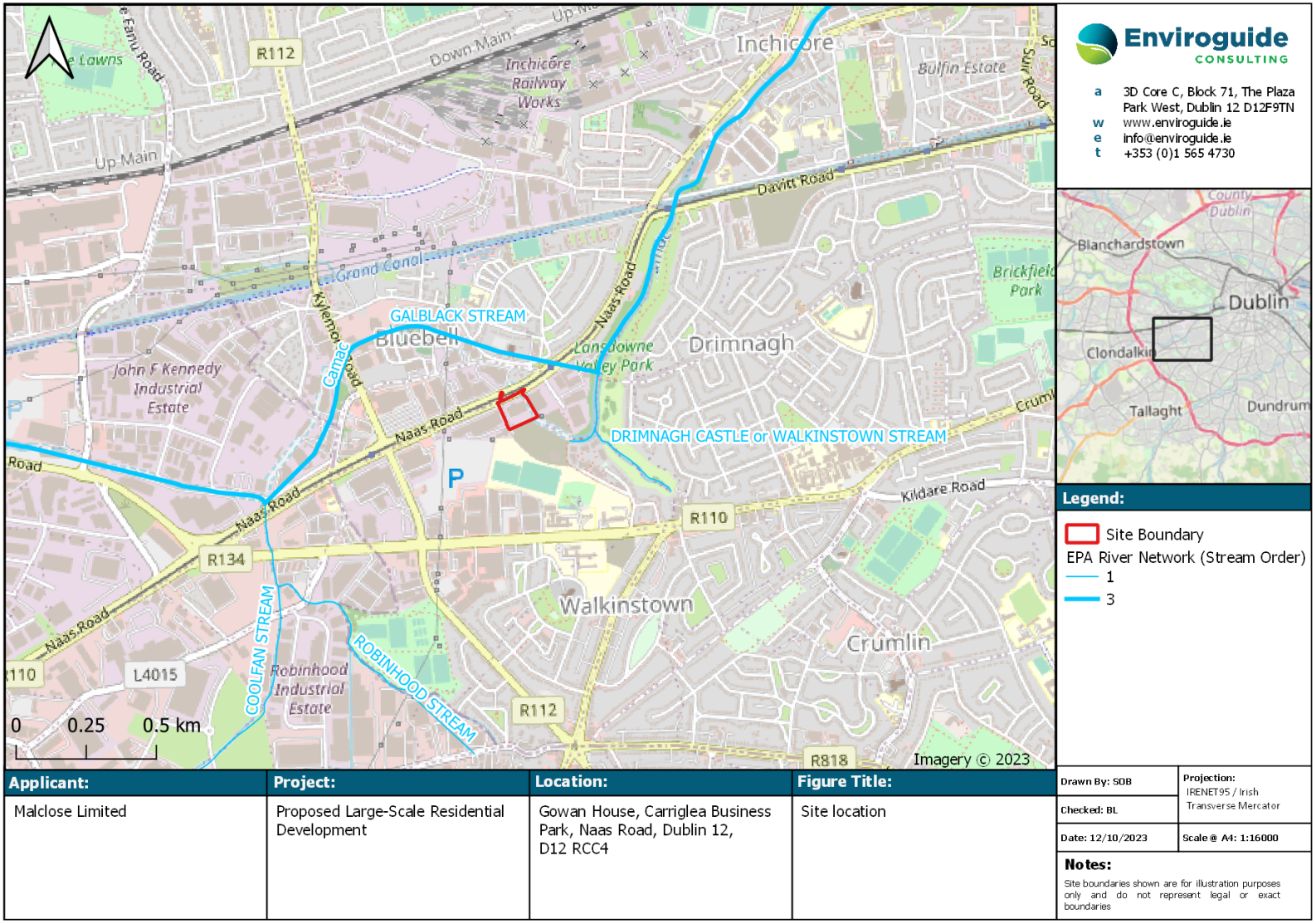

FIGURE 1. SITE LOCATION (RED LINE INDICATIVE OF PROPOSED DEVELOPMENT SITE BOUNDARY)

2.2 Proposed Development Description

Malclose Limited intend to apply to Dublin City Council for permission for a LRD principally comprising student accommodation at this 0.962 Ha Site at Gowan House, Carriglea Business Park, Naas Road, Dublin 12, D12 RCC4.

The Proposed Development will principally consist of: the demolition of the existing two-storey office/warehouse building and outbuilding (5,172 sq m); and the construction of a development in two blocks (Block 1 (eastern block) is part 2 No. storeys to part 15 No. storeys over lower ground floor and basement levels with roof plant over and Block 2 (western block) is part 9 No. storeys to part 11 No. storeys over basement with roof plant over) principally comprising 941 No. Student Accommodation bedspaces (871 No. standards rooms, 47 No. accessible studio rooms and 23 No. studios) with associated facilities, which will be utilised for short-term lets during student holiday periods. The 871 No. standard rooms are provided in 123 No. clusters ranging in size from 3 No. bedspaces to 8 No. bedspaces, and all clusters are served by a communal living/kitchen/dining room.

The Proposed Development also provides: ancillary internal and external communal student amenity spaces and support facilities; cultural and community floor space (1,422 sq m internal and 131 sq m external) principally comprising a digital hub and co-working space with ancillary cafe; a retail unit (250 sq m); public open space; the daylighting of the culverted River Camac through the site; an elevated walkway above the River Camac at ground floor level; a pedestrian bridge link at first floor level between Blocks 1 and 2; vehicular access at the south-western corner; the provision of 7 No. car-parking spaces, 2 No. motorcycle parking spaces and 2 No. set down areas; bicycle stores at ground and lower ground floor levels; visitor cycle parking spaces; bin stores; substations; hard and soft landscaping; green and blue roofs; new telecommunications infrastructure at roof level of Block 1 including antennas and microwave link dishes, 18 No. antennas and 6 No. transmission dishes, together with all associated equipment; boundary treatments; plant; lift overruns; and all associated works above and below ground.

The gross floor area of the development is c. 33,140 sq m comprising c. 30,386 sq m above lower ground and basement level.

2.2.1 Drainage and Water Supply

2.2.1.1 Surface water

As outlined in the Civil Engineering Infrastructure & Surface Water Management Report (BMCE, 2023) accompanying this application, the Site is currently served by an existing surface water sewer network, which drains to the River Camac culverted beneath the Site, flowing from the northeast to the southwest. As part of the Proposed Development, it is proposed a new surface water gravity drainage system will collect run-off from the roof and paved areas, and will connect to a newly constructed chamber adjacent to the Camac culvert. The River Camac flows into the River Liffey 3.5km northeast of the Site, before ultimately discharging to Dublin Bay.

Sustainable Urban Drainage Systems (SUDS) measures have been incorporated as part of the Proposed Development. It is also proposed to include green and blue roof coverage, which will allow for the infiltration and attenuation of rainwater. Permeable paving is proposed for the

pedestrian and non-trafficked hard surfaces on Site and will infiltrate to the ground via a soakaway, which will control the rate of infiltration. Swale features will also be included to collect surface water discharge from areas of impermeable paving.

2.2.1.2 Foul Drainage

As outlined in the Civil Engineering Infrastructure & Surface Water Management Report (BMCE, 2023) accompanying this application, an existing public foul water network runs along Carriglea Industrial Estate road to the west of the Site. It is proposed a newly constructed foul water system from the Site will discharge to this network via a new connection during the Operational Phase of the Proposed Development. This foul water will be treated at Ringsend Wastewater Treatment Plant (WwTP) before discharging into Dublin Bay.

2.2.2 Daylighting the River Camac

As outlined in the CEMP (AWN Consulting, 2023), a new central river channel will be created within the centre of the Site. Sandbags will be placed on both sides of the culvert with protective sheeting installed over the top of the channel. To facilitate the demolition phase, a temporary working platform with handrails will be put in place.

The procedure of works for the daylighting of the River Camac include:

- Excavation to uncover the current River Camac culvert.
- Construction of retaining walls along both sides of the culvert.
- Demolition of the existing culvert lid.
- Excavation and creation of sloped ground at the land boundaries to reach the necessary formation levels.
- Installation of contiguous piled wall along a portion of the southeastern boundaries.

3 BASELINE ECOLOGICAL CONDITIONS

Multiple surveys have been conducted to determine the baseline ecological conditions at the Site. Table 1 shows the types of surveys carried out and the dates they were completed.. These results are referenced where relevant in this BEP.

TABLE 1. SCHEDULE OF ALL ECOLOGICAL SURVEYS CARRIED OUT AT THE PROPOSED DEVELOPMENT TO DETERMINE BASELINE CONDITIONS AT THE SITE.

Survey Type	Date
Ecological Walkover	12/08/2022
Habitat and Flora Surveys	12/08/2022 21/08/2023
Non-Volant Mammal Surveys	12/08/2022 21/08/2023
Invasive Alien Plant Species Surveys	12/08/2022 21/08/2023
Bird Scoping Survey	12/08/2022 21/08/2023
Bat Emergence Survey	21/08/2023
Daytime Bat Habitat Assessment Survey	12/08/2022

Survey Type	Date
Dusk Bat Transect Survey	15/09/2022

All surveys have been undertaken having regard to best practice guidelines and guidance documentation published by relevant bodies including Transport Infrastructure Ireland (TII). A complete list of all surveys conducted, including their respective methodologies and results is detailed in the Ecological Impact Assessment (EcIA) Report which supports this planning application.

3.1 Habitats and Flora

The habitat types recorded in and around the Site boundary were recorded and are listed in Table 2 below.

TABLE 2. HABITATS RECORDED AT THE PROPOSED DEVELOPMENT SITE.

Habitat	Fossitt Code
Buildings and artificial surfaces	BL3
Scattered trees and parkland	WD5
Ornamental/non-native shrub	WS3
Amenity Grassland (improved)	GA2

The predominant habitat observed on Site is *Buildings and Artificial Surfaces BL3* in the form of a building and car park. The boundaries of this hardstanding area are comprised of *Amenity Grassland (improved) GA2*, with daisy (*Bellis perennis*), dandelion (*Taraxacum officinale agg*.), creeping cinquefoil (*Potentilla reptans*), and yarrow (*Achillea sp*.) recorded throughout. A number of semi-mature trees, including lime (*Tilia sp*.), sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), and cherry (*Prunus sp*.) have been planted along the west, south, and east borders of the Site to create *Scattered Trees and Parkland (WD5)* habitat.

An area of *Ornamental/non-native Shrub WS3* is currently planted at the entrance along the south of the building, with floral species such as lavender (*Lavandula sp*.), tutsan (*Hypericum androsaemum*), Japanese acer (*Acer palmatum*), buddleia (*Buddleja davidii*), and flax (*Linum sp*.) observed throughout.

No rare or protected flora were observed at the Site during this survey.

The habitat types recorded in and around the Site boundary were recorded and are shown in Figure 2.

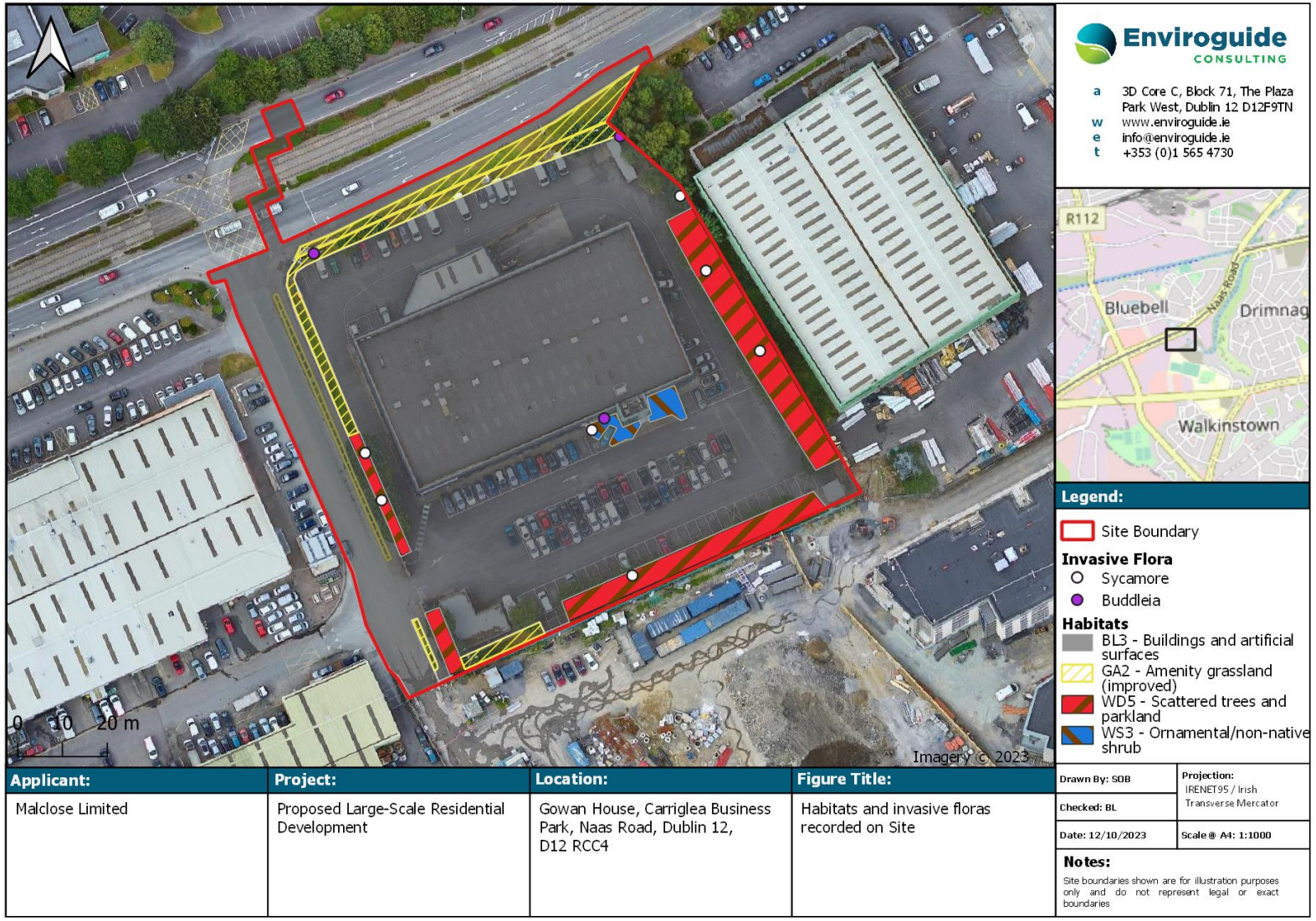

FIGURE 2. MAP SHOWING THE HABITAT TYPES (INCLUDING IAS SPECIES, WHERE THEY WERE RECORDED) AT THE PROPOSED DEVELOPMENT SITE.

Two Medium Impact (Kelly et al., 2013) invasive alien plant species (IASPs) were recorded on Site during site visits in August 2022 and August 2023 by Enviroguide. These include:

- Buddleia (*Buddleja davidii*).
- Sycamore (*Acer pseudoplatanus*).

Neither of these species are listed on the Third Schedule of European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011).

Three medium-sized stands of buddleia were noted on Site, within the northeast corner, northwest corner, and ornamental planting area on Site. Semi-mature sycamore was planted intermittently along the boundaries of the Site.

There were no plant species listed under the Flora (Protection) Order 2022 found during any of the ecological walkover surveys.

3.2 Protected Fauna (Excluding Bats)

No evidence of mammals were recorded within the Site of the Proposed Development. The habitats available at the Site are not optimal for the majority of the native mammals recorded within the relevant grid square due to the hardstanding on Site, however, may support small numbers of commuting and foraging pygmy shrew (*Sorex minutus*) and hedgehog (*Erinaceus europaeus*).

The National Biodiversity Data Centre (NBDC) records exist for these species in the vicinity of the Proposed Development.

In addition to the above, the Site was checked for any evidence of amphibian/reptile habitat suitability and activity. The results showed that no amphibian or reptile species were recorded during the field surveys carried out. There is also no suitable habitat (breeding, refuge, foraging etc.) present at the Site of the Proposed Development for common frog (*Rana temporaria*) or smooth newt (*Lissotriton vulgaris*).

3.3 Bats

The linear habitat features such as the treelines within the Site were assessed for bat roost potential and foraging/commuting suitability. The treelines on-site were composed of a variety of species including lime, ash and sycamore. All of the trees on-site are considered to be of *Negligible* bat roost potential given the lack of potential roost features (PRFs) as outlined in Table 4.1 in the Bat Conservations Trust's Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) i.e., "*negligible habitat features on Site likely to be used by roosting bats*" (Collins, 2016).

Enviroguide bat surveys conducted in August 2022 and August 2023 recorded two bat species using the Site; common pipistrelle *(Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*). Two individual bats were detected at the Site during the activity survey in August 2022. One common pipistrelle was observed commuting along the southern treeline to the southeast of the Site at 20:07pm, with one soprano pipistrelle was recorded commuting along the treeline at eastern boundary at 20:16pm.

During the emergence survey in August 2023, a single common pipistrelle was recorded emerging from above the right loading bay on the north side of the building at 21:05pm, which then commuted west and was recorded by the surveyor within the northwest of the Site.

Bat activity was generally sparse throughout the Site during both surveys, despite suitable weather conditions.

3.4 Birds

A bird scoping survey was carried out on 12th of August 2022. The survey was carried out in suitable weather conditions and within daylight hours. During this walkover, a total of four species of birds were recorded within the Site (Table 3), all of which are green listed (Gilbert et al., 2021). Herring gulls (*Larus argentatus*) were recorded on the roof of the building immediately east of the Site. Very little bird activity was encountered on Site, however pieces of egg shells were noted at the base of a tree along the northeast boundary, indicating potential breeding activity on Site. The ground truthing survey undertaken on the 21st of August 2023 determined there is limited suitable habitat for nesting birds on Site.

TABLE 3. BIRD SPECIES RECORDED ON THE 12TH OF AUGUST 2022.

Species	BoCCI Status
Woodpigeon (*Columba palumbus*)	Green
Robin (*Erithacus rubecula*)	Green
Wren (*Troglodytes troglodytes*)	Green
Blackbird (*Turdus merula*)	Green

Under the Wildlife Acts 1976, it is an offence to hunt, interfere with or destroy the breeding or resting places of bird species unless authority is obtained via a statutory licence provision.

3.5 Other Fauna

Other fauna including fish, reptiles, and invertebrates that have the potential to utilise areas within the landscape surrounding the Site of the Proposed Development, or for which records exist in the wider area, were also considered during the ecological walkovers. However, it has been noted that there are no watercourses or standing bodies of water at the Proposed Development Site, therefore it is deemed that there is no habitat suitability for fish, amphibians, or invertebrates whose life cycle requires waterbodies to be present.

4 BIODIVERSITY ENHANCEMENT MEASURES

4.1 Vegetated Habitats

4.1.1 Proposed Landscape Planting

4.1.1.1 Native Planting

The proposed Landscape Design Plan for the Proposed Development (Stephen Diamond Associates, 2023) includes semi-mature native and pollinator-friendly tree, shrub, aquatic, and ground flora planting along the daylighted section of the River Camac (Figure 3). Many of the proposed species are listed on the Pollinator Friendly Planting Code (NBDC, 2022) under the All-Ireland Pollinator Plan 2021 – 2025 (NBDC, 2021). These species include:

- Scot's pine (*Pinus sylvestris*)
- Downey birch (*Betula pubescens*)
- Bird cherry (*Prunus padus*)
- Aspen (*Populus tremula*)
- Alder (*Alnus glutinosa*)
- Goat willow (*Salix caprea*)
- Eared willow (*Salix aurita*)
- Hawthorn (*Crataegus monogyna*)
- Hazel (*Corylus avellana*)
- Sloe (*Prunus spinosa*)
- Wild privet (*Ligustrum vulgare*)
- Guelder rose (*Viburnum opulus*).

4.1.1.2 Biodiverse Roofs

Extensive green/blue roofs are proposed across the buildings within the development Site to further enhance biodiversity at the Site. Only native wildflower species will be utilised. This will provide another resource for foraging bats and birds as well as an increase in pollinator habitats.

4.1.1.3 Riparian and Wildlife Pond Planting

Wildlife ponds will also be included along the lower areas of the daylighted section of this river and will include aquatic native plant species, such as yellow iris (*Iris pseudacorus*), to provide still water specifically as amphibian and invertebrate habitat as part of the Proposed Development. Iris and ferns will also be planted along the riverbanks to provide ground flora along the watercourse.

FIGURE 3. LOWER GROUND FLOOR MASTERPLAN. DRAWING NUMBER: 22-579-SDA-PD-DR-GF-001 (STEPHEN DIAMOND ASSOCIATES, 2023).

4.1.2 Habitat Management and Maintenance

4.1.2.1 Grassland & Wildflower Meadow Management

A pollinator-friendly mowing regime will be implemented as per the All-Ireland Pollinator Plan 2015-2020 guidance leaflet '*Gardens: actions to help pollinators*'[1]:

- Where possible, areas of amenity grass shall be mown on a reduced mowing regime and shall not be mown until the 15th of April. This will allow important pollinator plants such as Dandelion to flower. Thereafter grass can be cut on a six-weekly rotation (**5 cut and lifts per year**). Second cut at the end of May, third cut in mid-late July to maximise growth of Clovers and other wildflowers, fourth cut at the end of August and the fifth cut after mid-October.
- Cutting arisings will be removed to an off-site compost facility. Mowing to be carried out when ground conditions are appropriate i.e., when soil is moist but not waterlogged. It is noted that, as these areas of amenity grassland are for use by future residents, there may be limited potential for areas of reduced mowing of amenity grassland, and that this will be adopted where possible (along margins forming a less managed verge may be appropriate).
- Areas of wildflower meadow will be cut **1-2 times annually**; once in early spring and once in September as per the All-Ireland Pollinator Plan 2015-2020 guidance leaflet '*Pollinator-friendly grass cutting*'[2].
- Cuttings will ideally be left lie for a few days to allow any seed to drop and then removed. Meadows managed in this way will allow wildflowers to bloom throughout the pollinator season and also provide undisturbed areas for nesting.
- Mowing will be undertaken during dry conditions to avoid compacting and potentially damaging the soil structure.

4.1.2.2 Low Intervention Riparian Understorey Management

The proposed riparian habitat will be managed in a way that maximizes the ecological value it provides. By managing understorey areas more naturally, they will provide more in terms of biodiversity; through increased plant diversity, increase provision of food resources and higher quality shelter to wildlife inhabiting and commuting through the area.

- Where trimming of dense scrub understorey needs to occur, delay trimming as late as possible – until January and February as the surviving berry crop will provide valuable food for wildlife. The earlier this is cut; the less food will be available to help birds and other wildlife survive through the winter. Any scrub/understorey cutting will be done **outside of the nesting season (March 1st- August 31st)** and due consideration of the Wildlife Act 1976 (as amended) needs to be taken.
- When trimming dense scrub understory during the winter months, the vegetation will first be thoroughly checked by a suitably qualified Ecologist for any hibernating mammals, such as hedgehog. Where hibernating mammals are found, no trimming will take place within close proximity (a minimum of 30m) to the hibernating animal.

[1] https://pollinators.ie/wp-content/uploads/2022/12/Garden-Pollinator-Guidelines-2022-WEB.pdf

[2] https://pollinators.ie/wp-content/uploads/2022/05/Pollinator-friendly-grass-cutting-A5-Flyer-2022-PRINT.pdf

- Where possible, minimise the frequency riparian understorey areas are cut, if at all, (as cutting annually stops the scrub species flowering and fruiting) and cut in a three year rotation rather than all at once - this will ensure some areas of dense vegetation will always flower (Hawthorn in May etc.).
- Where they occur naturally, bramble (*Rubus fruticosus agg*.) and ivy (*Hedra helix*) should be allowed to grow, as they provide key nectar and pollen sources in summer and autumn.

Methods to Avoid:

Scrub/understorey vegetation will not be cut between March 1st and August 31st inclusive. It is both prohibited (except under certain exemptions) and very damaging for birds as this is the period, they will have vulnerable nests containing eggs and young birds.

4.1.2.3 General Vegetation Removal

To ensure compliance with the Wildlife Act 2000 as amended, any removal of areas of vegetation (e.g., hedge cutting) will not take place within the nesting bird season (March 1st to August 31st inclusive) to ensure that no significant impacts (i.e., nest/egg destruction, harm to juvenile birds) occur at the Site.

Where any removal of vegetation within the nesting season is deemed unavoidable, a qualified Ecologist will be instructed to survey the vegetation prior to any removal taking place. Should nesting birds be found, then the area of habitat in question will be noted and suitably protected until the Ecologist confirms the young have fledged.

To avoid any issues, the preferred period for vegetation clearance is within the months of **September and October.** Any large areas of vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., hedgehog).

4.1.2.4 Herbicides & Pesticides

No herbicides[3] or pesticides will be used within or within close proximity to areas of biodiversity enhancement e.g., riparian habitat, wildlife ponds, insect hotels, biodiverse roof planting and log piles. This will protect local pollinators and wildlife and maximise the biodiversity value of these enhancement features.

4.1.2.5 General Management

The following best practice maintenance measures will be followed as part of the regular management of the habitats on Site:

- Periodic inspection for and if necessary, clean-up of litter.
- Physical removal of undesirable non-native or invasive shrub or herb species should these be recorded within the Site during the Operational Phase. Chemical control will be used only **as a last resort**.

[3] Ideally, herbicide use within the Site should be avoided entirely, and alternative weed control options (e.g. thermal control with hot water or foam) should be explored as per Pesticide Action Network UK: https://pollinators.ie/wp-content/uploads/2021/05/Alternatives-to-herbicides-a-guide-for-the-amenity-sector.pdf

- Signage will be erected to help management follow the pollinator and wildlife friendly management regime, while also informing residents and visitors of these biodiversity enhancement measures at the Site (See Figure 4).
- Signage and waste bins will be provided at the Site to minimise dog fouling, which can have a negative effect on biodiversity planting by adding excessive amounts of nutrients and "over-fertilising" areas thus reducing the number and types of wildflowers that will grow.

FIGURE 4. EXAMPLE POLLINATOR AND WILDLIFE FRIENDLY MANAGEMENT SIGNAGE AVAILABLE FROM POLLINATORS.IE

4.2 Human-made Habitats for Fauna

4.2.1 Bird Box Scheme

A bird box scheme is proposed to be installed at the Site of the Proposed Development and will be implemented with the landscape plan so as to enhance the potential bird nesting habitat at the Site during the Operational Phase.

A total of six bird boxes are proposed to be installed on suitable trees around the Site, to provide nesting habitat for breeding birds that may be using the Site.

Bird box installation will be overseen by the appointed ecologist, within the proposed areas of dense planting at ground floor and podium level and on the semi-mature trees to be planted on Site, and details of same provided to the Parks Department of Dublin City Council. The boxes will be durable. The bird boxes will be firm and secure to their supports, and only placed on trees that are robust and large enough to support bird boxes.

There are various standard bird box options, and a mix of the following box types[4] will be installed:

- 'Hole type' bird boxes (28 mm hole)
  - For example, the Eco Small Bird Box, which can be found at the following link: https://www.nhbs.com/eco-small-bird-box
- Open fronted bird boxes for blackbirds
  - For example, the Blackbird FSC Nest Box, which can be found at the following link: https://www.nhbs.com/blackbird-fsc-nest-box
- Open fronted bird boxes for wrens and robins
  - For example, the Eco Robin (Open-Fronted) Nest Box, which can be found at the following link: https://www.nhbs.com/eco-robin-open-fronted-nest-box

Hole type bird boxes should be positioned 2-4m off the ground, with good-visibility, a clear flight line, and away from the prevailing wind direction. The open-fronted boxes for robins, wrens and blackbirds should be installed lower than 2m but amongst dense vegetation, or newly planted vegetation that will grow to become dense upon establishment, and somewhere cats and other predators won't easily see or access them. Boxes will not be drilled or nailed to trees to avoid damage, but instead be attached via a wire strap wrapped around the tree. Unless the sites are very sheltered, bird boxes should be fixed facing between north and south-east to avoid the hot sun and the wettest winds. Guidance from Bird Watch Ireland regarding bird box construction and installation can be found at the following link: *https://birdwatchireland.ie/app/uploads/2019/09/Nestboxes-factsheet.pdf*.

Bird boxes will be cleaned out at the end of the bird breeding season by the development management company, from September onwards, to encourage birds to return to the nest boxes in the next breeding season.

4.2.2 Swift Brick Scheme

In addition, and as part of this scheme, it is proposed to include 6 No. swift bricks within the building facades, as swifts are a social nesting species, on suitable buildings within the Proposed Development. These nest bricks will be installed at least 5 metres above the ground (or roof, if installed on a wall above e.g., a green roof), in safe areas where they will not be disturbed. As the bricks tend not to overheat, they can be placed on any aspect, N, S, E, W. Care will be taken to ensure no obstacles or plate glass windows are located below the bricks.

Guidelines for the bird box scheme should also follow guidelines published by Swift Conservation Ireland, and those published by Birdwatch Ireland entitle "Saving Swifts" (2009/2010). The incorporation of swift bricks will help recover the declining swift population, which are now Red Listed in Ireland (Gilbert et al., 2021).

Swifts are a "clean" bird species which remove their own wastes from their nests periodically. As such, swift bricks do not require any cleaning by the management company.

It is advised to install a **swift calling system** to attract swifts and encourage them to take up residence at a new site. A swift calling system is a small speaker set-up that plays swift calls during the summer. It should be located close to the brick entrances and has been seen to

[4] https://birdwatchireland.ie/irelands-birds-birdwatch-ireland/garden-birds/nestboxes/#:~:text=Many%20people%20put%20their%20nestboxes,cats%20to%20get%20near%20it.

greatly increase the chances of swifts using the swift boxes/bricks. Solar powered options are also possible.

An Ecologist will be instructed to set up the swift calling system once the construction of the Proposed Development is complete. This can be with the help of active local swift groups as required (e.g., Dublin Swift Conservation Group), who can help and advise as to the best set-up etc.

4.2.3 Bat Boxes

Three summer bat boxes (e.g., Woodcrete 1FF design) will be erected on suitably sized trees within the riparian habitat of the Proposed Development Site. Bat boxes will be sited carefully, and this will be undertaken by a bat specialist. The boxes will be installed as part of the landscaping works, so as to not delay their deployment and potential positive impacts. The bat ecologist will erect the bat boxes with assistance from the contractor. Some general points that will be followed include:

- Bat boxes will be erected on trees (or telegraph poles) with no crowding branches or other obstructions for at least 1 metre above and below the bat box.
- Diameter of tree should be wide and strong enough to hold the required number of boxes.
- Locate bat boxes in areas where bats are known to forage or adjacent to suitable foraging areas (e.g., the newly created riparian habitats). Locations will be sheltered from prevailing winds.
- Bat boxes will be erected at a height of 4-5 metres to reduce the potential for vandalism and predation of roosting bats.
- The recommended Woodcrete 1FF design is open at the bottom, allowing the droppings to fall out, and so does not need cleaning.

Note that the bat box scheme may be revised if advised by NPWS during the derogation licence application process. If changes are required following the derogation licence application, those changes will supersede the scheme as described here.

4.2.4 Insect Hotels

The landscape plan includes the insertion of 5 no. insect hotels in select areas around the Site, during its Operational Phase, the placement of which will be confirmed by the Ecologist. No herbicides or pesticides will be used in the vicinity of these insect hotels; to protect bees and pollinators from harm.

Large bee or insect hotels will not be installed. Guidance from the All -Ireland Pollinator Plan states "*Don't install a large bee or insect hotel. Large bee hotels are attractive to humans, but not great for pollinators. They can encourage the spread of disease and attract predators. Avoid anything bigger than an average-sized bird box. There are many other ways to provide nesting habitats for pollinators, such as providing wild areas of undisturbed long grass, and scraping back some bare earth. If you want to make a bee hotel, make sure it is small, and position it away from bird feeders so the insects aren't easy targets*." A link to a "How-to-guide Creating wild pollinator nesting habitat" is provided for the development management company to put these habitats in place: *How-to-guide-Nesting-2018-WEB.pdf (pollinators.ie)*. An appointed ecologist will oversee the creation of these habitats.

4.2.5 Log-piles for Invertebrates and Fauna

Piles of logs and other woody vegetation arising from the proposed tree felling will be left in suitable secluded wilder margins of the Site where they will remain undisturbed. These will provide habitat for common frog and small mammals such as hedgehog and pygmy shrew. These areas of woody debris will also benefit local invertebrate species through the provision of shelter and food sources. Log piles will be left by management and remain undisturbed in discrete locations to allow colonisation by invertebrates and fungi as part of the biodiversity provision in the dense areas of woodland understorey planting. Figure 5 below shows how log piles can be constructed to maximise their biodiversity value.

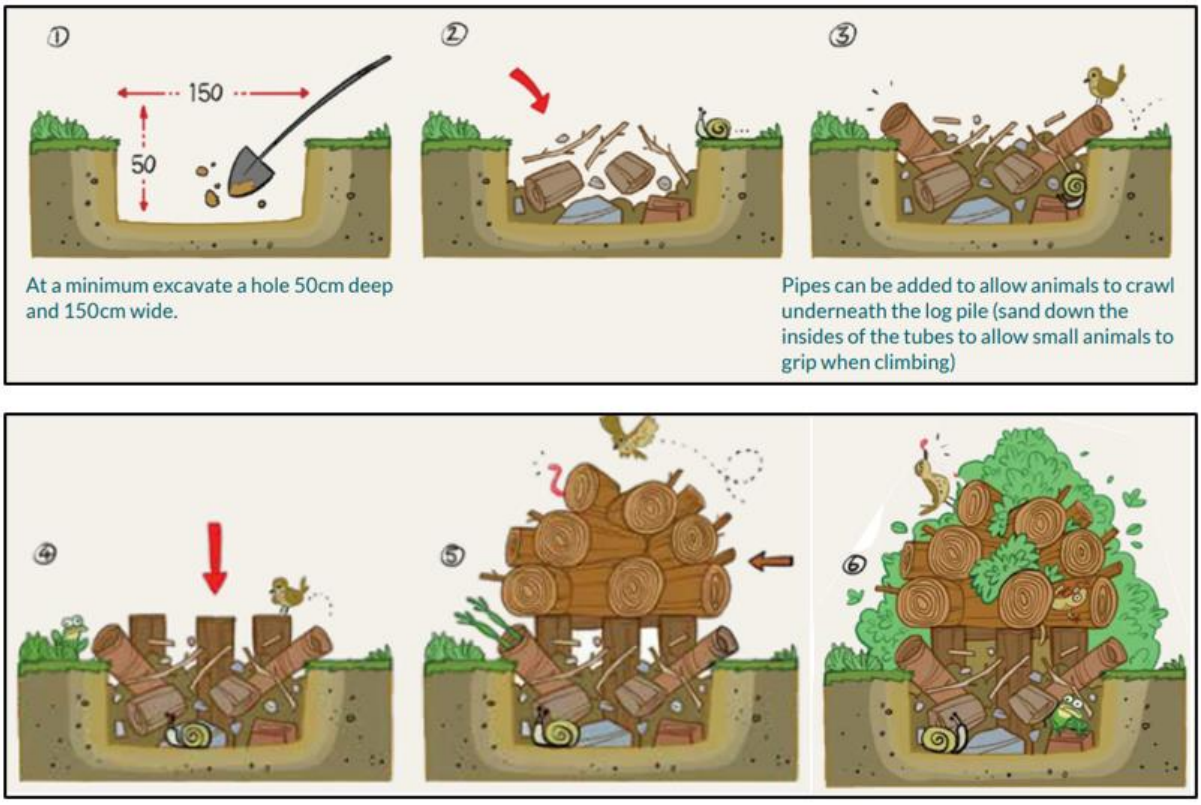

FIGURE 5. EXAMPLE DESIGN OF A WILDLIFE-FRIENDLY LOG PILE. EXTRACTED FROM GARDENING FOR BIODIVERSITY (JUANITA BROWNE, 2020).

5 MONITORING

5.1 Vegetation Management

The management of the areas of grassland, and riparian woodland and understorey planting at the Site will be assessed once annually during the growing season by an Ecologist, for a period of 5 years; to ensure that these areas are being managed in a way that maximises their biodiversity value, as laid out in this BEP. The Ecologist will be able to provide further guidance if required to the management company as to the management of these areas.

5.2 Bat Box Scheme

Bat activity at the Site and the use of bat boxes will be assessed by a licensed bat ecologist during the summer following their placement. The bat boxes will be registered as a bat box scheme with Bat Conservation Ireland. This should be undertaken for a minimum of 2 years.

These bat boxes will not require cleaning as they are self-cleaning by design. Bat boxes will be left undisturbed and any disturbance, if required, will be carried out under licence by a bat specialist.

5.3 Bird Boxes

Bird boxes will be checked annually between September and February, outside of nesting season, for damage and for the presence of old nests which will be removed. This will also allow for the condition of the boxes to be checked and maintained.

5.4 Swift Surveys

The swift bricks will be monitored annually during the summer by an ecologist to assess whether they are being used by swifts. Surveys will be carried out once a year for 3 years post installation with the results shared with BirdWatch Ireland and the Dublin City Council Parks, Biodiversity and Landscape Services Division to aid in the collection of data on Dublin's swift populations.

The ecologist will also check that the swift calling system is operational each year and advise if repairs are needed.

5.5 Invertebrate habitat

New logs can be added to the wood piles as the older one's decay over a period of years. Decaying wood can support a range of fungi and microhabitats and will be maintained as part of the log pile habitat.

6 SCHEDULE OF ENHANCEMENT MEASURES AND OPERATIONAL MONITORING

TABLE 4. SCHEDULE OF OPERATIONAL MANAGEMENT AND MONITORING MEASURES TO BE IMPLEMENTED AT THE SITE

Habitat/Species	Operational Phase Management/Enhancement			Operational Phase Monitoring		
	Task	**Frequency**	**Responsibility**	**Task**	**Frequency**	**Responsibility**
Proposed wildflower meadow, amenity grass, riparian understorey planting.	Where possible and deemed appropriate, five cuts and lifts per year of amenity grass areas, under dry conditions to avoid soil compaction. Collect cuttings and compost off Site. Where possible, grass will not be mown until the 15th of April to allow dandelions to flower. Areas along margins forming a less managed verge may be appropriate.	Where possible, cut on a six-weekly rotation. Second cut at the end of May, third cut in mid-late July to maximise growth of Clovers and other wildflowers, fourth cut at the end of August and the fifth cut after mid-October.	Management Company	These habitats will be monitored to: • Monitor the establishment of the newly planted vegetation. • Ensure the implementation of appropriate management regimes. • Advise on the management regime and/or any changes to the management needed based on the condition of the habitats. • Monitor and record the success of the enhancement measures.	Once annually for 5 years	Ecologist
	Areas of wildflower meadow will be cut 1-2 times annually. Collect cuttings and compost off Site.	Cut once in early spring and once in September.	Management Company			
	Periodic inspection for and if necessary, clean-up of litter.	To be undertaken as part of routine litter management.	Management Company			
	Removal of undesirable non-native or invasive shrub or herb species should these be recorded.	Annually or as required	Management Company			
	Signage to be erected to ensure management adhere to the pollinator and wildlife-friendly management regime.	Once	Developer			
	Herbicides will not be used within these habitats, except in exceptional circumstances where spot control of invasive flora is required.	n/a	Management Company			

Habitat/Species	Operational Phase Management/Enhancement			Operational Phase Monitoring		
	Task	**Frequency**	**Responsibility**	**Task**	**Frequency**	**Responsibility**
Bats	Erection of a bat box scheme in the form of three (3 no.) Woodcrete 1FF bat boxes which will be erected at appropriate locations under instruction from a qualified bat specialist.	Once, upon completion of development.	Developer & Bat Specialist	Inspection of bat boxes.	Within one year of erection of bat box scheme	Bat Specialist
				Register bat box scheme with Bat Conservation Ireland. This should be undertaken for a minimum of 2 years.	Two years	Bat Specialist
				Monitoring of bat activity and any bat mitigation measures. All mitigation measures will be checked to determine that they were successful.	A full summer bat survey will be carried out post-works.	Bat Specialist
Birds	A minimum of six (6 no.) garden bird boxes will be installed within the dense shrub planting and on trees on the Site, under advice from a qualified Ecologist. The boxes will be durable. The bird box will be firm and secure to its support, and only placed on trees that are robust and large enough to support bird boxes.	Once, upon completion of development.	Developer & Ecologist	Inspection of bird boxes for damage.	Annually between September-February (outside breeding bird season)	Management Company
	Removal of old nests from bird boxes.	Annually between September-February (outside breeding bird season)	Management Company	n/a	n/a	n/a
	Incorporation of six (6 no.) swift bricks along proposed buildings. Installation of swift calling system with guidance from an Ecologist or local swift action group.	Once, upon completion of development.	Developer & Ecologist	The swift bricks will be monitored annually during the summer by an ecologist to assess whether they are being used by swifts. Surveys will be carried out once a year for 3 years post-installation. The ecologist will also check that the swift calling system is operational each year and advise if repairs are needed.	Annually for 3 years	Ecologist
Invertebrates	The provision of five (5 no.) small insect hotels in areas of dense planting. Installation of insect hotels with guidance from an Ecologist.	Once, upon completion of development.	Developer and Ecologist	n/a	n/a	n/a
	Small discrete log piles will be created using the wood from the felled trees on Site. A suitable location is within the understorey along the riparian habitats.	Once during landscaping phase and then as required.	Management Company	New logs will be added as the older logs decay.	Several years, or as required	Management Company

7 CONCLUSION

This BEP describes the various ways in which biodiversity has been considered in the design of the Proposed Development. The enhancement measures and management approach detailed within this BEP will contribute to the support of biodiversity at the Site during its operational lifetime. The management approaches detailed in this BEP will be adhered to as will the various recommendations and commitments relating to post-construction monitoring of vegetation management regime, bats, birds and pollinator habitat. Should any of the proposed mitigation and/or monitoring measures recommended in this report fail to be adhered to, the Local Authority shall be informed, and appropriate remedial actions will be agreed. Furthermore, it is recommend that the appointed management company keep a log of all actions undertaken in the event of an audit being undertaken to ensure works are undertaken as described within this BEP.

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