Kelland Homes Ltd.

Clonburris Urban Centre & South East

Biodiversity Management Plan

604097 R7 (07)

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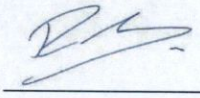
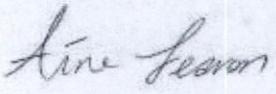
Signature		Signature	
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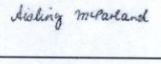
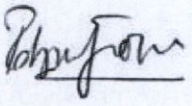
Signature		Signature	
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EXECUTIVE SUMMARY

This Biodiversity Management Plan (BMP) has been prepared by RSK Ireland Ltd on behalf of Kelland Homes Ltd. The Clonburris Strategic Development Zone (SDZ) is ca. 280 ha site in the west of Dublin. This report deals with a ca. 6.3 ha area within this larger site, located between the R113 and the Ninth Lock Road, Clondalkin, Dublin 22, Co. Dublin (Irish Grid Reference: O 06442 32486).

The proposed development planning permission is referenced under (Application: SDZ22A/0010). This report outlines measures to mitigate and compensate for the new development, which consists of the construction of 256 new dwellings, crèche and retail / commercial unit.

- A suite of measures have been proposed in this Biodiversity Management Plan (BMP), and in the Construction Environmental Management Plan (oCEMP) associated with the development, which attempt to lessen the impact of this project and these have been incorporated into the Ecological Impact Assessment (EcIA). These include but not limited to:
- Creation of 910m of new native, species-rich hedgerow
- Measures to retain and enhance 376m of existing hedgerows
- Planting of 410 native, species-rich trees
- Installation of a wildlife pond
- Planting of wildflower meadows
- Maintain and enhance connectivity of habitats on the site

It is proposed that appropriate measures are monitored for a period not less than 10 years to fulfil the aims and objectives of this BMP.

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1.0 INTRODUCTION

1.1 Purpose

1.1.1 RSK Ireland has been instructed by Kelland Homes Ltd to prepare this document for submission to the Land Use, Planning & Transportation Department at South Dublin Council. This is in fulfillment of planning permission register reference: SDZ22A/0010, which was registered on 4th July 2022. At the time of this report (March 2023), planning permission has not been granted. This biodiversity management plan (BMP) has been produced to for the planning application and updated in response to AI 8(f) and CFI 7(g), which state that:

"A site – specific Biodiversity Management Plan demonstrating compliance with the Clonburris BMP. This should include details of any site clearance works and/or the establishment of access routes and site compounds. The applicant is advised to contact SDCC Heritage Officer prior to the preparation of the BMP. The BMP shall be devised by a qualified and experience ecological expert/ecological team who can demonstrate previous experience of devising and implementing such a plan. The BMP shall clearly demonstrate how it purposes to adhere to and implement such a plan. The BMP shall clearly demonstrate how it proposes to adhere to and implement the ecological objectives and recommendations of the Clonburris SDZ Scheme, the Clonburris SDZ Biodiversity Management Plan, and the Parks and Landscapes Strategy. Particular focus is to be placed on demonstrating the retention and enhancement of:

– An appropriate level of existing biodiversity

– The robust and sustainable nature of any proposed replanting

– The strengthening of existing GI links, and

– The creation of new and appropriate green infrastructure.

The BMP will clearly indicate how the implementation of the BMP will be monitored, with appropriate remediation *measure where shortfall may occur. SDZ planning scheme within the development." (Land Use, Planning & Transportation Department 2022)*

1.1.2 This BMP may be subject to change once the final plan has been submitted. At the time of writing the report it was written to accommodate and fulfill measures, to satisfy the requirements of planning condition 8 (f) and includes:

- mitigation, compensation and restoration measures as detailed in the Ecological Impact Assessment (EcIA);
- planting numbers, species and maturity of trees to be planted and removed; Natural Heritage & Conservation Areas;
- long term management plan to ensure the viability of the new habitats; and
- details of the appointment of an Ecological Clerk of Works (ECoW) and their roles and responsibilities.

1.1.3 The following measures have been dictated by this BMP, which has been informed by the Clonburris SDZ Planning Scheme (2019), Clonburris SDZ Biodiversity Management Plan (Scott Cawley, 2021a), Clonburris SDZ Parks and Landscape Strategy (Dermot Foley Landscape Architects, 2022), EcIA (RSK, 2022a), Bat Report (RSK, 2022b), Breeding Birds Report (RSK, 2022c) and the Arboricultural Assessment (Arborist Associates Ltd, 2023) are listed here:

- Maintenance and protection of existing trees
- Measures to plant new trees
- Maintenance and protection of existing hedgerows
- Measures to create new hedgerows
- Measures to protect badgers
- Measures to protect bats
- Measures to protect breeding birds
- Measures to protect frogs
- Measures to protect hedgehogs
- Measures to protect newts
- Prevention of the spread of invasive species

1.1.4 Furthermore, this BMP adheres to Planning and Development Act 2000. To achieve this, the following points have been addressed within this report:

- Description and evaluation of features to be managed
- Aims and objectives of management
- Appropriate management options for achieving aims and objectives
- Prescriptions for management actions
- Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period)
- Body or organisation personnel for implementation of the plan
- Monitoring and remedial measures
- Mechanisms to ensure sustainable long-term delivery of the proposed management

1.2 Landscape context

This report relates to parts of the development within Clonburris Urban Centre (CUC-S4) and Clonburris South East (CSE-S1 & CSE-S2) which is a c. 6.3 ha area located at the far eastern end of the wider Clonburris SDZ (c. 280 ha). It is located at Irish Grid Reference O 06442 32486, to the southeast of Clondalkin Fonthill train station in the west of Co. Dublin; the railway line runs immediately north of the site. The Grand Canal proposed National Heritage Area (pNHA) is located approx.110m from the southern

site boundary. An area of commercial buildings are situated to the east. The proposed development forms a small part of the planned development for the Clonburris Strategic Development Zone (SDZ), which will extend to the north and west of the site, as set out in the Clonburris SDZ Planning Scheme (South Dublin County Council, 2019).

1.2.1 Using Fossitt's (2000) 'Guide to Habitats in Ireland' the site consists of hedgerows (WL1) and dry meadow and grassy verges (GS2), stone walls (BL1), recolonising bare ground (ED3), earth bank (BL2), spoil and bare ground (ED2), and recently felled woodland (WS5)[1], Drainage ditches (FW4), some of the vegetation has been recently removed or cut back, leaving the area covered with small branches and wood chip (ED2). A number of drainage ditches, partially filled with mostly stagnant water, run along the hedgerows (FW4). There is an area of recolonising bare ground in the north-eastern corner (ED3) with an earth bank (BL2) covered in dry meadow beside it, likely composed of soil and debris scraped from the area of recolonizing bare ground. Each of these features is highlightedon Figure 9. Metal fencing separates the site from a sealed walkway and the railway tracks to the north and from a strip of scrub leading up to Ninth Lock Road to the east ofthe site.

1.2.2 The large, ruined stone building (Cappagh House) (BL1), present in the south-eastern end of the site at the time of the survey (building location shown in *Figure 9*), has since been demolished by a third party under planning application SDZ20A/0021. Cappagh house will be noted at various points throughout this report. Even though the work was completed by a third party, the house was on the redline boundary and therefore discussed throughout this report.

1.2.3 The local bedrock is limestone of the Lucan formation, overlain with poorly drained mineral soils derived from limestone.

1.2.4 The site is surrounded by an urban environment, approximately 10 km from Dublin city centre. Full details of the Fossitt habitat survey results can be found in Figure 9.

1.3 Description of the project

1.3.1 The proposed development has been submitted under planning application SDZ22A/0010. Additional information has been submitted to South Dublin County Council by Kelland Homes Ltd following a response request.

1.3.2 The proposed development is located on a site area of 6.2 ha, on lands within the townland of Cappagh, Dublin 22. It stands west of the Ninth Lock Road, south of the Dublin-Cork railway line, north of Cappaghmore housing estate and Whitton Avenue, and east of an existing carpark / park & ride facility at the Clondalkin Fonthill train station and the R113 (Fonthill Road).

1.3.3 The site is located within the Clonburris SDZ, and is part of the development areas of (i) Clonburris South East (i.e. CSE-S1 & CSE-S2) and (ii) Clonburris Urban Centre (i.e. CUC-S4) as identified in the Clonburris SDZ Planning Scheme (2019).

1.3.4 The proposed development consists of the construction of 256 no. dwellings, crèche and 2 no. retail / commercial units, which are comprised of: 111 no. 2, 3 & 4 bed, 2 storey semi-detached and terraced houses, 100 no. 2 & 3 bed duplex units

accommodated in 8 no. 3 storey buildings, 45 no. 1, 2 & 3 bedroom apartments/duplex units in Block A (3-6 storeys) & Block K (4 storeys), 1 no. ground floor commercial / retail unit (c.333sq.m) & 1 no. 2 storey creche (c.487sq.m), both in Block A, and 1 no. 2 storey retail /commercial unit in Block K (c.152sq.m).

1.3.5 Access will be via the permitted road network (under Ref. SDZ01/0021) which provides access from the Ninth Lock Road to the east and the R113 (Fonthill Road) to the west. The proposed development will connect to the infrastructural works as approved under the Clonburris SDZ Planning Scheme (2019) and permitted under Ref. SDZ01/0021, with the proposed development connecting into the permitted surface water drainage attenuation systems i.e., 1 no. pond, 3 no. modular storage systems (*Figure 11*). The proposed wastewater infrastructure will connect into a permitted foul pumping station and pipe network within proposed road corridors to facilitate drainage connections to future wastewater drainage infrastructure within the adjoining SDZ lands (including future Irish Water pumping station permitted under Ref. SDZ21A/0006).

1.3.6 The proposed development also provides for all associated site development works above and below ground, public and communal open spaces, hard and soft landscaping and boundary treatments, surface car parking, bicycle parking, bin and bicycle storage, public lighting, plant (M&E), utility services & 4 no. ESB sub-stations.

1.3.7 Landscaping features will appear throughout the site between the residential units and road network. It is proposed to maintain existing hedgerow within the central portion of the site and along the southern boundary.

1.3.8 This Biodiversity Management Plan has been written in accordance with the Clonburris SDZ Planning Scheme (2019), Clonburris SDZ Biodiversity Management Plan (2021) and the Clonburris SDZ Parks and Landscape Strategy (Dermot Foley Landscape Architects ,2022).

Development programme

1.3.9 At the of writing this report (March 2023), a specific development programme has not been received in full. The dates of the site clearance and planting have not been confirmed. It has been confirmed that the site has been divided into three zones: K1, K2 and K2a (see *Figure 12*). These zones indicate the proposed phasing of development of each area. All landscaping works within each zone will be completed during or by the end of each phase.

1.3.10 It has also been confirmed that the new hedgerow will be planted along the northern boundary during the first/second planting season during construction works. The remaining hedgerows will be planted once building in each respective area has been completed.

1.4 Roles and responsibilities

1.4.1 This new development will be operated by the client, Kelland Homes Ltd, with day-to-day operations at the site organised and managed by a site foreman with the appropriate skills and experience. Kelland Homes Ltd. has overall responsibility for all tasks and will be responsible for ensuring the plan is on track and that the appropriately qualified personnel, e.g., ECoW is on site for the required site visits and monitoring of the works.

1.4.2 Kelland Homes Ltd is committed to these works, including the provision of funding to achieve relevant mitigation, enhancement and environmental management of the site with which this management plan will help to achieve.

1.4.3 Performance during construction and after the handover will be monitored to adhere to the format as outlined in this management plan (see Section 6.0, Table 2). This table provides the management actions and prescriptions that are required by key individuals responsible for managing the site at each stage of development. This will help ensure the monitoring and compliance with the BMP is met as per the council's response letter dated 4 Jan 2023, point 7(g.iii).

1.4.4 The Ecological Clerk of Works (ECoW) will carry out site visits to conduct checks during the construction and restoration phase to check compliance with the outline Construction Environment Management Plan (oCEMP) (RSK, 2022d) and this BMP.

1.4.5 The EcIA that was submitted along with this application recommended that aspects of site clearance should be supervised by a suitably qualified ecologist acting as an ECoW (e.g. removal of mature trees having bat roost potential, removal of vegetation with suitability for nesting hedgehog or breeding birds). As set out in the EcIA, it is the Kelland Homes Ltd responsibility to ensure that an ECoW is on site for all relevant works pre, during and post construction. This includes but is not limited to:

- supervision of all works in the vicinity of sensitive ecological features during construction;
- monitor planting of trees and hedgerow including species composition monitoring;
- supplementary planting of retained hedgerow;
- invasive species monitoring;
- post construction restoration works.

1.4.6 The mitigation measures outlined in the EcIA (RSK, 2022a), oCEMP (RSK, 2022d) and Clonburris Strategic Development Zone Biodiversity Management Plan (Scott Cawley, 2021a) have been pulled together, outlined, and should be read in conjunction with this Biodiversity Management Plan.

1.4.7 Once construction and enhancements have been completed as set out in this BMP, that accompanies this proposal all responsibility for the site will revert to Kelland Homes Ltd, and if they have a management committee.

1.4.8 Corrective action by Kelland Homes Ltd will be taken if compliance is not achieved by all parties, the planning authority (the Land Use, Planning & Transportation Department at South Dublin Council) will dictate whether corrective action is necessary.

2.0 PRE-CONSTRUCTION MANAGEMENT MEASURES

2.1 Introduction

2.1.1 The Clonburris SDZ Planning Scheme (2019), Clonburris SDZ Biodiversity Management Plan (Scott Cawley, 2021a), Clonburris SDZ Parks and Landscape Strategy (Dermot Foley Landscape Architects, 2022), EcIA (RSK, 2022a), Bat Report (RSK, 2022b), Breeding Bird Report (RSK, 2022c) and Arboricultural Assessment (Arborist Associates Ltd, 2023) and this BMP suggest actions to avoid, mitigate and compensate for the impacts that the development will have on biodiversity. These include pre-construction measures to protect existing habitat which are outlined in detail below. Subsequent measures during and at the end of the development phase are also covered in Sections 3.0, 4.0 and 5.0.

2.2 Maintenance of existing trees

2.2.1 A network of local and strategic green corridors established in the Clonburris SDZ will be matched within the scheme and trees retain as much as possible. The location of the proposed development is outline in blue on the Clonburris SDZ Planning Scheme (2019) and presented in Figure 1 below.

2.2.2 Trees will be retained where possible to maintain existing and ecological links and to support the wider green corridor network and the strategic green corridor along the railway line will be enhanced by the planting of whip and native hedge species.

2.2.3 A tree survey was undertaken by Arborist Associates Ltd (2023). This survey identified and tagged all existing trees on site and categorised them according to current condition. A total of 47 trees were identified.

2.2.4 An estimated 26 trees are required to be removed to allow for the proposed development.

2.2.5 The arboricultural report provides detailed strategies to protect the trees on site for proposed retention and should be referred to for additional information. The measures include:

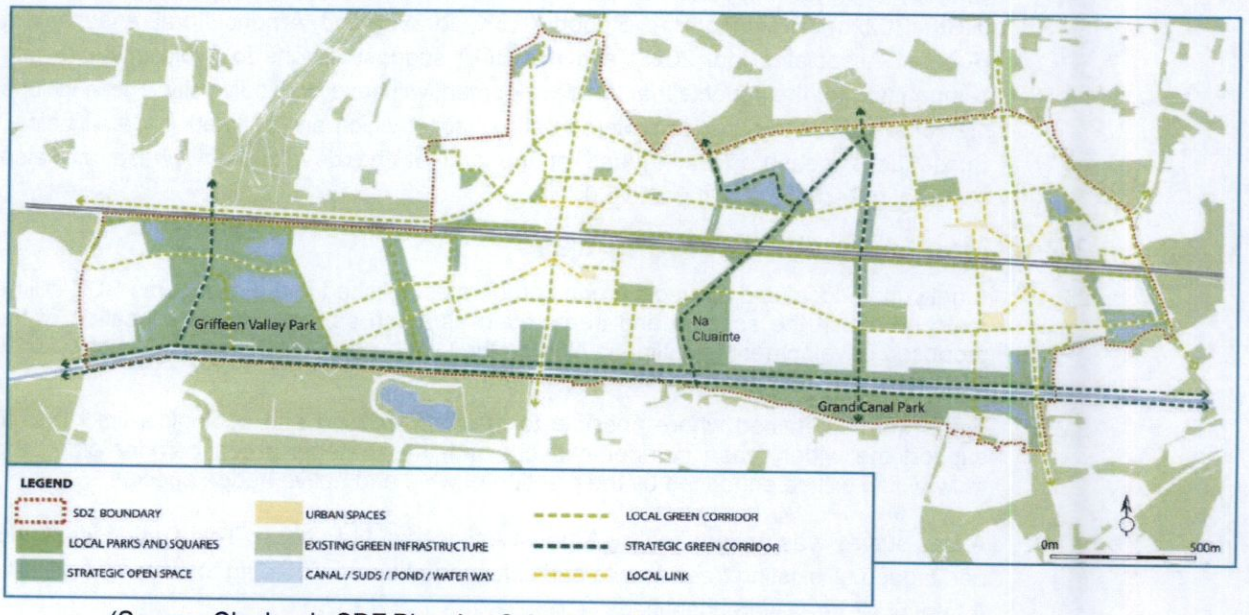
- Tree pruning
- Tree health monitoring
- Tree protective fencing and signage erected prior to excavation and construction works to protect limbs and roots as detailed in the Arboricultural Assessment (Arborist Associates, 2023).
- A buffer distance shall be kept between works and trees to protect roots (Root Protection Zone).
- Only when protective screening and fencing and been erected will construction work begin.
- Holes needed to erect the protective fencing will be dug manually with no

machinery.

2.3 Maintenance of existing hedgerows

2.3.1 Hedgerows and local green corridors which provide key links to the wider green corridor network will be retained and enhanced as set out in the Clonburris SDZ Planning Scheme (2019), Biodiversity Management Plan (Scott Cawley, 2021a) and the Parks & Landscape Strategy (Dermot Foley Landscape Architects, 2022).

Figure 1: Indicative proposal of the layout for parks and green corridors for Clonburris SDZ Planning Scheme, 2019. (The area in blue depicts the Clonburris South East to with is Report represents)



(Source: Clonburris SDZ Planning Scheme, 2019)

2.3.2 The proposed landscape plan will integrate the retained hedgerows and trees. Supplementary native species will be used to enhance the existing planting and augment where necessary. Green infrastructure links will be provided through the centre of the site by retaining the majority North-South hedge line as well as contributing to new green corridors running East-West along the railway line, North-South along the site perimeter & the retention of the Southern hedge line (refer to *Figures 10* and *13*). *Figures 10* (Proposed hedgerow and tree removal and planting*) and Figure13* (Proposed planting) display how local green corridors are to be retain and supplemented.

2.3.3 The combined length of hedgerows originally present on the site was measured as approximately 553 m. Hedgerows H1 H2 and H4 *(Figure 9*) are to remain in place, an approximate length of 400 m. H5 was removed under planning permission SDZ0A/0021 (see 4.3.5 for further details).

2.3.4 Along the length of the retained hedgerows, all gaps will be filled with mature thorny hedgerow species such as Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus*

spinosa). Additional suggested hedgerow species are listed in *Section 5.*

2.3.5 In the far south-west corner of the site is a small vegetated area which borders council land prescribed as strategic open space, and part of the Grand Canal Park in the Parks & Landscape Strategy (Dermot Foley Landscape Architects 2022). The existing vegetation here within the site boundary will be retained and enhanced with additional planting, and no hard border installed, thus maintaining and strengthening the green corridor from the Grand Canal and connecting to the hedgerows along the southern and western boundaries.

2.3.6 The existing hedgerow along the southern boundary will be retained and enhanced with a new stone footpath Installed. The hedgerow here is approximately 150m long and the overall hedgerow, footpath grass verge will be roughly 5-6m wide. This will be taken in charge by SDCC at some stage, though exact arrangements at the time of writing (March 2023) have not been confirmed.

2.3.7 The retained hedgerow running from south to north through the middle of the site, as well as the proposed new hedgerow planting along the north, east and western boundaries, will connect to the railway corridor as well as the proposed green corridor networks in the Clonburris North East SDZ area.

2.3.8 The site falls within the Strategic Corridor 3: Grand Canal Corridor of the South Dublin County Council (SDCC) Development Plan 2022-2028. Therefore, efforts have been made to maintain and enhance these key ecological networks and are thus in line with the aims of the council.

2.3.9 Protective fencing and Root Protection Zones (RPZ) as detailed in section 2.2.3 will be erected prior to construction works commencing.

2.3.10 All new trees and shrubs planted to fill gaps in the hedgerows should be mulched with woodchip to protect establishing root systems from extreme weather, drought and protect soil from erosion.

2.3.11 All new trees, shrubs and hedgerows planted to fill gaps in the hedgerows must be planted with an inoculation of mycorrhizal fungi and using biodegradable tree guards.

2.4 Measures to create new hedgerows

2.4.1 A section of new hedgerow will be planted prior to construction works commencing along the northern boundary of the site. While the remainder will be planted once works are complete. Specifications for suitable native species are listed in section 4.3.4, *Table 1.*

2.4.2 The new planting will follow the planting specifications and protection measures as detailed in sections 2.2 & 2.3., This will ensure that all new planting is robust and sustainable, as per the council's response dated 4 January 2023, point 7 (g.ii).

2.5 Measures to protect badger

2.5.1 Badgers (*Meles meles*) and their setts are protected by the Wildlife Act, 1976 (as amended).

2.5.2 A wildlife licence is required to conduct any activity that would otherwise involve committing an offence under the above legislation.

2.5.3 No badger setts were identified on site. The site lacks appropriate connectivity for badgers due to its predominantly urban surroundings, and therefore the potential for badger setts to be present on site is considered to be low.

2.5.4 However, the site has some suitable foraging and commuting habitat and potential snuffle holes were identified. Due to badger setts being extremely sensitive to vibration during construction phases, a walkover survey for mammals is recommended 48 hours prior tothe commencement of each phase of construction, to ensure setts have not been createdin the interim.

2.5.5 In the event that a badger sett is identified on site, no works may be undertaken within 25 m of a badger sett without first obtaining a licence. It may be necessary to exclude badgers from the sett, and this may only be undertaken at certain times of year.

2.6 Measures to protect bats

2.6.1 All bat species in Ireland protected by law in the Republic of Ireland under the Wildlife Act 1976 (as amended).

2.6.2 It is an obligation to protect thehabitat of bats, including links to important feeding and commuting areas.

2.6.3 The grant of planning permission does not authorise the disturbance of bats or interference with their breeding or resting places. A separate derogation licence is required (Protected sites in Ireland, 2022).

2.6.4 Bat activity surveys were carried out on the site and bat emergence and re-entry surveys were undertaken on Cappagh House during the spring and summer of 2022 and identified 3 species of bat.

2.6.5 Measures included within the oCEMP and outlined in the EcIA and bat report for this application include:

- As outlined in the Bat Report (RSK, 2022b) section 4.4, due to potential emergences of bats during the surveys, the demolition of Cappagh House was completed under a bat derogation licence, planning ref: SDZ20A/0021 by a third party.

2.6.6 Measures to protect, enhance and create hedgerow (2.3, 2.4) and woodland habitat (2.2) will also help to ensure that foraging and commuting corridors are protected within the site and between the site and the wider foraging territory.

2.7 Measures to protect breeding birds

2.7.1 Breeding birds and their nests, eggs and young are protected under the Wildlife Act 1976 (as amended) from reckless or deliberate disturbance, harm, or destruction. The level of protection afforded to individual species varies; species listed in Schedule four of the Wildlife Act receive enhanced protection.

2.7.2 Breeding bird surveys were carried out on the site during the spring and summer of 2022 and identified 29 bird species, some of which are listed as species of medium concern (amber list) within the BoCCI (Birds of Conservation Concern in Ireland) list 2020-2026.

2.7.3 Any clearance of scrub and trees required prior to commencement of works will be undertaken outside of the bird nesting season (defined as 1st March and 31st August).

2.7.4 It should be noted birds are increasingly breeding outside of the bird nesting season as it is currently defined and that legal protection applies to the breeding birds, not the nesting period, as such an ECoW is recommended for all vegetation clearance if breeding birds are likely to be present.

2.7.5 If any vegetation removal works are required to commence during the bird breeding season, then a further inspection by a suitably qualified ecologist, in and within at least 20m of the area to be impacted, is required immediately prior to commencement of the work. This is to ensure that no active nests and nest sites are illegally destroyed or disturbed. If active nests are identified, then an appropriate stand-off distance (10-20 m) will be maintained, and vegetation removal will have to cease until young birds have successfully fledged.

2.7.6 Loss of nesting space from the removal of hedgerows and woodland to be compensated by the planting of new, native, species-rich hedgerows of equal length, as detailed in *Section 4*.

2.8 Measures to protect hedgehog

2.8.1 Hedgehogs (*Erinaceus europaeus*) are protected under Wildlife Act 1976 (as amended).

2.8.2 Given the widespread distribution of hedgehog they should be considered present due to the suitability of habitat on site, for example, dense scrub, hedgerows, and log piles. Such areas are used by hedgehogs during hibernation periods, between the months of November and March, thus making them vulnerable to clearance works duringthis time. The desktop NBDC database provides records of hedgehog within 500 m of the site.

2.8.3 Hedgehogs are likely to suffer residual effects through loss of habitats and land use change due to a lack of connectivity in habitats. Therefore, the removal of any hedgerows and woodland should be compensated through strategic placement of new planting, to allow movement between habitats for hedgehogs.

2.8.4 Clearance of vegetation, including scrub, log and leaf piles should take place in between September - October, the reason for this is so that it occurs outside of the hibernating season for hedgehogs and bird breeding season. Consideration should be given to the possibility of compensating for the loss of such habitats removed. For example, retaining logs from felled trees on site and placing them in quiet, vegetated corners, for instance within the 5 m protection buffer surrounding mature trees and hedgerows.

2.8.5 If vegetation clearance, or removal of log piles, dense scrub and hedgerows is required during November-March, this should be undertaken under the supervision of a qualified ecologist to check for hibernating hedgehogs.

2.8.6 If a hedgehog is discovered on site, works in that location will stop and a suitably qualified ecologist will assess the situation and advise on an appropriate plan of action; which may include the translocation of the hedgehog. Once the plan has been created and implemented the ecologist will inform Kelland Homes Ltd. when work can start again.

2.9 Measures to protect common frog

2.9.1 Common frogs (*Rana temporaria*) are protected under the Wildlife Act 1976 (as

amended). Under this legislation it is an offence to capture or kill a common frog without a licence.

2.9.2 The habitat present on the site is suitable for common frogs, who are highly sensitive to removal and covering of ditches, loss of habitats and vegetation clearance. During vegetation clearance, and when removing ditches, an ECoW will be present so that if any frogs are identified on site, that work can be stopped until a strategic translocation plan can be developedand implemented.

2.9.3 Only drain standing water and remove scrub, trees and vegetation when it cannot be avoided. Implement measures set out in the oCEMP, avoid undue disturbance of vegetation. There will be 210m² planted with bulbs, and 2,830m² planted with native wildflowers in the central and eastern areas of the site and 174m² in the southeast of the site will be an attenuation pond with wetland planting (*Figure 13*). These new habitatswill provide suitable habitat for common frog and mitigate against losses during the development.

2.9.4 A destructive search will be completed on a precautionary basis for newts and frog,either by hand (e.g. for log piles) or by supervision of machine excavation throughgradual turf stripping etc. This will be conducted prior to construction works in the identified suitable habitat areas. If either newts or common frogs are found to be present, construction will be stopped by ECoW. Relocation of the newts may be needed under licence, as well as the creation of the habitat detailed above.

2.10 Measures to protect newts

2.10.1 The smooth newt (*Lissotriton vulgaris*) is legally protected in Ireland under the Wildlife Act 1976 (as amended). Under this legislation it is an offence to capture or kill a smooth newt without a licence. Although newts have not been recorded on site, they have been recorded locally, and suitable habitats for them are present on site, including waterbodies, scrub and areas of long grass.

2.10.2 The following precautionary mitigation measures in relation to smooth newt will be implemented:

- Where areas of standing water are to be infilled, then this will be preceded by precautionary mitigation measures. The water body will be gradually drained/pumped out, and this will be accompanied by netting to capture any amphibians which may be present. In the unlikely event that they do then appear on the site, work must stop and the appropriate licence must be obtained.
- A destructive search will be completed on a precautionary basis for newts and frog, either by hand (e.g. for log piles) or by supervision of machine excavation through gradual turf stripping etc. This will be conducted prior to construction works in the identified suitable habitat areas. If either newts or common frogs are found to be present, construction will be stopped by ECoW. Relocation of the newts may be needed under licence, as well as the creation of the habitat detailed above.
- Only drain standing water and remove scrub, trees, and vegetation when it cannot be avoided. Avoid the undue disturbance of vegetation while following the oCEMP. A proportion of the site must be retained for green space as per paragraph 2.9.3 to provide and replace appropriate habitat for smooth newts.

2.11 Invasive Non-Native Species

2.11.1 It is legally required to follow guidelines for control and management of invasive species, the Invasive Alien Species Regulation (Regulation (EU) 143/2014) includes a set of measure to be taken in relation to invasive alien species. These include restrictions on keeping, importing, selling, breeding, growing and releasing into the environment. EU states are required to;

- Take action on pathways of unintentional introduction (i.e. prevention)
- Take measure for the early detection and rapid eradication of these species
- Manage species that are already widely spread in their territory.

2.11.2 The Invasive alien species found on site are: cherry laurel, butterfly bush, snowberry and piri-piri burr. These should be completely removed from site according to best practice guidance.

2.11.3 The ECoW will follow guidance for control and management if invasive species are found on site, these guidelines will be species specific (National Biodiversity Data Centre, 2021). It is important that developers do not facilitate the encroachment of unwanted vegetation which degrades the environmental value of the land.

2.11.4 Practices to aid in the prevention of spreading non-native invasive species, include:

- Washing tools and machine wheel onsite in appropriate locations so that the water is retained on site and doesn't run off to a nearby location.
- Washing boots at entrances so that material is not brought onto or off the site.
- When removing invasive species, the soil must be bagged on site and disposed of at suitable licensed individuals/businesses, authorized to accept it.
- The transport vehicle must be covered in a sheet/ material so that seeds/ plant material cannot be blown away.
- Kelland Homes Ltd must have waste transfer notes (WTNs) that list the material leaving the site, this is for any material that contains invasive plants or their seeds. It is their duty of care for such waste to be sorted, handled and disposed of safely and legally.
- WTNs must be kept for at least two years, and a record of any transfer of hazardous waste between the parties be made using a signed consignment note should be kept for at least three years.

2.11.5 Checks for the presence of non- native species should be undertaken by the ECoW when on site. Japanese Knotweed was noted and treated by a third party before this report was completed, a check for this onsite should be completed before the construction phases, if found, works should not start, and an invasive species management plan constructed and followed for the removalof the species.

2.11.6 Japanese Knotweed is a highly invasive weed. It is illegal to plant or otherwise knowingly cause the species to grow in the wild. Japanese Knotweed spreads rapidly by rhizome spread and as a result of the anthropogenic transportation of either fragments of rhizome or stem. It is important to remember that as little as 0.7g of Japanese Knotweed rhizome may grow into a new plant, and larger pieces of rhizome may remain dormant for up to twenty years. It is a Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 and controlled under Regulations (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014, on the prevention and management of the introduction and spread of invasive alien species.

3.0 CONSTRUCTION PHASE MANAGEMENT MEASURES

3.1 Introduction

3.1.1 Monitoring of all protected and newly created habitat is required to ensure adherence to this BMP. This will require site walkovers in Years 1, 2, 3 and 5 during the construction period. This section relates to themanagement of trees, hedgerows, bats and invasive species during the ongoing construction phase. Measures implemented to protect badgers, breeding birds, hedgehogs, common frog and newts has already been outlined in Section 2.0. Monitoring of all protected and newly created habitat is required to ensure adherence tothis BMP. This will require site walkovers in Years 1, 2, 3 and 5 during the construction period, a monitoring plan has been outlined in *Table 4 and 5.*

3.2 Maintenance and establishment of existing and newly planted trees and hedgerows

3.2.1 Existing ground levels within the RPZ of the trees and hedgerows will be retained and incorporated into the finished landscaping of the development to prevent any root damage. If any paths or hard landscaping will encroach on the RPZ, it will be installed using a 'No-Dig' method or with the use of a cellular confinement system such as 'CellWeb' (Arborist Associates, 2023).

3.2.2 The establishment of planted and enhanced hedgerows around the northern boundary will be checked annually and any areas that have failed will be mapped for replanting.

3.2.3 Ensure that 5m buffer zones, Root Protection Zones (RPZ), screening and signage around any retained trees and hedgerow, and newly planted hedgerow along the northern boundary, are being maintained and protected from works, associate personnel and vehicles. These are to be monitored by the project Arboriculturist throughout the construction phases as per the Arboricultural Assessment (Arborist Associates, 2023).

3.3 Bats

3.3.1 Bats and their roosts are protected from disturbance and harm. Artificial lighting can cause disturbance and harm to bats (Downs *et al.*, 2003) by:

- Causing bats to desert roosts
- Impoverishing adjacent foraging areas of insects
- Preventing bats from using commuting corridors of feeding grounds

3.3.2 Tree and hedgerow habitat shall therefore be protected from light spill from works on the site by ensuring that light is not spilled onto adjacent hedgerow and woodland habitat or at a minimum is mitigated through measures outlined in best practice guidance (Bat Conservation Trust, 2018).

3.3.3 If lighting is required at any point during construction, it should be on the warm-white spectrum (ideally <2700Kelvin) to reduce blue light component. Luminaires should always be directed downwards to retain darkness above and to reduce light spill. Any external security lighting should be set on motion sensors and short (1min) timers.

3.4 Prevent spread of Invasive Non-Native Species

3.4.1 Japanese knotweed has been recorded beside Cappagh House in a previous walkover survey of the complete SDZ site by a third party hired by Kelland Homes Ltd. It was treated prior to this report by a third party in 2021 and 2022, additionally a third party will removethis species under granted permission SDZ20A/ 002. This will need monitoring in the future through site walkovers by the ECoW to check that there has not been regrowth.

3.4.2 A dedicated invasive species inspection should be undertaken across the site in form of a site walk over by the ECoW and the surrounding area to ensure that no spread of non-native invasive species has been facilitated by the works. This should occur prior to commencement of the works in the late-spring and summer months. Should occurrences of any non-native invasive species be identified on site a suitably qualified ecologist shall be consulted and an Invasive Species Management Plan drawn up to agree mitigation and control measures. In the interim no works shall be undertaken within 10m of any identified invasive species.

3.4.3 If concerns are raised during these monitoring checks that any of these measures are not being undertaken, corrective action will be issued, and a follow up survey undertaken.

4.0 POST-CONSTRUCTION HABITAT CREATION AND ENHANCEMENT MEASURES

4.1 Introduction

4.1.1 This section outlines the detailed aims and objectives for enhancing and creating the ecology and biodiversity of Development Area 2 – Clonburris South East, as has been broadly outlined in the Clonburris SDZ Planning Scheme and Clonburris SDZ Biodiversity Management Plan (Scott Cawley, 2021a).

4.1.2 The aims of the habitat creation and enhancement measures are as follows:

1. Retain as much existing biodiversity as possible in the first instance.
2. To create new habitats on the site to enhance the ecological function and improve and increase the overall biodiversity of the site.
3. Link retained, enhanced and created habitats to existing and planned Green Infrastructure and green corridor networks across the site and the wider SDZ scheme and the incorporation of Sustainable Drainage Systems (SuDS) as set out in the SDCC Development Plan 2022-2028.

4.2 Planting of new trees

4.2.1 A total of 410 new trees are to be planted across the site. The locations are specified in *Figure 10.*

4.2.2 Suitable native tree species to be included around the site and in the open park area are Pendunculate Oak (*Quercus petraea*), Rowan (*Sorbus aucuparia),* Sessile Oak (*Quercus robus*), Yew (Taxus baccata) and Willow (*Salix spp.).* Yew, Hazel (*Corylus avellana*) and Whitebeam (*Sorbus hibernica)* are particularly well suited to limestone bedrock of the site. Further species are listed in *Table 1.* All trees and hedge species will be native Irish and sourced as locally as possible.

4.2.3 A small parkland area is to be created around and to the north of the pond in the southeast of the site. Species surrounding the pond should be appropriate for the wetter habitat, for example Willow (*Salix* spp.), Downy Birch (*Betula pubesens*) and Common Alder (*Alnus glutinosa*).

4.2.4 Trees are also to be planted along street lines. They will be native Irish species as listed above in Section 4.2.2 and locally sourced. Where possible, larger canopy trees should be included. Trees will be planted in each section after construction is complete between November – March.

4.2.5 Planting will consist of trees of mixed ages to provide structural diversity and therefore will include "mature standards" specimens.

4.2.6 Trees should be planted according to established best practice (e.g., Woodland Trust),

including the creation of wavy line borders for a more natural aesthetic and to help create ecological niches, and ensure that trees are planted no closer than 2m apart; approximately 6m is recommended for street trees. This will allow for uninterrupted green corridor routes.

4.2.7 All trees and shrubs planted must be planted with an inoculation of mycorrhizal fungi and using biodegradable tree guards.

4.2.8 All trees and shrubs should be mulched to protect establishing root systems from extreme weather, drought and protect soil from erosion.

4.2.9 These steps and guidance will ensure robust and sustainable planting is achieved.

4.2.10 Refer to Arboricultural Assessment for further details.

4.3 Creation of new hedgerows

4.3.1 Hedgerows H1, H2 and H4 will be retained and enhanced in line with the SDZ Planning Scheme (2019) and Parks and Landscape Strategy (Dermot Foley Landscape Architects, 2022).

4.3.2 Compensation for the loss of H3 (*Figure 9*) will be required. This is a length of approximately 135m.

4.3.3 New hedgerows around the perimeter and within the site are proposed totaling a length of 910m (*Figure 10*). This will involve the planting of native, locally occurring hedgerow species.

4.3.4 New hedgerow planted at the southern section of the western boundary will provide a key green corridor route linking prescribed council green space adjacent to the Grand Canal in the south, up to the railway line to the north.

4.3.5 H5 was removed by a third party before this report was completed as part of the South Link Road/Pump Station Road infrastructure, granted under permission SDZ20A/0021. It is therefore not included in the required length of compensation in section 4.3.2 above.

4.3.6 H1, H2 and H4 all require enhancements such as dead or diseased trees or hedges removed, and gaps filled in with new planting.

4.3.7 Any dead trees will be cut, leaving the stumps to provide additional habitat and supporting vegetation for wildlife, such as fungi, lichens, bryophytes, invertebrates', larvae, woodlice, centipedes, millipedes and insects.

4.3.8 *Table 1* provides a list of suitable Irish native species which will provide food for birds, insects and small mammals all year.

Table 1. Proposed species for hedgerow composition to provide a food source for birds, insects, and small mammals year-round.

Native Irish hedgerow species	Flowering and fruiting months
Hazel (*Corylus avellana*)	February - April
Blackthorn (*Prunus spinosa*)	March - May
Hawthorn (*Crataegus monogyna*)	April - June

Native Irish hedgerow species	Flowering and fruiting months
Broom (*Cytisus scoparius)*	April - June
Wild Cherry *(Prunus avium)*	April - May
Bramble (*Rubus fructicosus)*	May - September
Crab Apple *(Malus sylvestris)*	May - June
Elder (*Sambucus niger*)	May - June
Whitebeam (*Sorbus hibernica)*	May - June
Honeysuckle (*Lonicera periclymenum)*	June - October
Guelder Rose (*Viburnum opulus)*	June - July
Raspberry (*Rubus idaeus*)	June - August
Dog-Rose (*Rosa canina)*	June - October
Holly (*Ilex aquifolium*)	June – November
Ivy (*Hedera helix)*	September – November
Gorse (*Ulex europaeus*)	January – December

(Source: Scott Cawley 2021a)

4.3.9 Tree species should also be included, species specification can be found in section 4.2.2. All trees and hedge species should be sourced as locally as possible.

4.3.10 Hedgerows should be planted with 5 or 6 plants per metre with a minimum of 5 different species every 30 metres, and no more than 1 tree every 6 metres to reduce competition.

4.3.11 Planting should be done in a staggered row formation with approximately 160-200mm between plants within the row and 300mm between each plant and the parallel row with a guideline mixture of native species as above. This will ensure planting is robust and sustainable. Once new hedges are planted, they should be pruned to half height, with hard pruning in the first 2-3 years of lower branches. Once more established, annual pruning can be done of at least 2cm above the previous years' growth. This will encourage bushy and dense growth and therefore better shelter for birds and small mammals.

4.3.12 New hedges will be kept free from weeds in the first few years by mulching.

4.3.13 Once new hedgerows have become established, in approximately year five, climbers should additionally be planted. These will include climbing rose (*Rosa setigera*), dog rose (Rosa canina), ivy (*Hedera helix*), and wild honeysuckle (*Lonicera periclymenum*).

4.3.14 Newly planted hedgerow along the eastern boundary will be adjacent to an existing stretch of hedgerow to the west of the Ninth Lock Road. This area is approximately 130m long and ranges between 3m – 13m wide. This will provide and additional and beneficial buffer to the site boundary and further strengthen this green corridor.

4.3.15 New hedgerows planted will connect to existing key green corridors both within and adjacent to the site (*Figure 1*).

General Guidance for tree and hedge planting

Site Preparation

- Mechanical cultivation will be avoided as much as possible
- Fertiliser is permitted for use locally to help trees and hedges to establish but it must be organic and avoid widespread enrichment.

Sourcing trees and hedging

- Trees and hedges should ideally be sourced from as close to the site as possible. Preferably somewhere in Ireland, failing that somewhere on the island of Ireland to prevent spread of disease and pests from Great Britain.

4.4 Birds and bats

Bats

4.4.1 Permanent bat boxes, for example, the Crevice Bat Box[1] will be installed on mature trees.

4.4.2 The integration of permanent bat boxes within the structure of the new building in the form of the apartment blocks will provide the best long-term solution and should be designed in collaboration with the ecologist. Specific recommendations include the installation of Schwegler brand 'Multiple bat tubes 2FR', or 'Bat access panel 1FE'. Alternatively, if this is not feasible, bat boxes could be installed once construction has been completed, e.g. 'Bat Winter Roost 1WQ'.

4.4.3 Boxes should be erected at suitable locations (e.g., close to areas with vegetative cover, woodland, tree lines and hedgerows, and any water bodies) and suitable numbers to replace potential bat roosts lost as a result of any necessary vegetation clearance and the demolition of the Cappagh House.

4.4.4 It is recommended they be installed in the southeast corner of the site. This is where Cappagh House previously stood and where bat activity was recorded during surveys. It is also where the current plans have proposed to have an area of green space with trees and a pond. Additionally, it is in proximity to the Grand Canal for foraging opportunities.

4.4.5 Bat boxes will be placed at least 4m from the ground and in a sunny location that is sheltered from the wind. Apartment block A and K will each have four bat boxes installed along the western side facing the newly planted vegetation making up the green corridor. An additional ten bat boxes will be installed across the site, on those trees identified as early-mature, semi-mature or mature, and listed for retention as per the Arborist report (Arborist Associates Ltd, 2023, P. 30). Further guidance on bat boxes can be found in *Appendix D*.

4.4.6 Permanent lighting plans for the site will be in line with BTC Bats and artificial lighting

[1] Crevice Bat Box (2022) *The Nestbox Company Limited.* Available at: https://www.nestbox.co.uk/products/crevice-bat-box (Accessed: November 16, 2022).

guidance note (2018). Where lighting is required, it will be:

- Kept to a <0.5 lux increase of current and newly created potential foraging and commuting resources.
- There will be a dark zone around the central south-to-north hedgerow. Indiscriminate lighting elsewhere will be avoided, and any necessary artificial lighting will not exceed 1 lux.
- Lighting will be angled below the horizontal plane, will use baffles, hoods or canopies to retain darkness above and focused on the intended area to retain darkness above and reduce light spill.
- Permanent lighting will be LED luminaries, avoiding the use of UV elements.
- Any external security lighting will be set on motion sensors and short (1 min) timers.

Birds

4.4.7 The planting of new fruit-bearing tree, hedgerow and shrub habitats will compensate for the loss of bird foraging and nesting opportunities at the site. Additional nest box provision is also recommended to increase the availability of bird nest sites in the short and long term. Bird nest boxes suitable for a range of species (a variety of boxes with varying sizes of entrance hole) will be installed (Plate 2).

4.4.8 The integration of bird boxes within the structure of the new apartment building will provide the best long-term solution and should be designed in collaboration with the ecologist. Nest boxes suitable for a range of species should be provided (a variety of boxes with varying sizes of entrance hole). Examples include: Schwegler brand 'Brick box type 25', Brick box type 24', Brick box 1HE', and 'Sparrow terrace 1SP'. These will provide space for nesting birds until the trees and hedgerows mature. Swift boxes will be installed on the site, this will help the conservation efforts for this species. The swift box 'Zeist' design has been widely used within Europe to create new habitat for the species, the entrance size hole is important as it lets swifts enter but limits opportunity of other species to occupy the space. These will be placed on vertical walls, with unobstructed flight paths in and at a minimum height of 5m on the apartment buildings.

Figure 2: Examples of nest boxes with different entry hole sizes. Wrens prefer smaller entrances as on the left, whereas robins prefer a more open hole as on the right.

(Source: Cawley, 2021a)

4.4.9 Boxes should be installed on retained mature trees to provide sufficient cover, as high as possible (2-5 metres from ground level) to be away from predators (e.g. cats), and facing north-east. Once newly planted trees have matured enough to be able to hold a box and provide a good level of shelter, boxes will additionally be erected on these too. This will be responsibility of Kelland Homes Ltd. There will be up to 40 bird boxes installed across the site.

4.4.10 Further guidance on the installation of bird boxes can be found in *Appendix E*.

4.4.11 Additionally, areas have been set aside to be planted with a mix of wildflowers and grasses. This will be maintained with an annual, late cut. This will provide foraging habitatand shelter for breeding birds. This cut will be the responsibility of Kelland Homes Ltd, ortheir management team for the properties. Areas of wildflower planting are shown in *Figure 13*.

4.4.12 If the enhancement measures above are implemented, it is considered that this would offset the adverse impact associated with the loss of nest sites and foraging resources.

4.5 Insect hotels

4.5.1 The additional planting on the site will provide important habitats for invertebrate species. However, these habitats can be increased through the provision of additional and specific habitat opportunities that promote and aid nesting for invertebrates such as insect hotels.

4.5.2 There are various types of structures that can be constructed for insects, for this developmenta wooded insect hotel and combined bee house has been selected as an example. Thisdesign includes small wooden sections in the top which is netted, wooded cylinder with holes cut out of it, smaller wooden cylinders, and closed of area in the middle of the thirdsection with a long narrow opening in the middle of the wooden panel, and in the last andbottom section natural forest floor findings in the form of pine cones which is netted in. The dimensions will be approximately 23 x 40 x 7 cm (see *Figure 3*).

Figure 3: Insect hotel design

(Source: Navaris XL Wooden Insect Hotel, 2022)

Installation

4.5.3 The insect hotel will be erected and secured within the planting areas of the site, in the northwest corner, along the northern and eastern hedgerow boundary, and in the southeast corner. This will help promote nesting invertebrates within the natural planting that will provide a food source and encourage pollinator species, which will help achieve objectives of the All-Ireland Pollinator Plan (National Biodiversity Data center, 2021). Further planting guidance and advice can also be found there.

4.6 Attenuation pond installation

4.6.1 An attenuation pond will be installed by a third party under planning permission reference: SDZ20A/0021. This will be in the southeastern corner of the site (*Figure 11*). For the new attenuation pond it is recommended to enhance the ponds edge with a planting mixture (Emorsgate EP1) to increase the biodiversity and foraging habitat for birds and insects. The mixture is composed of 80% grasses and 20% wildflowers, these should be species which are suitable for growing in wet margins. The seeds should be sown in late summer or spring as this will prevent them being affected by winter flooding.

4.6.2 The attenuation pond will provide Green Infrastructure SuDS to be in line with the aims of the SDCC Development Plan 2022-2028.

4.6.3 New wetlands should be created with biodiversity in mind. Retention and attenuation ponds should have shallow, gently sloping areas to create suitable habitat for amphibians and other fauna. Guidance for the creation of ponds can be found in the following documents:

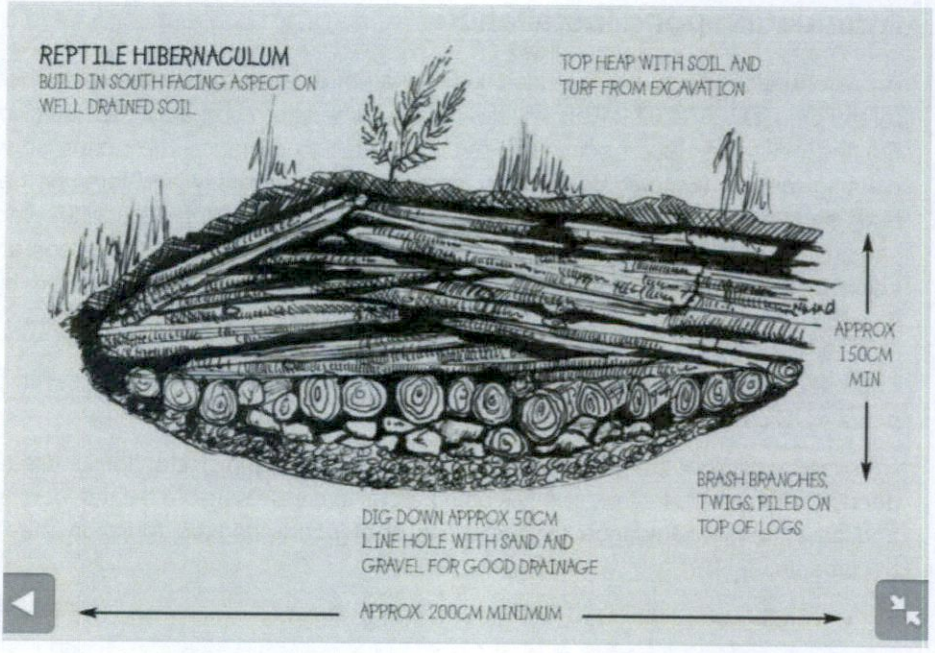
- Freshwater Habitats Trust (2008). *Million Ponds Project. Pond Creation Toolkit.*
- WWT Consulting & RSPB (2012). *Sustainable Drainage Systems. Maximising the potential for people and wildlife.*

4.6.4 Ecological features to improve and replace suitable newt habitats on site are recommended. This can be achieved in the planned installation of the wildlife pond in the southeastern corner of the site (*Figure 13*). Key features of the pond to benefit newts include:

- The pond will have a variety of depths, with a layer of stones or rocks at the bottom and either some natural steps or gently sloped margins to allow newts and other wildlife to crawl in and out (*Figure 6*).
- The pond will be left to fill with rainwater, allowing aquatic vegetation to grow. Supplementary planting of native aquatic plants will be required, this will encourage newts and frogs and provide essential vegetation for breeding. See *Figure 4* for suitable aquatic species.
- The pond should not contain any fish.
- Spoil left from the dug area can be used to create a hibernaculum next to the pond to provide wintering/sheltering habitat. It should be uncompacted and can be mixed with rocks, gravel, branches, and logs. A suggested hibernaculum design is given in below in *Figure 4.*

- Vegetation should be allowed to grow around the margins of the pond to provide shelter.
- Trees and hedgerows should be to the north but clear to the south to allow sufficient sunlight and warmth.

Figure 4: Suggested hibernaculum design



(Source: Julian & Hand, 2018)

Figure 5: Native Irish aquatic plants

(Source: Scott Cawley, 2021a)

Figure 6: Example of pond with ramp made of rocks to allow access for birds, small mammals and amphibians

(Source: Scott Cawley, 2021a)

4.7 Wildflower meadows, shrub and herbaceous border planting

4.7.1 Native wildflower meadows will be planted in a total area of 2,830m² in a central area running vertically through the site at the bases of the hedgerow, along the eastern and north-eastern boundary, and around the open green space to the south-east (*Figure 13*). Planting will take place once all construction has been completed.

4.7.2 Existing areas consist of improved grasslands with the swords being of generally low ecological value due to limited diversity. New planting reflecting local biodiversity will greatly improve this. This will be achieved in the following ways:

- Seeds will be locally sourced to ensure that local biodiversity is retained.
- Seed mixes will be bought from a wildflower provider. Species known to be present in the area will be chosen for the seed mixes.
- If bought from a wildflower provided, seeds will be a perennial mix, rather than annuals. This is a more cost-effective approach and provides a better source of food for pollinators than an annual mix, though take longer to become established. Native Irish perennial seed mixes can be sourced from various suppliers, for example *Design by Nature.*

4.7.3 Wildflower planting on site will be in line with the *All-Ireland Pollinator Plan 2021-25* and will follow these guidelines:

- No single species should make up over 50% of the mix,
- No competitive grasses will be planted (e.g. Common Bent, Creeping Bent, Crested Dog's-tail, Meadow Foxtail, Rough-stalked meadow grass, Smooth Meadow-grass, Sheep's fescue or Sweet-vernal Grass),
- The grass component of the mix must not be more than 80% of the mix,
- Recommended seed mix includes late-flowering red clover, other red clover, Alsike clover, Bird's foot trefoil, Sainfoin, Lesser knapweed. Additional suggestions can be found in *Figure 7.*
- No fertilisers will be added to the wildflower meadows as this encourages grass and weed growth.

4.7.4 Proper ground preparation and weed elimination is integral to successful creation. Guidance from the All-Ireland Pollinator Plan on ground preparation, seed sowing and problem solving can be found in Appendix F.

5.0.1 The margins of the meadows will be protected by fencing for a period not less than 5 years from planting.

4.7.5 Areas of amenity grass along roadside verges (*Figure 7)* will additionally have a shorter, flower-rich sword. These will include dandelions (*Taraxacum officinale*), clover (*Trifolium*), Selfheal (*Prunella vulgaris)*, Cuckoo flower (*Cardamine pratensis*) and Bird's-foot-trefoil (*Lotus corniculatus*). They will be cut on a six-weekly rotation with cuttings removed. The first mow will be around the 15th April, and every six weeks thereafter (Cawley, 2021a).

4.7.6 In areas indicated for shrub planting (*Figure 13),* native, pollinator-friendly species of both shrubs and herbaceous plants will be used in areas totalling 2792 m². Suggested species include:

- English lavender (*Lavandula angustifolia*)
- Rock rose (*Cistus corbariensis*)
- Firethorn (*Pyracantha coccinea)*
- Heathers (*Calluna)*
- Barberry (*Berberis vulgaris)*
- Broom (*Cytisus scoparius)*

Figure 7: Suitable native Irish wildflowers for pollinators

(Source: National Biodiversity Data Series No.13, 2018)

4.8 Green Roof

4.8.1 Kelland Homes Ltd are enhancing the properties by including green roofs (*Figure 16*). These will be Sedum roof planted with *Sedum* sp. There will be three green roofs, individually they are 322m^2, 155.7m^2, and 54.6m^2, totaling 532.5m^2.

4.9 Fencing

4.9.1 Walls and fencing installed on the site will be kept to a minimum as these act as barriers to hedgehogs and other wildlife from travelling around the development and foraging. As prescribed in Scott Cawley's (2021a) BMP, soft screening infrastructure such as native hedgerows will largely be used. Where walls and fencing are necessary, hedgehog passes, by way of a small opening at the base will be incorporated into the design, allowing hedgehogs, other small mammals, reptiles and amphibians to disperse and forage across the site freely.

Figure 8: Hedgehog and small mammal passes

(Source: Scott Cawley, 2021a)

5.0 POST-CONSTRUCTION HABITAT MAINTENANCE AND MANAGEMENT MEASURES

5.1 Introduction

5.1.1 This section provides recommendations for the ongoing management of the habitats and features on site. Long-term management will help achieve and maintain the aims and objectives and is required in order to maintain and enhance the biodiversity value of the created features. The details of appropriate timings for different aspects of the management plan and the key personnel responsible for ensuring each task is undertaken appropriately and in line with this management plan are detailed in *Table 4* including date and sign off tabs. It is proposed that appropriate measures are monitored (Section 5.9 and *Table 4*) for a period not less than 10 years to fulfil the aims and objectives of this BMP.

5.2 Tree and hedge management

5.2.1 The management and maintenance of the planting on site should adhere to the following measures:

All Year Round

- Tree stakes and ties will be inspected and maintained if loose, broken, decayed or removed if no longer required.
- Planting will be inspected and any dead, dying or diseased plants will be noted and gapping filled. This is to ensure connectivity for the species identified in this report.
- Plants will be watered during hot, dry weather.
- Any issues identified shall be addressed according to the specifications and in the manner outlined in this BMP.
- Woodland and shrub areas must be managed for a period of 20 years following establishment in accordance to ensure their satisfactory establishment and allow the development of a rich biodiversity.

Winter Maintenance (October – February)

- Any tree or shrub pruning will be kept to a minimum, but will be carried out over winter as required (*e.g.* where branches become dangerous) - although the pruning of young trees will be avoided during the late winter and early spring sap-flow period. Pruning will be in accordance with good horticultural and arboriculture practice (*i.e.* do not damage or tear the stem or bark and keep wounds as small as possible and cut cleanly back to sound wood).
- Hedges will be cut back as required, annually if appropriate. This will encourage

healthy, bushy growth, and increase the number of flowers produced.

- They shall be cut or trimmed in an A shape to allow increased bases which provides better habitat for nesting, roosting and foraging wildlife.
- All dead, dying and diseased plant material will be removed and replaced with like for like planting at the end of the growing season during autumn (*i.e.* from 1 November up to 30 December of each year of maintenance).
- Undertaking pruning work over the winter will also avoid the nesting bird period which is February to August inclusive.
- Late-winter pruning (where possible) will allow increased opportunities for birds and insects to harvest fruits.

Summer Maintenance (March – September)

- An organic fertiliser will be applied between March and April.
- To allow the establishment of new planting, planted areas will be kept clear of weeds by maintaining a woodchip mulch and hand weeding.

5.3 Deadwood

5.3.1 Deadwood provides a valuable habitat for biodiversity; any windblown trees or limbs during the construction phase, if not diseased, should be retained on site as it lies where possible, or kept and placed elsewhere on site for additional habitat creation.

5.3.2 Logs gained from felled trees during the construction phase can also be retained for this purpose and be used, for example, for the hibernaculum around the wildlife pond.

5.4 Bird and bat boxes

5.4.1 During site monitoring as per section 5.9 and *Table 4*, nesting and bat boxes will be checked to ensure that they remain intact, as cracks and holes may make them vulnerable to predators. Damaged boxes should be replaced.

5.4.2 All bird boxes should be cleaned out once between September and February when birds are unlikely to be using them for nesting.

5.4.3 Any old nests should be removed from the boxes entirely and should preferably be cleaned with boiling water to kill-off any remaining parasites. The boxes should then be replaced in their original position.

5.5 Insect hotel maintenance

5.5.1 Insect hotels naturally degrade over time as the materials used are untreated. The blocks or parts within the refuge should be checked on an annual basis and any degraded or rotten parts should be replaced to avoid build-up of mould and the spread of diseases.

5.6 Attenuation pond maintenance

5.6.1 In the first year, around the pond edge, good ground cover should be encouraged by cutting back the annual weed growth. Following this, the vegetation should be kept long and only cut back every 3 years in rotation by selectively thinning the vegetation and removing. The vegetation removal should be carried out between September and November.

5.6.2 It should be ensured that logs and materials used for the hibernaculum remain in situ and the area does not become over manicured.

5.6.3 Water levels should be monitored to ensure there is no risk of the pond drying out. If a liner is used any holes or rips should be repaired to ensure it remains a reliable habitat for wildlife.

5.7 Wildflower meadows, shrubs and herbaceous borders

5.7.1 Wildflower meadows must be managed and maintained if they are to be successful.

5.7.2 The meadow will be kept short (75mm) in the first year of planting and weeds removed,

5.7.3 In the second and third years the meadow will be cut once annually to encourage germination the following year in mid-November to 30mm. Cut vegetation will be left and then removed after 3 days. Weeds should be continually removed.

5.7.4 Once the meadow has become established, in year 3, yellow rattle (Rhinanthus minor) can be sown to help keep dominant grasses at bay.

5.7.5 No fertilisers will be used on the wildflower meadows.

5.7.6 Some problem-solving guidance can be found in Appendix F.

5.8 Precautions against invasive non-native species

5.8.1 There are several invasive pests that could undermine the conservation objectives. Species such as New Zealand flatworm (*Arthurdendyus triangulates*) are already found on the island of Ireland and oak processionary moths (*Thaumetopoea processioneal*) both of which are transported through the horticultural trade. As a result, any trees and shrubs shall be sourced from the Republic of Ireland to prevent introduction of Invasive non-native species.

5.8.2 Prevention of colonisation and establishment of invasive non-native species such as Beech (*Fagus sylvatica*) and alien plant species including Rhododendron (*Rhododendron ponticum*), Cherry Laurel (*Prunus laurocerasus*), Japanese Knotweed (*Reynoutria japonica*), Salmonberry (*Rubus spectabilis*), Snowberry (*Symphoricarpos* albus). If monitoring checks identify these species Kelland Homes Ltd shall commission a suitably qualified and experienced contractor to remove them.

5.8.3 When removing such plants, these roots must be bagged before destruction. This is to prevent the transportation of soil which could harbor invasive non-native species.

5.8.4 Other measures such as site surveys monitoring for invasive non-natives will be completed by a suitably qualified ecologist working as the ECoW.

5.9 Monitoring programme

5.9.1 A monitoring programme is set out to be undertaken at certain intervals throughout the pre-construction, construction and restoration phases of the works. This will oversee the establishment of the various mitigation and compensation measures that are outlined in this document and, if necessary, outline adjustments and remedial measures. This programme should be carried out by a qualified ecologist.

Species and habitat protection monitoring

5.9.2 Prior to the commencement of each phase of construction works, a walkover survey will be undertaken by a suitably qualified ecologist / ECoW to ensure:

- The success of hedgerow enhancement and site screening measures around the perimeter of the site (e.g. improved species richness and composition, no gaps, no mismanagement)
- The maintenance and adherence of appropriate buffers to protect retained hedgerows and mature trees and root zones (appropriate buffers, no evidence of trespass)
- To ensure that no non-native invasive species are present on the site, which could spread due to the works.

5.9.3 Any issues identified that challenge the success of the measures outlined for mitigation and compensation will be addressed with appropriate remedial measures prior to the commencement of additional phased works.

Frequency of monitoring

5.9.4 The proposed monitoring regime is summarised in *Table 4*. This includes:

- New tree habitat: Monitoring to occur in years 1, 3 and 5, and thereafter every 5 years post-restoration until canopy closure and full establishment (15-20yrs).
- The site should be surveyed by a suitably qualified ecologist in Years 1, 2, 3, 5 and thence every 5 years post-restoration until woodland is fully established and canopy is closed (20yrs).This survey will cover monitoring for invasive species, monitoring of the tree/hedgerows, monitoring of the wildflower meadow, monitoring of the bird and bat boxes.

6.0 SUMMARY OF BIODIVERSITY MEASURES

6.1.1 *Table 2* outlines the identification of different typologies across the Clonburris SDZ scheme, which are referenced in *Table 3*.

Table 2: Development typologies for Clonburris SDZ

Typology	Element	Feature
1. Open Space	A. Neighborhood Park	i. Grand Canal Park
		ii. Griffeen Valley Park
		iii. Na Cluainte - North
		iv. Na Cluainte - South
	B. Local Park	
	C. Pocket Park	
	D. Urban Plaza	
	E. Green Corridors	i. Grand Canal
		ii. Railway Line
		iii. Fonthill Embankment
2. Residential	A. Houses	
	B. Apartments	
3. Urban Core (Retail / Commercial / Community)		
4. Schools		

(Modified from source: Scott Cawley, 2021a)

6.1.2 *Table 3* (Scott Cawley, 2021a) outlines the biodiversity measures recommended for each area of the Clonburris SDZ. The site that this BMP refers to is largely shown as 'SDZ area 2' in the table. However, 'SDZ area 2' in the Scott Cawley (2021a) BMP includes a section to the far south-west of the site, bordering the Grand Canal. The site boundary for this BMP, however, does not extend to this point, thus not bordering the Grand Canal. An additional column ('SDZ area 2 South East implementation') has been added to show adherence to these biodiversity measures for the site.

Table 3: Biodiversity measures recommended for specific development typologies found within Clonburris SDZ and specifically in SDZ area 2

Biodiversity Measure	Specific Typology	Recommended	Highly Recommended (those mandated in the Clonburris SDZ Planning Scheme)	SDZ area 2 South East implementations
Green and Blue Infrastructure				
Native planting	Use of only native species in planting should be considered for all across the SDZ		All SDZ areas	4.2,4.3, 4.6, 4.7
Hedgerow planting	Incorporation of hedgerows into design should be considered for all typologies across the SDZ	All SDZ areas	SDZ areas 2, 3, 8, 9, 11, 12	4.3
Tree planting	Incorporation of trees into design should be considered for all typologies across the SDZ		All SDZ areas	4.2, 4.3
Permeable paving with grass (i.e. grass crete) in areas for parking	Wherever there is parking	SDZ areas 2, 3, 4, 5, 9, 10, 11, 12	SDZ areas 1, 6	
Ponds	1A-1C (wherever there are ponds)	SDZ areas 3 and 9	SDZ areas 2, 4 5, 7, 8, 10, 11, 12	4.6
Green / brown roofs		SDZ areas 2, 3, 9, 10, 11, 12	SDZ areas 2, 4, 5, 7, 8, 10, 11, 12	4.8
50m setback for all buildings from the Grand Canal pNHA; 30m setback for all other development (with the exception of footpaths and bridges) from the Grand Canal pNHA.	1E(i)		SDZ areas 2, 3, 8, 9, 11, 12	N/A - Not on Grand Canal boundary
Additional planting along the Grand Canal to support the pNHA biodiversity and its role as an ecological corridor	1E(i)		SDZ areas 2, 3, 8, 9, 11, 12	N/A - Not on Grand Canal boundary

Biodiversity Measure	Specific Typology	Recommended	Highly Recommended (those mandated in the Clonburris SDZ Planning Scheme)	SDZ area 2 South East implementations
Additional planting along the railway line to support its role as an ecological corridor	1E(i)		SDZ areas 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	, 4.2, 4.3, Figure 2
Biodiversity				
Pollinator-friendly wildflower meadows in open spaces such as parks	1A, 1B, 1E		SDZ area 2, 3, 5, 7, 8, 9, 10, 11, 12	4.7
Pollinator-friendly verges along amenity grasslands	1A – E, 2A, 2B, 4		All SDZ areas	4.7
Pollinator-friendly herb garden	1A – C, 4	SDZ areas 2 and 3, 9	SDZ areas 4, 5, 7, 9, 10, 11	4.7
Wildlife-friendly pond	1A-1C (wherever there are ponds)	SDZ areas 3 and 9	SDZ areas 2, 3, 4, 5, 7, 8, 10, 11, 12	4.6
Swift boxes	2B and 3 (and 4 depending on the height of the buildings)	SDZ areas 2, 3, 9	SDZ areas 1, 4, 5, 6, 7, 8, 10	4.4
Barn swallow / house martin boxes	2A, 2B, 3 and 4	SDZ areas 2, 3, 9	SDZ areas 1, 4, 5, 6, 7, 8, 10	
Bird boxes (other species than those nesting on buildings)	2A, 2B, 3 and 4		SDZ areas 2, 3, 9	4.4
Bat bricks (on buildings adjacent to water features such as ponds and the Grand Canal parks)	1A and 1E		SDZ areas 2, 3 (Omer's Lock House)	4.4
Bat boxes in unlit areas such as green spaces with clusters of trees	1A – 1E		SDZ areas 2, 3, 5, 8, 9, 10, 11, 12	4.4
Bat friendly lighting plans	All typologies across the SDZ		All SDZ areas	3.3, 4.4

Biodiversity Measure	Specific Typology	Recommended	Highly Recommended (those mandated in the Clonburris SDZ Planning Scheme)	SDZ area 2 South East implementations
Hedgehog passes in walls of gardens and other areas that may be used by foraging / commuting hedgehogs	2A, 2B, 3 and 4	SDZ areas 1 and 6	All SDZ areas (except 1 and 6)	4.9
Insect hotels / Bee banks in gree spaces	1A – 1E, 4		SDZ areas 2, 3, 4, 5, 7, 8, 10, 11, 12	4.5

(Modified from source: Scott Cawley, 2021a)

7.0 TIMETABLE OF ACTIONS, REPORTING AND MONITORING REQUIREMENTS

The information collected will be reported and summarising data collected during the survey period reporting against each of the planning conditions.

Table 4 Programme of monitoring requirements

Action	Timing	Frequency of monitoring and reporting	Monitoring to be undertaken by	Measurement of success / remedial action	Responsibility
Trees maintenance – pruning and healthmonitoring	Pre-construction	Before construction begins	Overseen by ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd and ECoW
Tree protective fencing , signage , root protection zone	Pre-construction	Before construction begins	Overseen by ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd and ECoW
Northern boundary hedgerows, planting and fencing and signage and root protection	During construction	Before construction begins	Overseen by ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd and ECoW

Action	Timing	Frequency of monitoring and reporting	Monitoring to be undertaken by	Measurement of success / remedial action	Responsibility
All new trees and hedgerows must be mulched and inoculation by fungi and biodegradable tree guards	During and post construction.	Before construction begins	Overseen by ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd and ECoW
Selected hedgerows will be retained and enhanced according to the measures outlined	Pre-construction (retained elements) and during (retained and enhanced)	Annually during the first 5 years of development	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd
Approximately 910m of hedgerow along the perimeter and withing the site to be created to provide high quality species richhabitat.	During construction	Annually during the first 5 years post development	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd
Planting of 410 new trees	During construction	Within the 1st year and during construction	Overseen by ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd and ECoW
Survey for badger activity across site and within 30m of site boundary	Prior to each Phase of works beginning.	Prior to start of each Phase	Suitably experienced and qualified ecologist	Survey completed on time	Kelland HomesLtd

Action	Timing	Frequency of monitoring and reporting	Monitoring to be undertaken by	Measurement of success / remedial action	Responsibility
A suitably experience and qualified ECoW will be contracted for the duration of construction to oversee measures highlighted in this BMP and the oCEMP	Pre-construction and during	Within 1st year	Suitability qualified ecologist operating as ECoW	ECoW employed	Kelland Homes Ltd
Timber from tree felling, retained as logs for hibernaculum	Pre-construction and during	Prior to start of each Phase	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd and ECoW
Vegetation clearance prior to works	Pre-construction and during	Prior to start of each Phase	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland homes Ltd and ECoW
Destructive search for amphibians by hand	Pre-construction	Prior to start of each Phase	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd and ECoW

Action	Timing	Frequency of monitoring and reporting	Monitoring to be undertaken by	Measurement of success / remedial action	Responsibility
Invasive non-native species monitoring	Pre-construction at each stage.	Annually until development is complete.	Suitability qualified ecologist operating as ECoW	Survey undertaken, measures recommended implemented and verified as completed by ECoW.	Kelland Homes Ltd
Washing tools, machine wheels, boot. Containment in bagged on site.	From start to End of development phase.	During	Kelland Homes Ltd	Work agreed in advance and overseen by ECoW and Kelland Homes Ltd	Kelland Homes Ltd
Soil disposal correctly	From start to End of development phase.	During	Kelland Homes Ltd	Work agreed in advance and overseen by ECoW and Kelland Homes Ltd	Kelland Homes Ltd
Hedgerows and tree establishment of newly planted species	During construction	During	Kelland Homes Ltd.	Work agreed in advance and overseen by	Kelland Homes Ltd

Action	Timing	Frequency of monitoring and reporting	Monitoring to be undertaken by	Measurement of success / remedial action	Responsibility
				ECoW and Kelland Homes Ltd	
Mapping of trees which failed to establish	During and post construction	At each Phase and after construction	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd
Infilling of defuncted hedgerows	Post-construction	At each Phase and after construction	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd
Bird and bat boxes erected through site	Restoration and post construction	Year 1 post restoration	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd
Insect hotel erected within the wildflower meadow area	Post construction	Year 1	Kelland Homes Ltd	Kelland Homes Ltd	Kelland Homes Ltd

Action	Timing	Frequency of monitoring and reporting	Monitoring to be undertaken by	Measurement of success / remedial action	Responsibility
Planting around attenuation pond and planting aquatic plants.	Post construction	Year 1/3/5 and every 5 years post restoration	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd
Wildflower meadow to be created on site	Post construction	Year 1/3/5 and every 5 years post restoration	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd
Annual check on bat and bird boxes, if damaged need replaced.	Post construction	Year 1/3/5 and every 5 years post restoration	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd
Bird boxes cleaned annually between September and February	Post consruction	Year 1/3/5 and every 5 years post restoration	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd

Action	Timing	Frequency of monitoring and reporting	Monitoring to be undertaken by	Measurement of success / remedial action	Responsibility
Insect hotel monitoring, rotting part replaced	Post construction	Year 1/3/5 and every 5 years post restoration	Suitability qualified ecologist operating as ECoW	Work agreed in advance and overseen by ECoW	Kelland Homes Ltd
Ensure that logs and hibernaculum remain in-situ and monitor water levels of the pond	Post construction	Annually	Kelland Homes Ltd	Kelland Homes Ltd	Kelland Homes Ltd
Prevention of colonization and spreadingof non-native species.	During and Post construction	Annually	Kelland Homes Ltd	Kelland Homes Ltd	Kelland Homes Ltd

8.0 MANAGEMENT AND MAINTENANCE PLAN

Table 5 Management and maintenance plan for the first five years and for five years after until ten years.

Task	Construction Phase	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10
Planting	Planting of hedgerow. In accordance with the design drawings.	All plants will be inspected, and any dead, dying or diseased plants should be replaced. In Autumn and winter pruning should be completed this is to avoid nesting birds and provide extended foraging time for birds and insects. When the site gains mature shrubs or trees from planting or those being retained, late winter pruning is ideal for these.					
Bird and bat boxes	Should be installed pre tree removal /construction and restoration	Check for damages, and heavily damaged / degraded parts within these should not be changed during the winter months or periods of low temperatures. Any damaged boxes should be replaced as soon as possible. However, an ecologist should be contacted before removal to translocate the species from the damage box to the new box, as some species need handling licenses.					
Wildflower meadow	Seeds should be sown in Autumn or spring.	Management would be to annually weed to encourage perennial growth. All dead or dying plants should be removed. Yearly sowing may be needed for at least the first three years, with the hope that it will be self-seeded after this and will only need additional sowing of seeds every second year to boost the flowers there until it is completely self -seeded and will not need any more additional planting.					
Invasive non-native species management	Before construction a site walkover will be needed to mark any	The invasive species are removed and monitored for	Additional, site walk over should be completed, looking for the species that were removed and if any additional species developed on site. If any they should mark the area and contact the appropriate ecologist to make a management plan for removal.				

Task	Construction Phase	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10
	invasives that need removed and any additional species located.	initial grow back.					

Table 6 Roles, responsibilities and sign off

Phase	Task	Person responsible	Date completed	Sign off
Construction phase	Planting of trees			
	Planting of hedgerows			
	Bird and bat boxes			
	Wildflower meadow			
	Attenuation Pond			
	Insect hotel			
	Invasive species			
Year 1	Planting/maintenance of trees			
	Planting/ maintenance of hedgerows			
	Bird and bat boxes			
	Wildflower meadow			
	Attenuation Pond			
	Insect hotel			
	Invasive species			
Year 2	Planting/ maintenance of trees			
	Planting/ maintenance of hedgerows			
	Bird and bat boxes			

Phase	Task	Person responsible	Date completed	Sign off
	Wildflower meadow			
	Attenuation Pond			
	Insect hotel			
	Invasive species			
Year 3	Planting/ maintenance of trees			
	Planting/ maintenance of hedgerows			
	Bird and bat boxes			
	Wildflower meadow			
	Attenuation Pond			
	Insect hotel			
	Invasive species			
Year 4	Planting/ maintenance of trees			
	Planting/ maintenance of hedgerows			
	Bird and bat boxes			
	Wildflower meadow			
	Attenuation Pond			
	Insect hotel			
	Invasive species			

Phase	Task	Person responsible	Date completed	Sign off
Year 5	Planting/ maintenance of trees			
	Planting/ maintenance of Hedgerows (planting of addition climbin species)			
	Bird and bat boxes			
	Wildflower meadow			
	Attenuation Pond			
	Insect hotel			
	Invasive species			
Year 10	Planting/ maintenance of trees			
	Planting/ maintenance of hedgerows			
	Bird and bat boxes			
	Wildflower meadow			
	Attenuation Pond			
	Insect hotel			
	Invasive species			

Phase	Task	Person responsible	Date completed	Sign off
	Wildflower meadow			
	Attenuation Pond			
	Insect hotel			
	Invasive species			

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FIGURES

Figure 9. Fossitt Habitats Map. (note* since the writing of this report Cappagh House ruin and H5 were removed under planning permission SDZ0A/0021)

(Source: RSK, 2022a)

Figure 10. Proposed hedgerow and tree removal and planting

Item 7

(b) Trees and Hedgerows

A tree and hedgerow management plan that:

i) retains where possible the trees and hedgerows required by the Planning Scheme

ii) shows the amount of trees and hedgerow being removed and the amount of compensatory/replacement trees and hedgerow being planted as part of the proposals. To be in compliance with the SDZ and the requirement of no net loss of hedgerow across the scheme, the amount of compensatory/replacement hedgerow provided in this development shall be at least equal to that being removed. Trees and vegetation within what will be privately owned or inaccessible spaces (rear gardens) cannot be relied upon as compensatory planting that will be appropriately retained and managed. The applicant should also be cognisance of retaining or planting hedgerows/vegetation so that it is incorporated into open space and areas that will be appropriately managed and accessible.

Response:

(i) We propose to retain the majority of the trees and hedgerows on site. Native species will be used to augment hedges where neccessary. Please refer to arborist report and dwg for more details on the retention of the vegetation on site. The graphic shows the trees and hedge to be retained.

(ii) Please refer to diagram showing the amount of trees and hedgerow being removed and those that are being planted. As shown in the diagram, we are proposing to retain the majority of the vegetation on site.

Pre-Development, a protective fence will be erected around the central & southern hedge to protect the hedge structure.

The hedgerows/vegetation located centrally will be accessed via the open space.

On the Southern Hedge, a 4-5m buffer strip will be implemented to further protect the southern hedge. This hedge will be left open so it can be maintained and augmented if neccesarry.

Retained Trees, New trees & Removed Trees Plan

3 hedges : approx. 376 linear metres) (augmented with native species where necessary)

Existing Hedge Removed (2 hedges and sections of other hedge: approx. 177 linear metres) (poor condition or to facilitate development)

New Native Hedge : approx. 910.9 linear metres

Existing Trees Retained (21no. trees)

Existing Trees Removed (26no. trees) (poor condition or to facilitate development)

New Tree Planting (410no. trees)

RMDA

(Source: RMDA, 2023)

Figure 11: Proposed wildlife pond location showing within the New Local Green Corridor & Green Link Plan

7. Landscape & Open Space

The Public Realm Section have raised concerns in relation to landscaping, open space and green infrastructure (AI Item Nos. 5 & 8). The applicant is requested to address/ submit the following in this regard:

(c) A Local Green Corridor approximately N-S along the eastern boundary incorporating nature based SuDS: planting proposals require strengthening as there is no difference between it and the tree planting proposed on the other local streets and homezones.

(d) A Local Green Corridor approximately N-S and E-W along the westernmost local street south of Clonburris Link Street incorporating nature based SuDS: planting proposals require strengthening as there is no difference between it and the tree planting proposed on the other local streets and homezones.

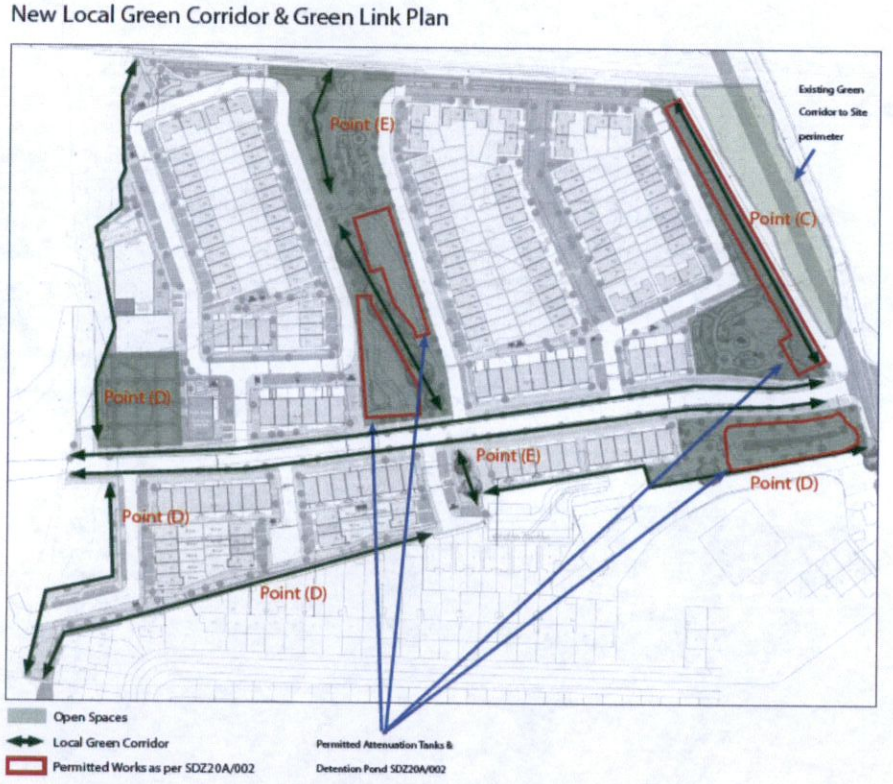
(e) A Local Green Corridor approximately N-S through the centre of the development increasing the retention of trees and hedgerows;

Response:

(c) Due to restrictions from previously agreed attenuation tanks in this area, we have proposed the use of wildflower planting and native hedge planting along the Eastern Boundary to introduce a new Local Green Corridor to mirror the Existing Green Corridor. Street tree planting will line the road.

(d) The Green corridor located N-S and E-W has been supplemented by the use of wildflower planting and native hedge planting. The tree planting has been revised to include native tree species, to differentiate it from local streets and homezones.

(e) The local green corridor running N-S through the centre of the developement is relatively untouched, SDCC infrastructure walls, attenuation are located in this area. We wish to retain this hedgerow as much as possible, subject to SDCC Works . Part of the hedge has been removed due to the agreed link road running East - West (Distributor Road as prescribed by SDCC) through the site and some trees will be removed as per Arborist recommendation.



(Source: RMDA, 2023)

Figure 12. Invasive non-native species map (note* H5 was removed under planning permission SDZ0A/0021 (see 4.3.5 for further details))

(Source: RSK, 2022a)

Figure 13. Proposed planting

Item 7

(e) Landscape Plan
A revised detailed landscape plan, to be agreed with Public Realm, with full works specification, that accords with the specifications and requirements of Council's Public Realm Section. The revised landscape plan shall integrate retained and enhanced hedgerows and trees, tree plantingand SuDS drainage to provide strong green infrastructure links throughout the development in accordance with Clonburris SDZ Planning Scheme, Parks and Landscape Strategy , Biodiversity Management Plan and SDCC County Development Plan (2022-2028).

Response:
(e) The proposed landscape plan will integrate the retained hedgerows and trees. Supplementary native species will be used to enhance the existing planting and augment where necessary. We are providing strong green infrastructure links through the centre of the site by retaining the majority N-S hedgeline as well as contributing to new green corridors running East-West along the railway line, North-South along the site perimeter & the retention of the Southern hedgeline.

As per Green Infrastructure, SDZ Planning Scheme 2019, we are providing local green corridors to the main and intimate streets. The strategic green corridor along the railway line will be enhanced by the planting of whip and native hedge species.

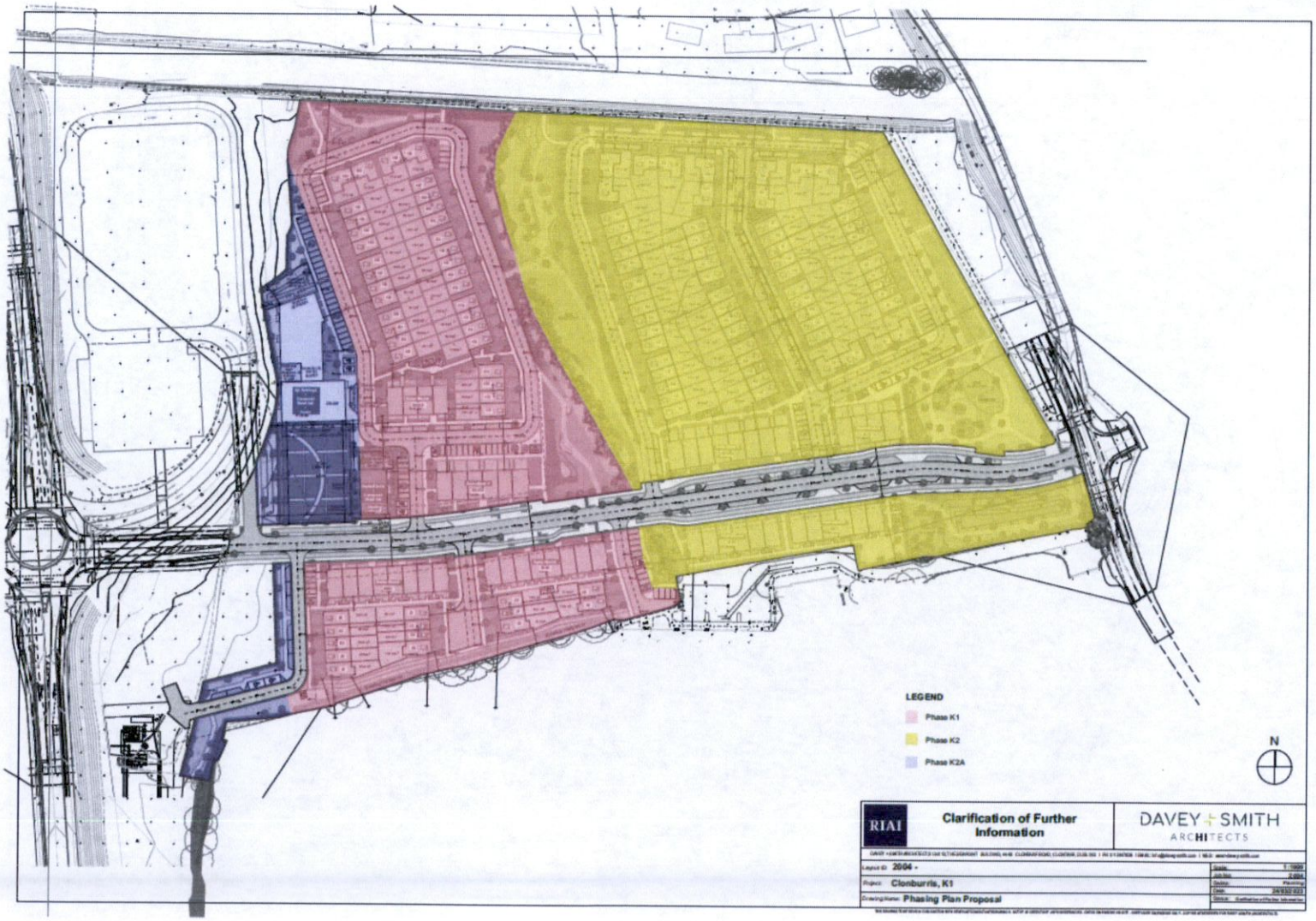
Also, please refer to full spec of works & maintenance attached.

(Source: RMDA, 2023)

Figure 14. Proposed site landscape plan

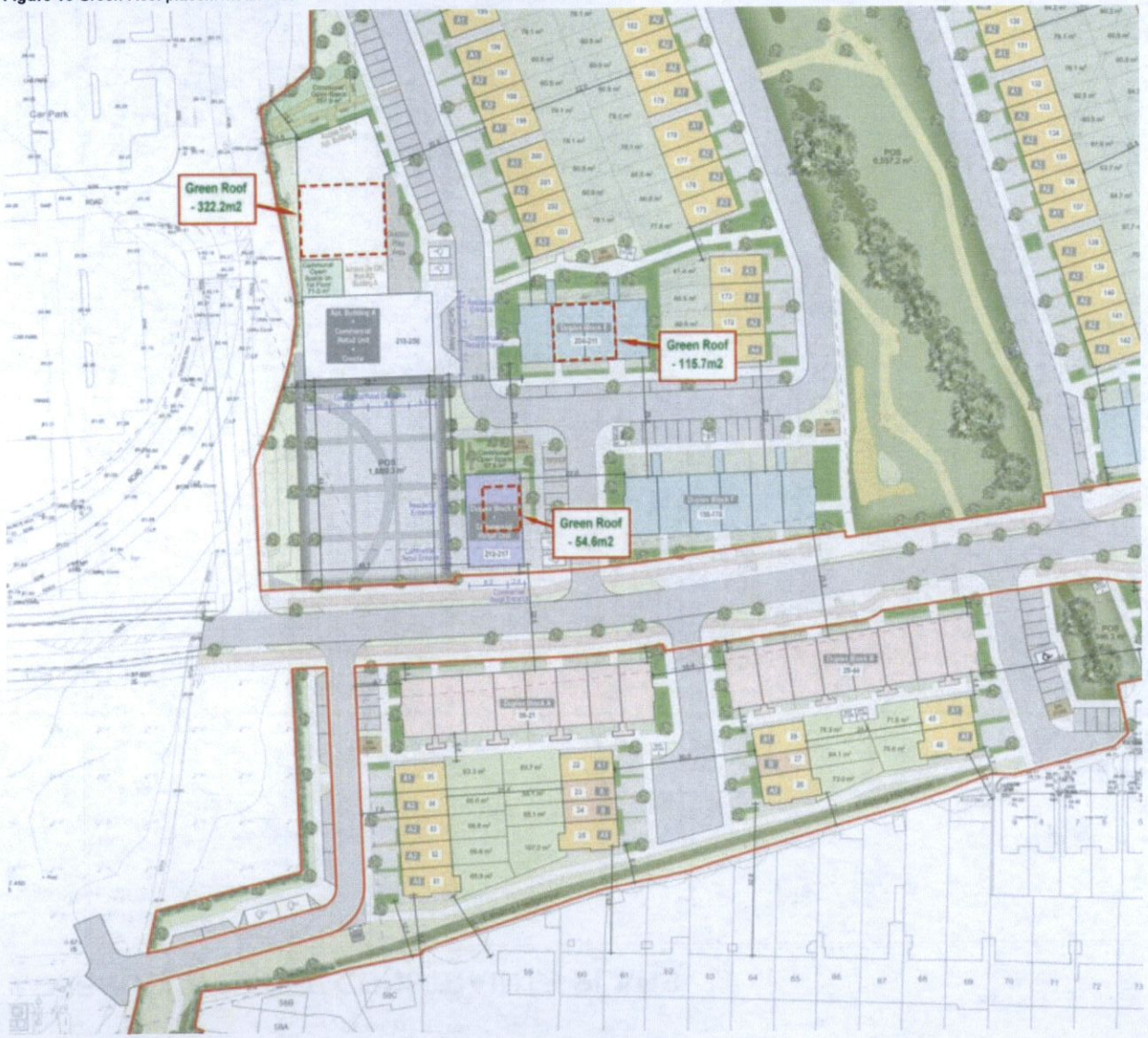
(Source: Davey & Smith Architects, 2023)

Figure 15. Planned construction work zones and phases



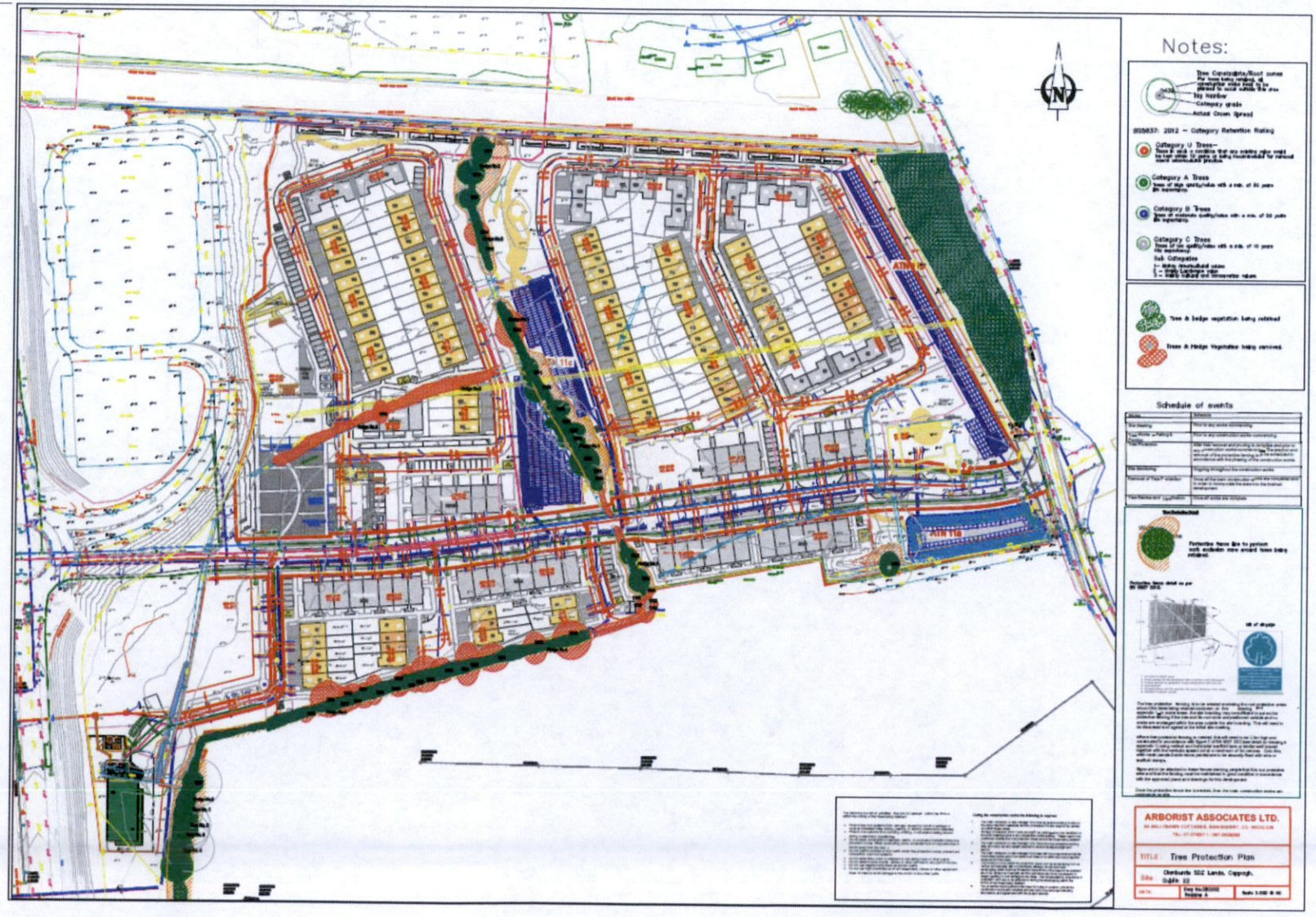
(Source: c, 2022)

Figure 16 Green Roof placement and size



(Source: Davey & Smith Architects, 2023)

APPENDIX A – TREE CONSTRAINTS PLANS



(Source: Arborist Associates Ltd, 2023)

APPENDIX B – TREE CONSTRAINT PLANS

(Source: Arborist Associates Ltd, 2023)

APPENDIX C – INVASIVE SPECIES CONTROL AND MANAGMENTGUIDANCE

Types of Control and Management

There are three main types of invasive species control methods. These are biological control, chemical control, and physical/mechanical control. Selecting the correct form of control will depend on the target species. Often invasive species are managed using a combination of different control and treatment types. Integrating multiple forms of control can offer a more effective, economic and sustainable way of managing invasive species.

Biological Control – this form of control uses natural interactions between different species to limit the abundance of an invasive species.

- Involves the use of a species 'natural enemy' to substantially reduce the abundance of an invasive species population.
- A 'natural enemy' generally originates from the same location as the invasive species and generally has a shared evolutionary history. This often means that the natural enemy has developed specific traits which allow it to prey/feed on or otherwise inhibit the invasive species in question.
- Natural enemies can be predators, herbivores, parasites, or pathogens.
- 'Classical biological control' differentiates itself from general biological control as it specifically involves the use of insect herbivores to control invasive plants.
- Insects used for this form of invasive species control are 'specialist' rather than 'generalist' herbivores (i.e. they feed on one specific plant species rather than a range of plants).
- Classical biological control agents go through rigorous laboratory trials and population modelling tests before being considered for release into natural environments.

Chemical Control – this form of control uses chemical solutions to actively reduce the growth or abundance of invasive species.

- Involves the use of biocidal treatments with active agents to induce death or significant degradation of targeted invasive species.
- For example, chemical treatments can include bleach, vinegar, Virkon products, lime, fresh or salt water, among many others.
- The method of application of these treatments (soaking or spraying), concentration of solutions and the regime of treatment (i.e., duration of soaking, frequency of application, intervals between treatments etc) are important factors when determining their effectiveness.
- Where invasive species are present in commercial industries broad spectrum herbicides and pesticides are often used to control both invasive and native pest species.

Physical/Mechanical – this form of control involves the physical or mechanical removal of invasive species (e.g. removal by hand, air drying or using equipment/machinery).

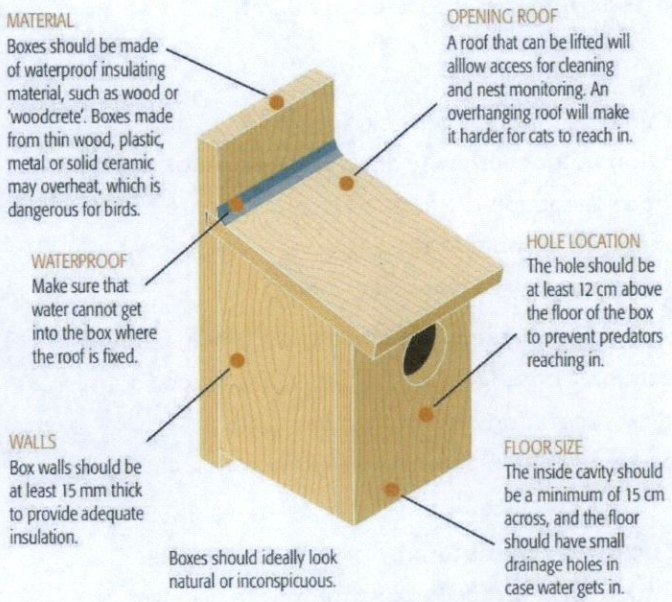
- Involves simple methods like hand removal, cleaning with hard bristle or wire brushes, air/water blasting, desiccation (air drying) as well as the use of physical barriers such as biodegradable geotextiles and plastic wrapping to smother targeted invasive species.
- V-blade cutting can be used to remove dense stands of invasive aquatic plants from waterbodies.
- Desiccation through air drying can be an extremely effective way of controlling invasive species. However, this treatment can vary in its effectiveness as temperature, humidity and light exposure can influence the time it takes to completely dry equipment, gear, and leisure/commercial craft. Many species can survive for more than two weeks in damp conditions.
- Physical/mechanical removal can be labour intensive and cost prohibitive where invasive species have established extensive populations.

Mark Otto, J.T. (2022).

APPENDIX D – BAT BOX GUIDANCE

Crevice Bat Box (2022)

APPENDIX E – BIRD BOXES GUIDANCE



Nest Box Guide - British Trust for Ornithology (2022).

Attaching your nestbox

Before you put up your nestbox, remember to keep in mind the following:

- Fixing your nestbox with nails may damage the tree. It is better to attach it either with a nylon bolt or with wire around the trunk or branch. Use a piece of hose or section of car tyre around the wire to prevent damage to the tree. Remember that trees grow in girth as well as height, and check the fixing every two or three years.
- Open-fronted boxes for robins and wrens need to be low down, below 2m, well hidden in vegetation. Those for spotted flycatchers need to be 2-4m high, sheltered by vegetation but with a clear outlook. Woodpecker boxes need to be 3-5m high on a tree trunk with a clear flight path and away from disturbance.
- Nestboxes are best put up during the autumn. Many birds will enter nestboxes during the autumn and winter, looking for a suitable place to roost or perhaps to feed. They often use the same boxes for nesting the following spring. Tits will not seriously investigate nesting sites until February or March.

Choosing the location

Things to consider when choosing where to position your nestbox include:

- Boxes for tits, sparrows or starlings should be fixed two to four metres up a tree or a wall.
- Unless there are trees or buildings which shade the box during the day, face the box between north and east, thus avoiding strong sunlight and the wettest winds.
- Make sure that the birds have a clear flight path to the nest without any clutter directly in front of the entrance. Tilt the box forward slightly so that any driving rain will hit the roof and bounce clear.
- House sparrows and starlings will readily use nestboxes placed high up under the eaves. Since these birds nest in loose colonies, two or three can be sited spaced out on the same side of the house. Keep these away from areas where house martins normally nest.
- Two boxes close together may be occupied by the same species if they are at the edge of adjoining territories and there is plenty of natural food. While this readily happens in the countryside, it is rare in gardens, where you normally can only expect one nesting pair of any one species. The exceptions to this are house and tree sparrows and house martins, which are colonial nesters. By putting up different boxes, several species can be attracted.

How big does the hole need to be?

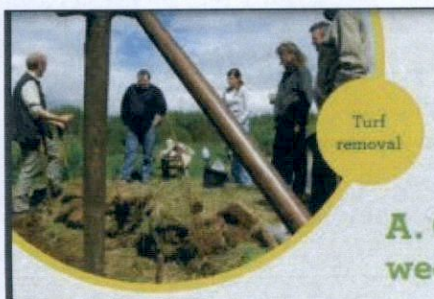
The entrance hole size depends on the species you hope to attract:

- 25 mm for blue, coal and marsh tits
- 28 mm for great tits, tree sparrows and pied flycatchers
- 32 mm for house sparrows and nuthatches
- 45 mm for starlings.

The small box with 100 mm high open front may attract robins or pied wagtails. A wren would need a 140 mm high front panel, while spotted flycatchers prefer a low 60 mm front to the box.

Where to put a bird box: Nestboxes (2022)

APPENDIX E – ALL-IRELAND POLLINATOR PLAN



A. Ground preparation and weed elimination

It is vital to prepare a proper seed bed before sowing wildflowers. This can be completed using organic or non-organic methods. Although many people leave this step until the last minute, ground preparation should be done as early as possible (March/April for spring sowing and July/August for Autumn sowing). However beware of doing damage to the soil if the site is too wet.

Organic Method: De-Turfing (do not use this method if the site is generally waterlogged and make sure you have properly risk assessed the work when working in groups)

1. Cut existing vegetation to ground level (as low as possible) using a strimmer or lawnmower
2. Remove turves by hand (with appropriate health and safety) or using a turf-stripping machine
3. Fork over or rotovate area to loosen soil to a depth of 10cm and then rake to achieve a fine tilth
4. Use a hand rake to break up the soil particles and open up the soil so it will accept seed. Remove stones greater than 5cm to create fine tilth
5. Sow the seed mixture immediately afterwards as detailed below

Non-Organic Method

1. Cut existing vegetation to ground level (as low as possible) using a strimmer or lawnmower
2. Spray area using a suitable herbicide. Always follow the manufacturers instructions
3. Wait 3-4 weeks, then rotovate or fork to a depth of 10 cm. Remove stones greater than 5 cm
4. Wait 3-4 weeks or when there is re growth, then re-spray all growth with suitable herbicide
5. Wait until herbicide has worked then prepare the seed bed by very lightly raking to achieve a fine tilth (but not deep enough to bring more seed to the surface)
6. Sow immediately afterwards as detailed below

B. Sowing seed

There is quite a variation in the size of wildflower seeds. If you leave a seed mixture in a container for any length of time it will tend to separate out. This is why it is very important to mix the seed constantly as you are sowing it. Very small seed is like dust so we recommend NOT to rake the seed in as you do with grass seed. This is because the small wildflower seed would get buried too deep and the emergent seedlings would not have enough energy to make it to the surface.

When to sow?

Wildflower mixtures can be sown in the Autumn or Spring.

- **Autumn:** The latest date for autumn sowing is usually the end of October. The first flowering of annuals will take place in the spring/early summer after sowing. Perennials will not usually flower in the first year.

- **Spring:** The latest date for spring sowing is early June. The first flowering of annuals will be the same year as sowing. Perennials will not usually flower in the first year.

Sowing steps

1. Check the weather. It is best to sow on a calm day when rain is not going to happen during sowing
2. If you are unfamiliar with seed sowing, practice first with some sand to ensure even distribution of the seed
3. **Mix the seed thoroughly**
4. Divide the seed mixture into smaller equal amounts (e.g. 4, 6 or 8 parts), and divide the site area into equivalent smaller sections to ensure even distribution of the seed
5. Scatter mix evenly, stirring constantly to mix seed throughout the sowing process
6. Firm the soil by rolling. You can hire a roller from a hire centre and these can be filled with water to increase weight. Do NOT use a roller if the soil is wet as it will stick to the roller. A flat plank of wood pressed on the soil may also be used to ensure good contact between the seed and the soil. Again do not use this method if the soil is wet

Info Box:

Do NOT rake wildflower seed in as you do with grass seed. The small wildflower seed would get buried too deep and the emergent seedlings would not have enough energy to make it to the surface.

D. Problem solving

Slow Germination

Do not be too concerned if the seed does not germinate immediately. Local weather conditions, including temperature and rainfall, can cause germination to be slow and/or uneven initially. If the weather has been very dry then germination will improve greatly when the rain eventually falls. Do not use artificial irrigation (hose or watering can). Slow germination may also result in gaps but these usually fill up by the end of the summer.

Weed Proliferation

It is best if weed proliferation can be avoided by thoroughly carrying out adequate ground preparation (instructions above).

Large perennial weeds such as dock or nettles: Individual weed plants must be totally removed (especially the root system) by mechanical means or by careful spot spraying with a suitable herbicide.

Frequency: Carry out a monthly check on the area. You will gain the benefits over the life of the seed mixture if you are vigilant.

Grass dominance: This is usually an indication of higher fertility. Over-sowing areas with Yellow Rattle after cutting in the autumn will help reduce the dominance of grass species.

Alternative pollinator friendly actions:

After reading this How-to-Guide you might decide planting a wildflower meadow is not the right project for you. There are still plenty of ways you can help pollinators:

1. To reduce costs, plant a small patch or strip of wildflowers, instead of a full meadow. Planting a small test area before completing a more ambitious project is highly recommended!
2. Create a wildflower meadow naturally through reduced mowing. Mow once in autumn & remove cuttings to reduce soil fertility & allow wildflowers to grow naturally
3. You can make your garden pollinator friendly by selecting ornamental plants that provide lots of pollen and nectar (see the All-Ireland Pollinator Plan's professional planting code)

For more information see: www.pollinators.ie

APPENDIX D – Report writers CV

Aine Fearon, Assistant Ecologist

Core skills

Habitat classification

Botanical surveys

Protected species surveys

Invasive species management

Habitat management

PEA, EcIA , AA , HRA

Biodiversity Checklist

Science communication

GIS mapping

Details

Qualifications

BSc (Hons) Animal Behaviour and Biology

MSc Ecological Management and Conservation Biology

Memberships

Qualifying membership CIEEM

British Ecological Society

Other

CSR Health and Safety Trained card holder

First Aider

OCN Autism Awareness

Safeguarding for Children and Adults

British Sign Language Diploma course (In progress)

NI Railway contractor pass

PROFILE

Aine joined RSK Ireland in Febuary 2022, following years of diverse work experience in the ecological, conservation, pharmaceutical company and education sectors. As an Assistant Ecologist, Aine plays a vital role in supporting the completion of projects, including but not limited preliminary ecological appraisals, ecological / environmental impact assessments and Ecological Clerk of works projects. Aine performs both desktop and fieldwork studies, and conducts ecological surveys, report writing and GIS mapping for a variety of clients.

Aine has a broad background in ecological management and conservation. Prior to RSK, she completed a project for her masters while on placement for The National Trust, which was a Phase 1 habitat survey .She also worked in Norbrook Pharmaceuticals validation department for a summer placement. She also completed a her undergraduate dissertation for the impacts of visitor numbers on enclosure use in Chester Zoo and developed her scientific communication skills through the creation of posters.

Aine is an active volunteer and advocates for the protection of biodiversity. Working with the Rostrevor Red Squirrel Group and Seal Rescue Ireland. She has also gained experience bird surveying for the British Trust for Ornithology (BTO), Wetland Bird Count in Castlewellan lake. Aine has a keen interest in continuing to upskill, she has recently completed BTO ID Basic Training, National Bat Monitoring Programme (NBMP) 'Using your Ears' Introductory Bat Detector Workshop, NBMP Level 1, Introductory Bat Detector Workshop, Wildlife Acoustics ' How to use your Song Meter SM4, Song Meter Mini, or song Meter Micro'. PIPS Hope and Support 'Building personal resilience' training. CIEEM training in Glasgow for urban infrastructure, CIEEM introduction to Bat ecology and bat surveys, CIEEM Bats: Assessing the impacts of development on bats, mitigation and enhancements.

Aine has specialist skills in the following areas:

- Botanical surveys, particularly Phase 1
- Invasive species control
- Habitat management
- PEA, AA , HRA and EcIA
- Knowledge of legislation and best practice codes, namely relating to protected sites and species
- Creation of scientific communication pieces such as posters
- GIS mapping and R Statistical Computing Language

Key project experience

RSK PROJECTS

Corcom Development Partners, Ecological Surveys, 2022-ongoing

Aine completed site surveys for proposed residential development Co.Dublin. This consisted of her visiting the site to assess if priority/protected species or habitats where onsite, or would be impacted through the development. Through this an Appropriate Assessment (AA) has been completed and an Ecological Impact Assessment (EcIA) report will be issued to the client with what is needed for the development to continue without impacting the species found on site, and within 15 km buffer of the site. Through the survey , contaminated land has now been identified as a need and this is now also being surveyed by the appropriate department.

Amey Consulting & Translink, Ecological Surveys, 2022-ongoing

Aine assisted in the wider surveys of two sites, Killiagan, Ballerena, Newry, Damhead, Berryhill with badger setts present. This has led to report writing done in a timely manner, with advise on how to mitigate for the proposed works.

Clyde Shank & J.H Turkington & Sons,, Biodiversity Checklist, 2022- ongoing

Aine undertook a survey of the site for a Biodiversity Checklist, for a residential development , Belfast, this was to assess for the presence of protected/ priority species on site. Through this potential Bat roosts where identified and therefore the recommendation for a PEA was made. This is now schedule to happen in the near future.

DataQube, Ecological Surveys, 2022- ongoing

Aine assisted in wintering bird surveys for a development of a data centre in Kilkenny. This was to assess the habitat and species using the site. A EcIA was them completed with her assistance for the development.

Kelland Homes Ltd, Biodiversity Management Plan, 2022-ongoing

Aine researched and wrote a Biodiversity Management Plan for this large new development scheme in Co. Dublin. This has involved liaising with the landscape architects and council Heritage Officer in order to finalise a plan for approval that achieves the purpose of the project whilst also effectively retaining, enhancing, creating and managing the biodiversity on the site.

Belfast Harbour Commission, Biodiversity checklist & HRA, 2022

Aine conducted a site survey and completed a biodiversity checklist report and a Habitat Regulations Assessment to assist in the new development of the construction of a series of new apartment blocks. The HRA report involved desktop research and analysis, and GIS mapping. The report will help to implement mitigation measures to safeguard the nearby Natura 2000 sites and their conservation objectives.

Nicholas O'Dwyer Ltd., Ecological Clerk of Works, 2022

Aine conducted Ecological Clerk of Works for the establishment of a new pipeline running along Francis Street and Shift Alley Co. Dublin. The position oversaw the clearance of vegetation prior to pipeline installation.

PRE-RSK EXPERIENCE

Volunteer, Seal Rescue Ireland, 2019-ongoing

Aine completed specifies identification training, including the skills around safe monitoring practices. Gained skills around the assessment of key health indicators. Completed training around delivery of emergency care to injured seals, including their recovery, transport and rehabilitation.

National Trust- Volunteer Ranger, 2019

Aine carried out a work placement for the completion of Phase 1 Habitat surveys and collation of baseline data. Comprehension of site and GIS maps. Management of invasive species through utilisation of approved

methods.,maintenance work on site. Engaging in multi-disciplinary Conservation Progress Indicator (CPI) meetings.

Aisling McParland, Principal Environmental Consultant

Core skills

Project and contact management

EIA support

Ecological assessment

Ecology surveys

Strategic environmental assessment (SEA) Support

Asbestos risk assessment

Site investigation and assessment

Surface-water and ground water sampling

EMS support

Noise monitoring

Air monitoring

Stakeholder engagement

Details

Qualifications

BSc (Hons) Environmental Science and DAS

PDip in Acoustic and Noise Control

BOHS P405 – Management of asbestos

Memberships

Affilate Member of the Institute of Environmental Management and Assessment (IEMA)

Other

Environmental auditing training

CSCS visitors card holder

CONSIM risk assessment training

PROFILE

Aisling is a Principal environmental consultant with RSK for over 16 years' experience in the environmental sector.,Since joining RSK in 2006, she has played a lead role in a variety of projects, including design, implementation and auditing of environmental management systems (EMS), environmental impact assessment (EIA), contaminated land assessment and the provision of environmental advice and support. Over this time she has worked across multiple disciplines and sectors from, geoscience, asbestos, noise, management systems, management systems bidding, marketing, and business development and as a result have developed a broad knowledge and competencies.

Most recently she has built and lead a valuable business asset in establishing an ecology department in RSK Ireland and is Project and line manager to a team of ecologists, overseeing project management operation and leads multiple projects

She has excellent communication competencies and is responsible for managing multidisciplinary projects, providing fee proposals, business generation, team coordinating, data collection and reporting. This includes project resourcing, client liaison and relationship management with local authorities, regulatory authorities and subcontractors. Organising fieldwork operations i.e. preliminary ecological appraisals to support biodiversity checklists, regeneration schemes, bat roost assessments, emergence and re-entry survey, VP surveys and wintering and breeding bird surveys as well the coordination of EIAR chapters and AA/NIS reports to support planning applications.

Aisling provided support to Roadbridge in an environmental manager capacity on the Gas to the West High-Pressure cross-country gas pipeline. The planning corridor incorporates a complex environmental system with numerous diverse environmental constraints with programme commitments and seasonal ecological constraints, mainly with badger setts, protected birds and aquatic species. The role included applying for ecological discharge consents, wildlife licences, abstraction licences and permits, and producing NIPH habitat management plans.

Aisling has specialist skills in the following areas:

- ecological surveys: badger, bats, newt and invasive species
- project management of multisite contracts
- environmental management systems
- EIA, SEA support
- noise and air monitoring
- stakeholder engagement
- site investigation and assessr

Key project experience

ECOLOGICAL ASSESSMENTS

Greensource,Windfarms 2022–ongoing

RSK are leading the submission of two separate EIARs for two sites that greensource wish to secure concent for Windfarms. Aisling act as Project Manager and liaison between the client and the ecologists, scopes ecological inputs required for the the sites for ornithology,terrestrial and aquatic surveys, EIA chapters and AA screening and other reporting

Amey Consulting,Rail, Flood Risk Assessment for Govenmnet 2019–ongoing

Aisling is project manager for several ecological projects with Amey Consulting, including PEA walkover surveys, terrestrial and aquatic surveys, EIA chapters and AA screening reports order to facilitate a programme of repairs on the sea defences, flood defence schemes and NI rail network.

Strategic Development Zone (SDZ), Dublin 2021-ongoing

Aisling is project manger on behalf of RSK for the Design team working to secure planning for a proposed mixed tenure housing development in Co. Dublin. Working with the design team to deliver RSKs environmental and ecological outputs: ecological surveys EclA reporting Screening for Appropriate Assessment and CEMP as well as, EIAR Chapters including noise, hydrology, Biodiversity Waste, Air Quality

Ecological Services - Urban Design, Economic and Masterplanning Consultancy Services for Regeneration and Development –Turley, Ongoing

Aisling is project manager for several Masterplanning projects forming part of multidisciplinary Design Teams with Turley for various town regeneration schemes. Workes include coordinating multidisciplinary environmental consultancy services. Ecologicial servies also include including Appropiate Assessment Screening, NIS, site surveys and Environmental Impact Statement, Tree surveys, as well as Geotechnical Preliminary Sources Study Report (PSSR) report and Envirnmental Risk Assesment Report and related EIAR Chapters. Aisling has also been involved in SEA and EIA Screening reportingAs well as ongoing support and consultation to the wider design team, liaising to collate reports.

Scheme include: the Regeneration at Loughanaskin, Athlone, Mullingar, Westgate Vision (Droghdea), Ardee.

ESB Carnsore windfarm, 2021

RSK is part of an ecological framework with a major utility company and has been commissioned to complete ecological services at a windfarm in Co. Wexford. Works include terrestrial ecology survey, vantage point bird and bat surveys, preparation of biodiversity and ornithology chapters and Natura Impact Statement for EIAR.

As project manager/coordinator, Aisling works closely with the client and multidisciplinary teams to schedule surveys and successfully complete the deliverables and permission was granted in September 2021.

Rowan Engineering, ecological services for community wind turbine sites, ongoing

Aisling is project manager for multiple single turbine sites, which include coordinating ecological services, scoping walkover and reports, bird vantage point and monitoring, bat surveys, client liaison .

Roadbridge, gas to the West high pressure cross country gas pipeline, 2017–2018

Aisling was environmental manger on a fourteen-month secondment with Roadbridge, appointed to carry out the engineering and construction of the high pressure (HP) pipeline and two HDD crossings at Upper Lough Erne (SAC).

The role included continual engagement with stakeholders and regulators on a regular basis; hosting environmental liaison meetings; advising on legislation; preparing RAMS and CEMP documents; discharging planning conditions; waste management; applying for ecological, discharge, abstraction licences and permits (including wildlife licences, derogation licence for closure of badge setts, Section 48 permits, Section 14 licences to allow electro fishing, NIPH habitat management plans and waste exemption licences).

Duties also included conducting site audits and observations; completing preconstruction surveys; reporting and investigation of incidents; implementing mitigation measure; carrying out toolbox talks; raising awareness on matters such as silt management, waste, biosecurity; invasive species and monitoring water, noise and dust.

Shell, Corrib offshore natural gas field development – Ireland, 2009

Aisling worked on the alternative route options and the environmental impact assessment for the Corrib gas field development.

EirGrid, East–West Interconnector cable – Wales–Ireland, 2009

Aisling's role included stakeholder engagement for the EirGrid East-West Interconnector, a proposed submarine electrical power cable crossing the Irish Sea between Ireland and Wales. She was responsible for liaising with statutory consultees and other interested parties to provide early and continued engagement with and to establish the best route for the cable.

Department of Infrastructure, SEA for the Policy Review of the Strategic Planning Policy Statement (SPPS), 2017 - ongoing

Aisling was involved in drafted the Scoping Report for the SEA of the review of two regional policy areas 'Development in the Countryside' and 'Renewable Energy' of the Northern Ireland SPPS.

Robin Jones, Associate Director

Core skills

Team coordination, including resourcing, health and safety, quality assurance and staff management.

Project management

Training, including staff CPD and presentations to clients/wider audiences

Business generation, client liaison and relationship management

Ecological appraisals, impact assessments and management plans

Ecological fieldwork, specialising in protected species

Details

Qualifications

BSc (Hons) Zoology (Animal Ecology)

Memberships

Chartered Environmentalist (CEnv)

Full Member of Chartered Instituteof Ecology and Environmental Management (MCIEEM)

Other

Construction Industry Training Board: Site Safety Plus – Site Manager Safety Training Scheme

CSCS Managers and Professionals Card holder

PROFILE

Robin joined RSK Biocensus as associate director in July 2017, with 15 years' experience as a professional ecological consultant.

Robin is a Chartered Environmentalist specialising in ecological assessment, protected species ecology, mitigation and licensing, with experience in construction site environmental management.

Robin has specialist skills in the following areas:

- ecological subcontractor management
- protected species licensing: specialist in relation to water vole and great crested newt licensing
- legislation and best practice, specifically in relation to protected species
- design and implementation of ecological mitigation measures in relation to infrastructure and development projects
- provision of clear and professional ecological advice
- preparation of advice documents, (having been involved in preparing Highways England DMRB and Interim Advice in relation to nature conservation, and HS2 Ecology Technical Standards)
- preparation of ecological impact assessments and habitats regulations assessment.

Experience Summary

RSK BIOCENSUS EXPERIENCE

Fusion JV, HS2 phase1 (central) badger mitigation, 2018–ongoing

Robin has overall responsibility for RSK Biocensus' role to deliver badger mitigation for HS2 phase 1 (central), on behalf of Fusion joint venture. Robin's detailed understanding of the delivery of ecological mitigation for construction projects and his experience in working closely with main contractors has ensured the smooth running of this challenging project.

Atkins, EWR 2 environmental assessment, 2018–2019

Robin coordinated a team of technical specialists from the Biocensus supplier network to provide Atkins with high level support in the quality assurance of field data and the drafting of ecological assessment reports for EWR 2, a high profile nationally significant infrastructure project. Robin resourced a strong team at very short notice, pulling in subcontractors from all parts of the country, who each worked remotely. He coordinated the team's contribution, which was reviewed prior to issue to the client.

APEM, Welsh Water AMP6 and AMP7 frameworks, 2017–ongoing

Robin oversees several small ecology call-off projects on the Welsh Water framework, on behalf of Apem. RSK Biocensus provides all terrestrial ecology surveys and advice for sites across Wales from the Stonehouse office using a team from the Biocensus supplier network. Robin's role is to ensure that the work is resourced appropriately, and a high quality of deliverables is maintained.

PRE-RSK BIOCENSUS EXPERIENCE

Arup, HS2 ecology technical standards, 2015

Building on his experience in the production of technical advice notes (e.g. on behalf of Highways Agency), Robin provided support to Arup in relation to the production of Ecology Technical Standards for HS2. As co-author for the first draft of the document, Robin's role was to oversee the production of the fauna chapters, providing a coordination and editorial function for the team of specialist authors from Aecom, Arup, BSG, PAA and Hyder.

Highways England, M4 J3–J12 Smart Motorway project, 2014–2017

As ecology lead, Robin provided ecological support to the M4 Smart Motorway project, overseeing ecological surveys and the preparation of the ecology chapter of the environmental statement. He also provided technical ecological advice throughout the development consent order (DCO) process. His role involved overseeing pre-construction surveys for protected species required to update the baseline, informing detailed design and construction programming and informing protected species licence applications, where necessary.

Environment Agency, Ouse Washes, 2014–2015

On behalf of Jackson Hyder joint venture, Robin held a key role overseeing the ecological pre-construction surveys and mitigation during site clearance and construction of large ecological enhancement project in Cambridgeshire. The aim of the project was to create large areas of wetland habitats for birds adjacent to the Ouse Washes SPA. To facilitate this, mitigation had to be developed and monitoring undertaken to ensure that the effects upon ground nesting birds, water voles and badgers were minimised.

Robyn Maby, Assistant Ecologist

Core skills

Protected species surveys

Botanical surveys

Habitat classification

Habitat management

Biodiversity Checklist

PEA, HRA, AA

GIS mapping

Science communication

Details

Qualifications

BSocSci Social Anthropology

MSc Ecological Management and Conservation Biology

Memberships

British Ecological Society

BSNI

BNFC

Other

CSR Health and Safety Trained card holder

First Aid

NI Railway contractor pass

PROFILE

Robyn joined RSK Ireland in April 2022 on a student placement and then as an assistant ecologist from August 2022. Prior to this, Robyn was working in the administrative and educational sectors. As an Assistant Ecologist, Robyn plays a critical role in supporting the completion of projects, including preliminary ecological appraisals and biodiversity management projects. Robyn performs both desktop and fieldwork studies, and conducts ecological surveys, report writing and GIS mapping for a variety of clients.

Robyn previously volunteered regularly with the London Wildlife Trust and advocates for the protection of biodiversity. Working with the London Wildlife Trust, she has experience in species surveys and land management techniques. Robyn also completed and received a distinction in an Ecology Level 2 training course with Animal Biology & Care in 2020. Robyn's master's thesis researched current biodiversity net gain legislation across the UK and is familiar with such policies regarding planning requirements.

Robyn has specialist skills in the following areas:

- Botanical surveys, particularly Phase 1
- Habitat management
- Preliminary Ecological Appraisals
- Appropriate Assessments
- Protected species surveys
- Biodiversity Checklists
- EIA and EcIA support
- Knowledge of legislation and best practice codes, namely relating to protected sites and species
- Creation of scientific communication pieces such as posters
- GIS mapping

Key project experience

RSK PROJECTS

Kelland Homes Ltd, Biodiversity Management Plan, 2022-ongoing

Robyn researched and wrote a Biodiversity Management Plan for this large new development scheme in Co. Dublin. This has involved liaising with the landscape architects and council Heritage Officer in order to finalise a plan for approval that achieves the purpose of the project whilst also effectively retaining, enhancing, creating and managing the biodiversity on the site.

Belfast Harbour Commission, Biodiversity checklist & HRA, 2022

Robyn conducted a site survey and completed a biodiversity checklist report and a Habitat Regulations Assessment to assist in the new development of the construction of a series of new apartment blocks. The HRA report involved desktop research and analysis, and GIS mapping. The report will help to implement mitigation measures to safeguard the nearby Natura 2000 sites and their conservation objectives.

Clyde Shanks, Bat Report, 2022

Robyn completed a bat re-entry and activity report, this included the processing, analysis and identification of different bat species present and how they are using the site. The report included the use of GIS mapping to illustrate where bats were recorded and their flight paths as requested from NIEA in order to secure planning permission for a housing development on the site.

Amey Consulting, Ecological Surveys, 2022-ongoing

Robyn conducted a variety of ecological surveys for Amey Consulting, on behalf of Translink. This included bat endoscoping, badger surveys and badger sett closure monitoring with the use of camera traps. Robyn applied to NIEA for the required bat licence and completed the return findings reports. These were in connection with required maintenance and upgrade works on Northern Ireland's road and rail network.

The Arden Team DAC, Ecological surveys 2022

Robyn undertook a number of ecological surveys including newt, hedgehog, common lizard, and bat on this proposed site of development. This involved species-specific knowledge and data collection and transposition to assist the EcIA and AA report write-ups.

PRE-RSK EXPERIENCE

Facilities & ICT Coordinator, London Wildlife Trust, 2020-2021

Robyn was promoted to this role after a restructure and did this alongside previous office manager duties. She managed the IT systems and equipment and troubleshooted technical problems. She managed office contracts for health and safety ests, utilities, internet, and phone providers and managed the fleet of vehicles.

Volunteer, London Wildlife Trust, 2020-ongoing

Robyn was a regular volunteer at various nature reserves across London. She helped with the conservation land management of the sites across range of different habitats, including woodlands, wetlands, heaths and meadows. Robyn also assisted in various bird and floral surveys.

Administrative Officer, Court of Protection, Ministry of Justice, 2018-2019

Robyn processed court applications to ensure compliance, read and analysed reports and drafted court orders. She liaised with solicitors and lay applicants, updated computer systems with records/data and provided occasion support to the customer services team.

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