February 2024

Biodiversity Management Plan 2024

Large Residential Development (LRD)

Spa Glen, Mallow, Co. Cork

On Behalf of

O'Flynn Group

MALONE O'REGAN ENVIRONMENTAL

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Biodiversity Management Plan 2024
Large Residential Development (LRD)
Spa Glen, Mallow, Co. Cork
O'Flynn Group

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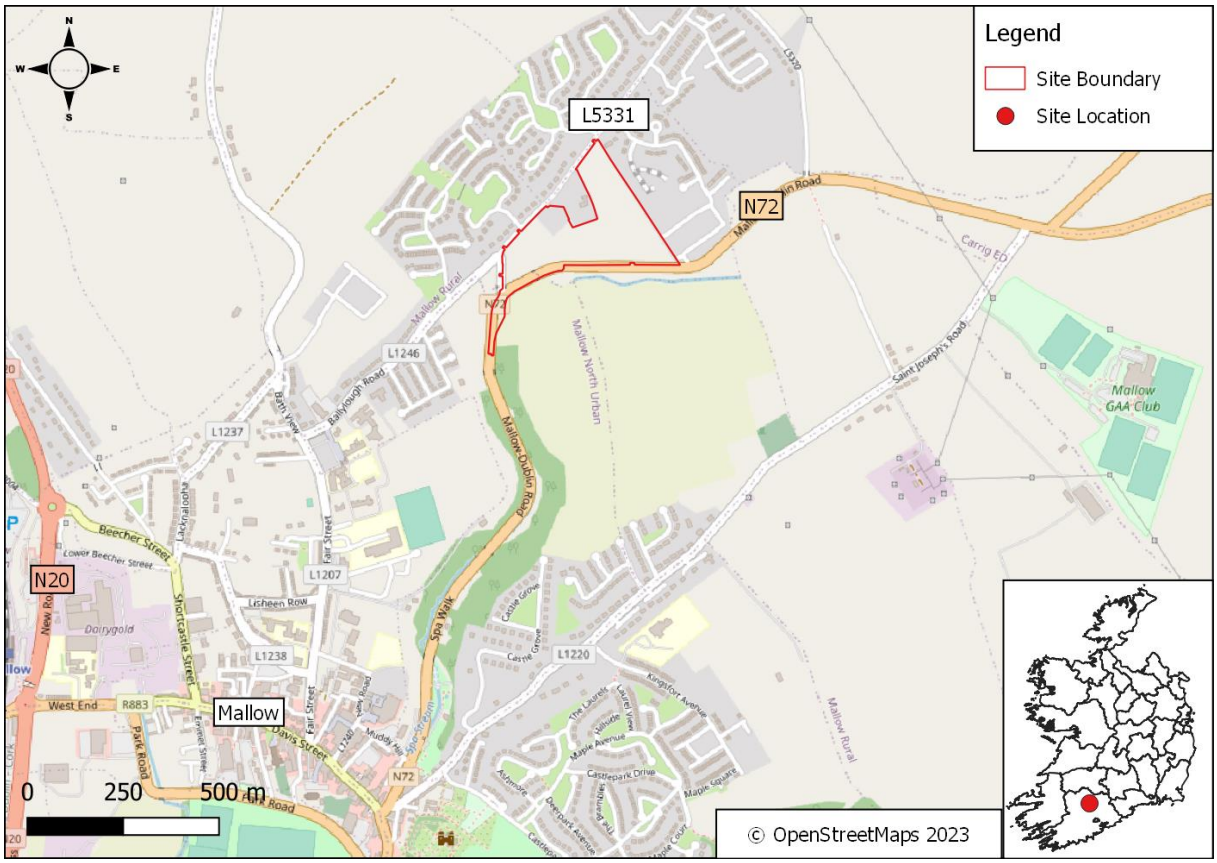
1 INTRODUCTION

1.1 Background

Malone O'Regan Environmental (MOR) has been commissioned by the O'Flynn Group to develop a Biodiversity Management Plan (BMP) in respect of the proposed Large-scale Residential Development (LRD) and all associated works (the 'Proposed Development') on lands at Spaglen, Mallow, Co. Cork (OSI Reference ITM 556603 599835).

The Proposed Development will be located on a site that is ca.8.12 hectares (ha) in size and is located within the townland of Spaglen, Mallow Co. Cork ('the Site'). The Site location is shown in Figure 1-1.

Figure 1-1: Site Location



1.2 Purpose of the BMP

The Proposed Development provides a number of opportunities for providing biodiversity enhancement measures within the development design. The purpose of this plan is to maximise the value of the natural features on-site and to outline measures that will be incorporated as part of the proposed design to enhance the biodiversity of the Site and the surrounding area.

1.3 Site Context

The Site is located within the townland of Spaglen north-east of Mallow. The Site is comprised of an agricultural field and a yard, which is overgrown by vegetation, containing stables and a disused residential property. The Site is accessed via the L5331 from the N72.

The L5331 local road runs parallel to the northern and western side of the Site, and the N72 national road bords the southern Site boundary. The South Caherduggan river runs along the south-western Site boundary adjacent to a mature hedgerow / treeline. The Tinley Park

housing estate borders the north-western Site boundary. There is a development in Hazel Brook to the east of the Proposed Development (PR 166949).

1.4 Description of the Proposed Development

The Proposed Development is for a Large-scale Residential Development (LRD) at Spaglen (townland), Mallow, Co. Cork, and will comprise of:

- the demolition of existing farmhouse/buildings;
- the construction of 186No. residential units to include:
    - 168no. dwelling houses (comprising a mix of 2, 3 & 4 bed, detached, semi-detached & terraced/town houses); and,
    - 18No. 1 bed duplexes/apartments;
- 1No. creche; and,
- All associated ancillary development works including 2No. vehicular access points, footpaths, parking, drainage, landscaping and amenity areas.

1.5 Consultation

A number of correspondence's have occurred between the Applicant and Cork County Council. These include:

- A section 247 meeting on the 9th September 2021 with regards to the original planning application on the Site for a Strategic Housing Development (SHD);
- The applicant met with Cork County Council on 4th April 2022 with regards to the original planning application on the Site for a Large-scale Residential Development (LRD) (Ref.PPN 21.937);
- A Section 32B meeting was held on the 21st June 2022 for the original planning application on the Site.
- With regard to the Proposed Development, an online Section 32B meeting was held for this application on the 4th December 2023.
- Cork County Council issued an opinion letter for the Proposed Development on the 22nd December 2023.

Additionally, a number of informal meetings have been held to discuss aspects of biodiversity on the Site and the opinion letter issued by Cork County Council between Ms. Joy Barry, Executive Planner, and Malone O'Regan Environmental.

2 LEGISLATION POLICY CONTEXT GUIDANCE

Biodiversity loss in Ireland has accelerated in recent decades predominately due to human induced activities, resulting in increased damage to habitats, loss of species, reduced abundance of wildlife and degradation of our surrounding environment.

However, through appropriate enhancement measures and appropriate management, biodiversity can be maintained within Large-scale residential developments.

2.1 National Planning Context

The National Planning Framework - Project Ireland 2040 [1] states the following objectives, in relation to Biodiversity:

National Policy Objective 59:

'Enhance the conservation status and improve the management of protected areas and protected species by:

- *Implementing relevant EU Directives to protect Ireland's environment and wildlife;*
- *Integrating policies and objectives for the protection and restoration of biodiversity in statutory development plans;*
- *Developing and utilising licensing and consent systems to facilitate sustainable activities within Natura 2000 sites;*
- *Continued research, survey programmes and monitoring of habitats and species.'*

National Policy Objective 60:

'Conserve and enhance the rich qualities of natural and cultural heritage of Ireland in a manner appropriate to their significance.'

2.2 Ireland National Biodiversity Action Plan 2017-2021

The National Biodiversity Action Plan [2] sets out a number of strategic objectives that lay out a clear framework for Irelands approach to biodiversity and demonstrates Ireland's commitment to protect our biodiversity and also halt against decline.

Objective 4 of the Action Plan aims to:

'*Conserve and restore biodiversity and ecosystem services in the wider countryside.'*

This BMP outlines effective conservation of biodiversity within the wider countryside and will demonstrate how the Proposed Development will support in achieving this objective.

2.3 All Ireland Pollinator Plan 2021-2025

Irish pollinators are in decline and in response, Ireland joined a small number of countries in Europe who have developed a strategy to address pollinator decline and protect pollination services.

The All-Ireland Pollination Plan [3] was developed by a fifteen-member All-Ireland steering group, with the aim to build a foundation to bring about a landscape where pollinators can flourish, revers pollinator losses, help restore populations to a healthy level and make Ireland pollinator friendly.

The plan identifies targets that can incorporated by actions undertaken voluntarily by both public and private landowners to make Ireland more pollinator friendly.

- Increase the area of Council land that is managed in a pollinator-friendly way;
- Make transport corridors more pollinator friendly;

- Organisations with site networks on public land to manage these in a pollinator-friendly way;
- Make local communities more pollinator friendly;
- Make protected land in a pollinator-friendly way where appropriate;
- Manage protected land in a pollinator-friendly way where appropriate;
- Complete policy investigations;
- Strengthen links between the AIPP and other national initiatives;
- Track changes in pollinations on public and private land;
- Increase the number of gardens that are pollinator friendly; and,
- Increase the network of AIPP business supporters.

The BMP recommends enchantments which will support the targets and actions as set out by the Irelands Pollination Plan, including the creation of wildflower habitats.

2.4 Local Planning Context

2.4.1 Cork County Development Plan 2022-2028

The Cork County Development Plan 2021-2028 [4] has a variety of statements which relate directly to biodiversity in this context. Under Chapter 14 Green Infrastructure and Recreation, the CDP states that it is the policy of the Council to:

Objective GI 14-3: Green Infrastructure and Development

> *"a) Require new development and redevelopment proposals, to contribute to the protection, management and enhancement of the existing green and blue infrastructure of the local area in terms of the design, layout and landscaping of development proposals.*
>
> *b) Require all development to submit a green infrastructure statement outlining how the proposal contributes to green and blue infrastructure both within its environs as well as within the wider settlement or rural area. Larger developments (multiple residential developments including Part 8 applications, retail, industrial, mineral extraction, etc) will be expected to prepare a Landscape/ Green (and Blue) Infrastructure Plan including a Landscape Design Rationale. This Plan should identify environmental assets and include proposals which protect, manage and develop green infrastructure resources in a sustainable manner.*
>
> *c) Over the lifetime of the Plan the Council will prepare a guidance note/update on best practice in integrating green and blue infrastructure/biodiversity within development proposals."*

Under Chapter 15 Biodiversity and the Environment, the CDP states that it is the policy of the Council to:

Objective BE 15-1: Support and comply with national biodiversity protection policies

> "a) *Support and comply with the objectives of the National Biodiversity Plan 2017-2021 (and any future National Biodiversity Plan which may be adopted during the period of this Plan) as appropriate,*
>
> b) *Implement the current County Biodiversity Action Plan and any future updated Plan;*
>
> c)*Support and comply with biodiversity policy set out in other national and regional policy documents as appropriate."*

Objective BE 15-2: Protect sites, habitats and species

"a) Protect all natural heritage sites which are designated or proposed for designation under European legislation, National legislation and International Agreements. Maintain and where possible enhance appropriate ecological linkages between these. This includes Special Areas of Conservation, Special Protection Areas, Marine Protected Areas, Natural Heritage Areas, proposed Natural Heritage Areas, Statutory Nature Reserves, Refuges for Fauna and Ramsar Sites. These sites are listed in Volume 2 of the Plan.

b) Provide protection to species listed in the Flora Protection Order 2015, to Annexes of the Habitats and Birds Directives, and to animal species protected under the Wildlife Acts in accordance with relevant legal requirements. These species are listed in Volume 2 of the Plan.

c) Protect and where possible enhance areas of local biodiversity value, ecological corridors and habitats that are features of the County's ecological network. This includes rivers, lakes, streams and ponds, peatland and other wetland habitats, woodlands, hedgerows, tree lines, veteran trees, natural and semi-natural grasslands as well as coastal and marine habitats. It particularly includes habitats of special conservation significance in Cork as listed in Volume 2 of the Plan.

d) Recognise the value of protecting geological heritage sites of local and national interest, as they become notified to the local authority, and protect them from inappropriate development e) Encourage, pursuant to Article 10 of the Habitats Directive, the protection and enhancement of features of the landscape, such as traditional field boundaries, important for the ecological coherence of the Natura 2000 network and essential for the migration, dispersal and genetic exchange of wild species."

Objective BE 15-3: Local Authority plan making

"a) Ensure that biodiversity issues are considered at the earliest possible stages of plan making;

b) Ensure that plans and strategies comply with nature conservation legislation and policy as required (fulfil Strategic Environmental Assessment and Appropriate Assessment requirements); and

c) Carry out ecological impact assessment of plans and strategies as appropriate."

Objective BE 15-6: Biodiversity and New Development

"Provide for the protection and enhancement of biodiversity in the development management process and when licensing or permitting other activities by:

a) Providing ongoing support and guidance to developers on incorporating biodiversity considerations into new development through preplanning communications and the Council's guidance document 'Biodiversity and the Planning Process – guidance for developments on the management of biodiversity issues during the planning process' and any updated versions of this advice;

b) Encouraging the retention and integration of existing trees, hedgerows and other features of high natural value within new developments;

c) Requiring the incorporation of primarily native tree and other plant species, particularly pollinator friendly species in the landscaping of new developments;

d) Fulfilling Appropriate Assessment and Environmental Impact Assessment obligations and carrying out Ecological Impact Assessment in relation to development and activities, as appropriate;

e) Ensuring that an appropriate level of assessment is completed in relation to wetland habitats subject to proposals which would involve drainage or reclamation. This includes

lakes and ponds, watercourses, springs and swamps, marshes, heath, peatlands, some woodlands as well as some coastal and marine habitats;

f) Ensuring that the implementation of appropriate mitigation (including habitat enhancement, new planting or other habitat creation initiatives) is incorporated into new development, where the implementation of such development would result in unavoidable impacts on biodiversity - supporting the principle of biodiversity net gain."

Objective BE 15-7: Control of Invasive Alien Species

"Implement best practice to minimise the risk of spread of invasive alien species, on Council owned or managed land, and require the development and implementation of Invasive Alien Species Management Plans for new developments where required.

Objective BE 15-8: Trees and Woodlands

"a) Protect trees the subject of Tree Preservation Orders.

b) Make use of Tree Preservation Orders to protect important trees or groups of trees which may be at risk or any tree(s) that warrants an order given its important amenity or historic value.

c) Encourage the provision of trees for urban shading and cooling in developments in urban environments and as an integral part of the public realm.

d) Preserve and enhance the general level of tree cover in both town and country. Ensure that development proposals do not compromise important trees and include an appropriate level of new tree planting.

e) Where appropriate, to protect mature trees/groups of mature trees and mature hedgerows that are not formally protected under Tree Preservation Orders"

Objective BE 15-9: Support for Communities and Other Stakeholders

"Support community organisations and other stakeholders as follows:

a. Implement the County Biodiversity Action Plan and any future updated Plan;

b. Support the implementation of the All-Ireland Pollinator Plan.

c. Where possible, support community led initiatives to protect biodiversity including the development of community led Biodiversity Action Plans and Pollinator Plans.

d. Work with statutory agencies, educational institutes and other organisations to address the issues relating to the protection of biodiversity in the County where possible and as appropriate."

3 CURRENT BASELINE

3.1 Methodology

3.1.1 Desk Study

This BMP has been prepared in accordance with best practice guidelines and legislation including:

- The Cork County Development Plan 2022-2028 [4];
- The National Biodiversity Action Plan [2];
- The All-Ireland Pollination Plan [5]; and,
- The National Planning Framework, Project Ireland 2040 (Ireland, 2018).

3.2 Field Based Studies

In order to establish baseline conditions at the Site, a field survey was undertaken by one (1No.) MOR Ecologists on the 23rd September 2021.

3.2.1 Habitat Survey

An initial habitat survey was undertaken on the 21st September 2021, by a suitably qualified and experienced MOR ecologist, to assess extent and the quality of habitats present on the Site and to identify any potential ecological receptors associated with the Natura 2000 sites. Additionally, three (3No.) updated surveys were also undertaken on the 24th May 2022, 3rd August 2022, 18th August 2022, 11th October 2022 and 2nd June 2023 by one (1No.) MOR ecologist. Following the opinion letter issued by Cork County Council on the 22nd December 2023, an additional Site walkover was undertaken on the 9th January 2024 to assess levels of hedgerow / treeline removal and to confirm any other potential changes to the Site since previous Site visits.

The habitat surveys undertaken utilised Fossitt's *Guide to Habitats in Ireland* [6]. The surveys aimed to identify the extent and quality of habitats present on the Site. The assessments were extended to also identify the potential for these habitats to support other features of nature conservation importance, such as species afforded legal protection under either Irish or European legislation.

3.3 Existing Baseline Environment

The Site is comprised of two agricultural fields which are predominantly used for animal fodder. The Site also contains a yard, which is overgrown by vegetation, containing stables and a disused residential property. The principal natural or semi-natural habitat features noted during the Site survey were the hedge / treelines bordering the Site and a small area of scrub along the south-eastern boundary of the Site.

Key elements of biodiversity, including legally protected species, species and habitats of high conservation value and designated areas were identified within the Site and in the surrounding area.

3.3.1 Designated Sites

The Proposed Development is not located within or directly adjacent to any statutory or non-statutory designated sites for nature conservation.

3.4 Habitat

Five (No.5) habitats were noted within the site boundary, as listed below. A description of the habitats and features of ecological significance are outlined in the Ecological Impact Assessment (EcIA). The distribution of the habitats and location of features of interest are shown in Figure 3-1.

1. Improved Grassland (GA1);
2. Recolonising bare ground (ED3);
3. Buildings (BL3);
4. Hedgerows (WL2) / Treelines (WL1) and,
5. Scrub (WS1) / Grassy Verges (GS2).

3.5 Species

Based on identified features, signs of activity and onsite habitats, the following species are / have the potential to use the Site, further details can be found in the EcIA submitted as part of the overall:

- Amphibians;
- Badgers;
- Bats;
- Birds; and,
- Otter.

Invasive Species

No invasive species were identified within the Site Boundary. However, the NBDC holds records for invasive species within 2km of the Site.

Other Species

No other protected or otherwise notable species were noted during the Site walkover.

Figure 3-1: Habitat Map

4 BIODIVERSITY MANAGEMENT PLAN

The Proposed Development provides a number of opportunities for providing biodiversity enhancement within the development design, through the enhancement of the land within the development boundary.

In order to maximise the floral and faunal biodiversity and to enhance the ecological value of the Site the following measures will be implemented as part of the landscaping works:

- The creation and maintenance of wildflower meadow strips
- Enhancement of existing hedgerows with additional hedgerow species-rich planting along the Site boundaries; and,
- Swales incorporated into open spaces;
- The provision of wildlife shelters providing nesting opportunities for protected and locally important species including bird boxes, bat boxes and habitat piles.

Please refer to Figure 4-7 for Biodiversity Enhancement Drawing.

4.1 Habitats

Habitat creation and enhancement measures will be implemented in order to increase opportunities for a variety of wildlife. The proposed planting will be native and where practically possible of local providence and / or those that have a known attraction or benefit to local fauna.

4.1.1 Swales

Swales are wide, shallow, vegetated channels designed to store and direct runoff and removed pollutants. As part of the sustainable drainage system (SuDS), 600m sq. swales and filtration beds have been included as part of the project design. They will be incorporated into open space areas will be planted with species rich grasses and wildflowers. They will be maintained in accordance with the All-Ireland Pollinator Plan 2021-2025. Refer to examples below in Figure 4-1.

Figure 4-1: Swale examples.

4.1.2 Mixed Tree Groups

There will be two groups of trees planted in the Site: mixed tree group planting and a wet woodland mix as part of the Proposed Development. It is proposed to plant a number of trees horizontally along the southern boundary of the Site, including a mix tree group and wet woodland mix trees as listed in Table 4-1 and Table 4-2. There will also be a strip of trees planted vertically across the Site.

These trees, when mature, will aid connectivity across the Site and wider landscape, as well as providing shelter and foraging opportunities.

Table 4-1: Mix Tree Group Planting (see LMP for full details)

Common Name	*Scientific Name*	No. of trees
Common Oak	*Quercus robur*	21
Sessile Oak	*Quercus petraea*	41
Bird cherry	*Prunus padus*	9
Hawthorn	*Crataegus monogyna*	22
Field Maple	*Acer campestre*	42
Norway Maple	*Acer platanoides*	30
Wild cherry	*Prunus avium*	27
European crab apple	*Malus sylvestris*	13
Rowan Ash	*Sorbus aaucuparia*	6

Table 4-2: Wet Woodland Mix Tree Planting

Common Name	*Scientific Name*	No. of trees
Silver birch	*Betula pendula*	20
Goat willow	*Salix caprea*	20
Black alder	*Alnus glutinosa*	20
Common Holly	*Ilex aquifolium*	60

4.1.3 Hedgerow

The Proposed Development will retain existing vegetation and hedgerows where possible. Infill planting is proposed on the eastern hedgerow boundary to strengthen this corridor, which is currently damaged in places. Planting is specified at 120-150cm in height and bareroot double staggered at 6m.

The hedgerow planting will provide shelter and a source of food for a variety of species throughout the year including birds, small mammals and butterflies. It will also provide connectivity to the wider landscape.

All planting will consist of a mixture of native hedgerow species that are prevalent in the immediate area as listed in Table 4-3.

Table 4-3: Native Hedgerow Species Planting

Common Name	*Scientific Name*	Percentage Mix (%)
Hawthorn	*Crataegus monogyna*	60%
Hazel	*Corylus avellana*	10%

Common Name	*Scientific Name*	Percentage Mix (%)
European crab apple	*Malus sylvestris*	5%
Bird cherry	*Prunus padus*	5%
Elder	*Sambucus nigra*	10%
Guelder rose	*Viburnum opolus*	5%
Holly	*Ilex aquifolium*	5%

4.1.4 Species Rich Grassland and Wet Grassland

Within the Site the planting of species rich diverse grassland will occur, with the management regime ensuring a varied sward structure. The objective of species rich grassland habitat is to enhance the quality of existing habitats onsite.

It is proposed to create a new species-rich grassland habitat with a varied sward structure using only Irish sourced seeds from a reputable supplier. The proposed species composition of the seed mixture is specified in Table 4-4.

The creation of a species-rich grassland habitat will greatly enhance the biodiversity of the onsite habitats. Species rich grasslands support a wide variety of species including insects, amphibians and birds and have the potential to significantly enhance the local biodiversity and can provide a source of nectar and pollen for a range of insect species, which in turn will provide prey for birds and bats to feed on.

This commitment will also have a major positive benefit in regard to managing soil conditions onsite as the vegetation cover will also delay surface water runoff and prevent soil erosion.

Table 4-4 Indicative Species Rich Grassland Seed Mixture

Common Name	Scientific Name	Mix %
Meadow Fescue	*Festuca pratensis*	85% Native Grasses
Sheep's Fescue	*Festuca ovina*	
Perennial Rye	*Lolium perenne L*	
Creeping Red Fescue	*Festuca rubra*	
Chewings Fescue	*Festuca rubra subsp. commutata*	
Smooth Stalked Meadow Grass	*Poa Pratensis*	
Meadow Foxtail	*Alopecurus pratensis*	
Timothy grass	*Phleum pratense*	
Ribwort Plantain	*Plantago lanceolata*	15% Native Flowers

In addition to the areas of species rich grassland, wet grassland areas have also been incorporated into the Landscape Management plan. This habitat provides excellent habitat for a range of species including birds, reptiles, amphibians and bats due to the large numbers of invertebrates that are associated with these areas because of the soft damp soil conditions.

The proposed species composition of the seed mixture for the wet grassland areas are specified in Table 4-5.

Table 4-5 Wet Grassland Mix

Common Name	Scientific Name
Devils Bit Scabious	*Succisa pratensis*
Common Sorrel	*Rumex acetosa*
Cowslip	*Primula veris*
Fleabane	*Pulicaria dysenterica*
Greater Trefoil	*Lotus pedunculatus*
Hemp Agrimony	*Eupatorium cannabinum*
Lesser Knapweed	*Centaurea nigra*
Marsh Cinquefoil	*Comarum palustre*
Meadow Buttercup	*Ranunculus acris*
Meadowsweet	*Filipendula ulmaria*
Meadow Rue	*Thalictrum flavum*
Oxeye Daisy	*Oxeye Daisy*
Purple Loosestrife	*Lythrum salicaria*
Ragged Robin	*Silene flos-cuculi*
Red Clover	*Trifolium pratense*
Red Rattle	*Pedicularis palustris*
Ribwort Plantain	*Plantago lanceolata*
Selfheal	*Prunella vulgaris*
Sneezewort	*Achillea ptarmica*
Tufted Vetch	*Vicia cracca*
Water Avens	*Geum rivale*
Wild Angelica	*Angelica sylvestris*
Wild Valerian	*Valeriana officinalis*
Yarrow	*Achillea millefolium*
Yellow Flag Iris	*Iris pseudacorus*
Yellow Rattle	*Rhinanthus minor*
Corn Marigold	*Glebionis segetum*
Corn Poppy	*Papaver rhoeas*
Corncockle	*Agrostemma githago*
Cornflower	*Centaurea cyanus*
Scentless Mayweed	*Scentless Mayweed*

4.1.5 South Caherdugan River

The section of the South Caherdugan River that runs through the Site will be retained during the construction and operational duration of the Proposed Development. Mitigation measures are in place to prevent water pollution as a result of the Proposed Development.

4.2 Fauna

The recommendations proposed below detail measures that will enhance the attractiveness of the Site to wildlife in the surrounding areas. The locations and density of the below enhancements will be determined by the Project Ecologist during the construction phase of the Proposed Development, the locations and numbers of these will be submitted to the Planning Authority prior to their establishment, Figure 4-7 shows the indicative locations of these locations.

4.2.1 Hibernaculum and Habitat Piles

Hibernacula and habitat piles are a valuable habitat and support a range of biodiversity including, insects, amphibians and small mammals. These habitats act as refuges and hibernation sites for amphibians as well as a host of other species of inverts and small mammals.

Hibernacula and habitat piles can be created through the placement of either piles of rocks or logs around the margins of the wetland areas / onsite waterbodies and adjacent to drainage ditches. It is proposed to create these enhancement measures using the material generated by the vegetation clearance works on-site. Refer to examples below Figure 4-2 and 4-3.

Figure 4-2: Typical hibernaculum and cross section.

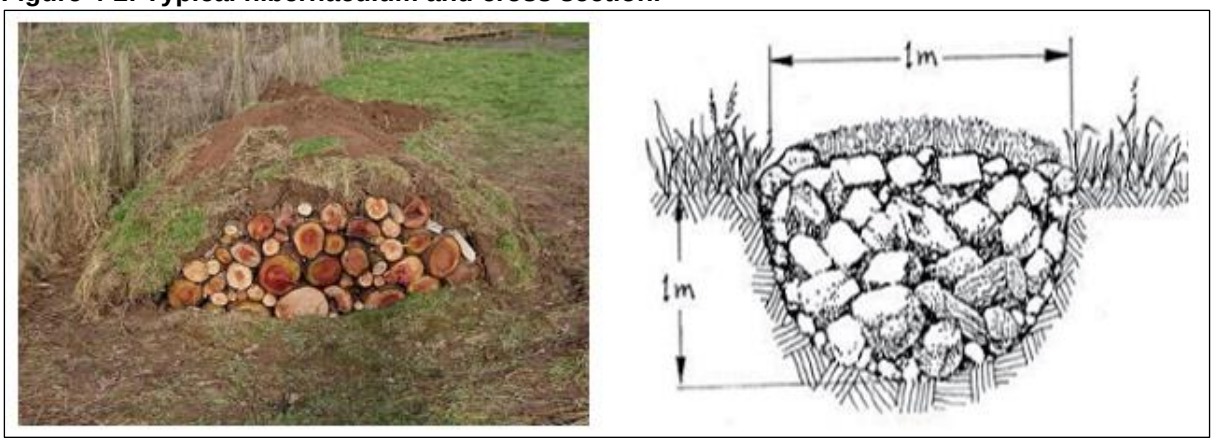


Figure 4-3: Habitat Piles

4.2.2 Bird Boxes

Three bird nest boxes designed to attract a variety of nesting bird species will be erected on suitable trees around the Site. There will be a minimum of 10No. bird boxes installed around the Site. Refer to examples provided in Figure 4-4.

Figure 4-4: Bird Box Examples

4.2.3 Bat Boxes

Hedgerows / treelines are a linear habitat that provide suitable commuting corridor / foraging habitat for bats. As part of the landscape plan these habitats are being reinforced as detailed in Section 4.1. Additionally, landscape planting will be established in sections of the Site prior to the removal of existing vegetation.

Artificial bat boxes will also be erected on suitable trees along the within the Site. Artificial bat roost boxes can provide vital roosting places in habitat devoid of natural roosting opportunities. These will be placed in a position sheltered from strong wind and exposed to the sun for part of the day. There will be a minimum of 10No. bat boxes installed on the Site. Refer to figure 4-5 suitable bat roost box examples including a Pole Mounted Bat Box, Bat Box Schwegler 1FF and Vivara Small Bat Box.

Figure 4-5: Suitable Bat Roost Boxes

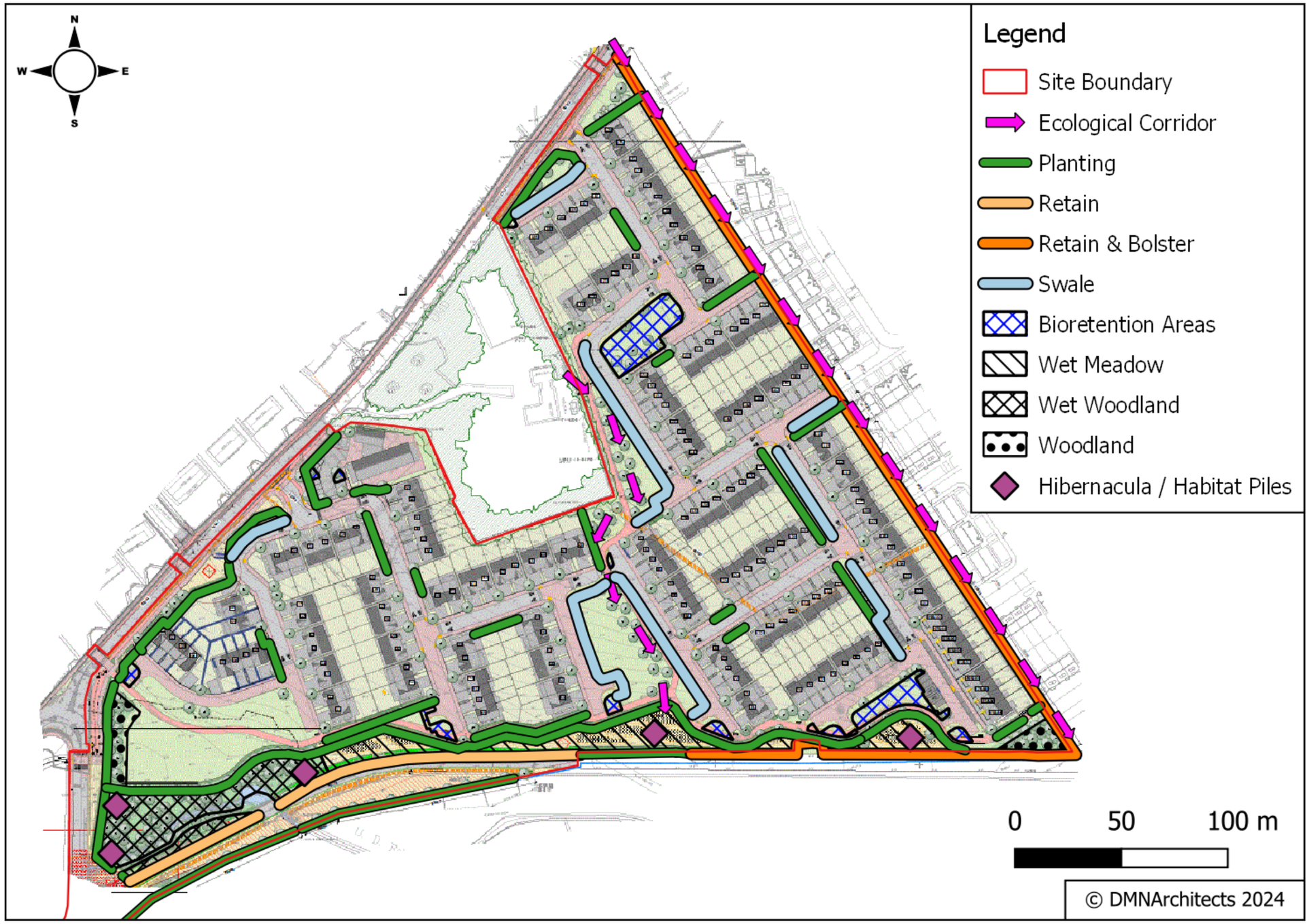
4.2.4 Artificial Deadwood Habitat

The primary purpose of insect hotels, also referred to biodiversity towers, is to provide additional habitat space for small organisms, insects and other invertebrates.

They can be built from a variety of natural and / or repurposed materials. Dead wood provides habitat for beetles, centipedes, woodlice and spiders, and materials with holes act as shelter for solitary bees, which are crucial for pollination. The artificial shelters can come in a variety of sizes and can be used by a range of smaller animals, who can use these artificial habitats for hibernation or breeding (see Figure 4-6).

Figure 4-6: Artificial Deadwood Habitats

Figure 4-7: Biodiversity Management Plan I



5 IMPLEMENTATION AND AFTERCARE

5.1 Hedgerow / Treeline Enhancement

Where possible, planting should be implemented prior to the removal of hedgerows, or in the first available planting season (November to March).

The new sections of hedgerow will be a double staggered row of native species to provide a well-structured hedgerow and dense screening. A height of 6m will be established along all hedge / treelines.

Annual inspections of the trees will take place for a period of five years to ensure tree health and establishment. Trees that fail to become established within 5 years of planting will be replaced by trees of a similar size and species within the next planting season.

All newly planted hedgerows will be lightly managed / pruned in Year 2 with the existing hedgerows cut on a 2- or 3-year cycle, with no more than 1/3 cut in any one year. All pruning / management should take place outside of the nesting and breeding bird season, typically March 1st to August 31st.

Prior to the removal of vegetation along the N72 to improve the sightlines and for safety reasons, the proposed advanced nursery planting in this section will be planted 12 months in advance to allow the hedgerow / treeline to establish and maintain an ecological corridor south of the N72. An ecological corridor has been incorporated into the design of the Proposed Development running north-south connecting Meadowbrook to the southern boundary, this will also be planted at the initial phase of the Proposed Development to provide an ecological. Additionally, an ecological corridor along the eastern boundary with the Hazelbrook housing development will also be bolstered and no lighting will be associated with this section of the Site.

5.2 Monitoring

An annual assessment by the project Ecologist will be undertaken to verify that the management actions have been completed and to the assess their effectiveness for the first five years following the construction of the development. This will include a review of the BMP and include revisions to reflect the conditions on the ground and will be updated, as necessary. The Ecologist will submit an annual report to the Planning Authority. The following information will be included within the report:

- A habitat assessment including information on the vegetation composition within the Site;
- Management prescriptions;
- Information on use of the bird boxes;
- Information on use of the bat boxes; and,
- Information on the condition of native trees and shrubs onsite.

Following the fifth year of assessment and management, a report will be submitted to the Planning Authority summarising the status of the created habitat and overall biodiversity gain achieved through the project. The report will also outline the recommendations for both future management options and monitoring works.

6 CONCLUSIONS

In summary, it is considered that the BMP will be an integral part of the Proposed Development to ensure that in the long-term, benefits to flora and fauna can be maximised. It can be concluded that the implementation of the measures outlined will not only support the protection and enhancement of the environmental quality of the area but will also result in an overall positive impact on the local biodiversity.

7 REFERENCES

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