Kelland Homes Ltd

Clonburris Urban Centre & South East

Biodiversity Management Plan

604097 R7 (04)

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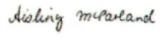
Signature		Signature	
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EXECUTIVE SUMMARY

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 283 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 933m of new native, species-rich hedgerow
- Measures to retain and enhance 233m of existing hedgerows
- Planting of 361 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 20 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 (November 2022), planning permission has not been granted. This biodiversity management plan (BMP) has been produced to fulfill planning condition 8 (f) of the planning application, this states 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 with some aspects additionally taken from and included in EcIA (RSK, 2022a), Bat Report (RSK, 2022b), Breeding Birds report (RSK, 2022c) and the Arboricultural Assessment (Arborist Associates Ltd, 2022) 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 is located approx.110m from the southern site boundary which is a site proposed as a National Heritage Area (pNHA). An area of commercial building lie to the east. The

broader development will extend to the north and west of the site. The proposed development forms a small part of the planned development for the Clonburris Strategic Development Zone (SDZ), 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). A large, ruined stone building (Cappagh House) (BL1), heavily overgrown with ivy and other vegetation, is present in the south-eastern end of the site and the area of woodland that previously existed around the building has been recently cleared (WS5). 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 highlighted on Figure 1. 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 of the site.

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

1.2.3 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 1.

1.3 Description of the project

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

1.3.2 The proposed development consists of the construction of 283 new dwellings, crèche and retail / commercial unit, comprised of:

- 112 no. 2, 3 & 4 bed, two-storey semi-detached and terraced houses;
- 110 no. 2 & 3 bed duplex units, accommodated in 11 no. three-storey buildings;
- 61 no. 1 & 2 bedroom apartments;
- 1 two-storey creche (c.599 m²);
- 2 retail /commercial units (c.325 m² & c. 152 m² respectively);
- A road (permitted under planning Ref. SDZ20A/0021) linking Ninth Lock Road to the R113 to facilitate access to the west.

[1] This habitat felled in the appropriate time of year to allow for commencement of granted south link street which is part of the larger development.

1.3.3 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 & 5 no. ESB sub-stations.

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

1.3.5 Landscaping proposals filed as part of the application state that at the conclusion of the development there will be a net gain in biodiversity and green space.

1.3.6 Cappagh house (building location shown in *Figure 1*) is to be demolished by a third party under planning application SDZ20A/0021, Cappagh house will be noted at various point throughout this report. Even though the work is to be completed by a third party, the house is on the redline boundary and therefore discussed throughout this report.

Development programme

1.3.7 At the of writing this report (November 2022), 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. 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. The zones have been identified and mapped out in *Figure 8*.

1.3.8 It has also been confirmed that the new hedgerow will be planted along the northern boundary during the first 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.

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 (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 EcIA (RSK, 2022a), Bat Report (RSK, 2022b), Breeding Bird Report (RSK, 2022c) and Arboricultural Assessment (Arborist Associates Ltd, 2022) 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 tree survey was undertaken by Arborist Associates Ltd (2022). This survey identified and tagged all existing trees on site and categorised them according to current condition. A total of 47 trees were identified.

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

2.2.3 The arboricultural report provides detailed strategies to protect the trees on site for proposed retention and should be referred to for additional information. Some of 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, 2022).
- 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 The length of hedgerow originally present on the site was measured as approximately 553 m. Hedgerows H1 and H2 are to remain in place, an approximate length of 233 m.

2.3.2 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*.

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

2.3.4 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.

2.3.5 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.

2.5 Measures to protect badger

2.5.1 Badgers (*Meles meles*) and their setts are protected in Wildlife Act, 1976; Wildlife (Amendment Act, 2000). This makes it an offence to:

- intentionally or recklessly kill, injure or take a badger;
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place (normally a sett) that badgers use for shelter or protection;
- intentionally or recklessly damage or destroy anything which conceals or protects any such structure;
- intentionally or recklessly disturb a badger while it is occupying a structure or place which it uses for shelter or protection.

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 to the commencement of each phase of construction, to ensure setts have not been created in 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 and subsequent amendments. It is an offence to intentionally disturb, injure or kill a bat or disturb its resting place and any work on a roost must be carried out with the advice of the National Parks and Wildlife Services. They are also listed under Annex IV of the EC Habitats Directive which requires protection for bats and their habitats. Bats are also protected across Europe by the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention, 1982). Therefore, it is an obligation to protect the habitat of bats, including links to important feeding and commuting areas. In relation to the above legislation, it is an offence to:

- Deliberately capture, injure or kill a bat,
- To disturb them in such a way as to significantly affect their ability to survive, breed, or rear/nurture their young, or in a way that affects the local distribution or abundance of a species,
- Damage or destroy a breeding site or resting place of a species, even if it is unintentional and / or when the animal is not present,
- Obstruct access to a structure or place used by a species for protection or shelter.

2.6.2 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).

2.6.3 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.

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

- Felling of trees to be limited to September / October to avoid main breeding and hibernating periods.
- As outlined in the Bat Report (RSK, 2022b) section 4.4, due to potential emergences of bats during the surveys, demolition of Cappagh House will require a bat derogation licence, should be limited to September / October to avoid main breeding and hibernating periods, and under supervision of a suitably qualified ecologist. This work is being completed under SDZ20A/0021 by a third party

2.6.5 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.

2.6.6 For the demolition of Cappagh House, a bat derogation licence should be sought, and a suitably qualified ecologist be present during the demolition.

2.7 Measures to protect breeding birds

2.7.1 Breeding birds and their nests, eggs and young are protected under the Irish Wildlife (Amendment) Act 2000 from reckless or deliberate disturbance, harm, or destruction It is considered an offence to:

- Kill, injure or take any wild bird,
- Take, damage or destroy the nest of any wild bird while that nest is in use or being built,
- At any other time take, damage, or destroy the nest of any wild bird included in Schedule A1,
- Take or destroy an egg or any wild bird,
- Disturb any wild bird while it is building a nest or is in, on, or near a nest containing eggs or young,
- Disturb dependent young of such a bird,
- 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). The demolition of Cappagh House (planning reference: SDZ20A/0021) should also occur outside of nesting season. works are required to commence during the bird breeding season, then a further inspection by a suitably qualified ecologist.

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 and building demolition 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 are protected under Wildlife Act 1976/2000 Bern Convention Appendix III, some of which is below;

- Injure a protected wild animal otherwise than while hunting it,
- in case the protected wild animal is not an exempted wild mammal, under and in accordance with such a permission or a licence granted by the Minister under this Act,
- in case the protected wild animal is an exempted wild mammal, either,
- under and in accordance with such a permission or a licence granted by the Minister under this Act other than section 29, or
- in the manner and on a day, or during a period of days, mentioned in subparagraph (ii) of paragraph (*b*) of this subsection,
- Willfully interferes with or destroys the breeding place of any protected wild animal shall be guilty of an offence.
- The Minister may grant a licence to a person to capture or humanely kill or capture and humanely kill at any time a protected wild animal of a species specified in the licence for such educational, scientific or other purpose as shall be specified in the licence.
- While so engaged to interfere with or destroy the breeding place of such an animal, or
- while constructing a road or while carrying on any archaeological operation, building operation or work of engineering construction, or while constructing or carrying on such other operation or work as may be prescribed, to kill or injure such an animal or to destroy or injure the breeding place of such an animal.

2.8.2 Given the widespread distribution of hedgehog (*Erinaceus europaeus*), 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 November and March, thus making them vulnerable to clearance works during this 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 either September or October, so it occurs outside of the hibernating season 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 located on site, stop work will happen and a suitably qualified ecologist will assess the situation and develop and plan, this could be the translocation of the hedgehog . Once the plan has been created and implemented the ecologist will inform Kellard homes Ltd, when work can start again.

2.9 Measures to protect common frog

2.9.1 Frogs are protected under the European Union Habitats Directive and by the Irish Wildlife Act. Protection is as listed in section 2.8.1 which is the Irish Wildlife Act.

2.9.2 Given the habitat that is present on the site it could be suitable for common frog. Common frog are highly sensitive to removal and covering of ditches, loss of habitats and vegetation clearance. As frogs are highly sensitive to loss of habitat and vegetation clearance, when removing ditches have a ECoW present so that if any frogs do appear on the site, that work can be stopped until a strategic translocation plan can be developed and 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. 193.5m m² will be planted with bulbs, 2,346.6 m² will be planted with native wildflowers in the central and eastern areas of the site and 173.2 m² in the southeast of the site will be an attenuation pond with wetland planting (*Figure 6*). These new habitats will provide suitable habitat for common frog and mitigate against losses during the development.

2.10 Measures to protect newts

2.10.1 The smooth newt (*Lissotriton vulgaris*) is the only species of newt found in Ireland. The suitability of habitat for the smooth newt within the boundary of the application site was assessed during the walkover survey and location and features of any area of standing/slow flowing water were target noted. The smooth newt is legally protected in Ireland un the Wildlife Act, 1976 and the Wildlife Amendment Act, 2000. Under this legislation it is an offence to capture or kill a smooth newt without a licence. Key parts of the protection is as listed in section 2.8.1.

2.10.2 The ponds on site did not have any aquatic plants, and no newts were found during the survey. However, newts should be considered while work is being completed on site, as they have been identified in background search of the area. This is discussed more in the EcIA. Suitable habitat such as non-running water, scrub and log grass in close proximity to the water and log piles are ideal for newts. During the construction phase, newt habitats must be taken into consideration as new habitats could accidentally be created by way of rubble and log piles.

2.10.3 Measures to protect suitable newt habitat are as follows:

- 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 must stop and the ECoW notified, 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 The ECoW will follow guidance for control and management if invasive species are found on site, these guidelines will be species specific (*Control and Management* ,2021). It is important that developers do not facilitate the encroachment of unwanted vegetation which degrades the environmental value of the land. Accordingly, the invasive non-native species identified on site; cherry laurel, butterfly bush, snowberry and piri-piri burr, should be completely removed from site according to best practice guidance (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 into the site or existing the site. When removing the invasives species on site, the soil must be bagged on site so that it is not transported , then disposed of suitable in waste sites that are authorised 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 there duty of care for waste that affects all business, they must make sure that the waste is sorted, handles and disposed of safely and legally by licensed individuals/ businesses, that they keep all the WTNs for at least two years, that record any transfer of hazardous waste between the business and any other business using a consignment note, that consignment noted which both parties sign are kept for at least three years. 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 removal of the species.

2.11.2 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. Negative impacts include outcompeting native flora, but it can also cause significant delays and cost to development as well as structural damage. Due to the invasive nature of Japanese Knotweed, additional regard should be given to recommendations to limit accidental spread. 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. (Mark Otto, J.T. 2022) 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 will assess adherence to the following measures. This section relates to the management of trees, hedgerows, bats and invasive species during the congoing construction phase. Measures implemented to protect badgers, breeding birds, hedgehogs, common frog and newts has already been outlined in section 2.0.

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, 2022).

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, 2022).

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 was located beside Cappagh House in a previous walkover survey over 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 remove this 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 aims and objectives for enhancing and creating the ecology and biodiversity of the site.

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

1. to create new habitats on the site to enhance the ecological function and improve and increase the overall biodiversity of the site.

4.2 Planting of new trees

4.2.1 A total of 361 new trees are to be planted across the site. The locations are specified in *Figure 7.*

4.2.2 Suitable tree species to be included 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 should be sourced as locally as possible.

4.2.3 A small parkland area is to be created around the pond in the southeast of the site. Species here 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 and locally sourced. Where possible, larger canopy trees should be included.

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.

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 Refer to Arboricultural Assessment for further details.

4.3 Creation of new hedgerows

4.3.1 Compensation for H3, 4 and 5 (*Figure 1*) will be required. This will be a combined length of approximately 400m.

4.3.2 New hedgerows around the perimeter and within the site are proposed totaling a length of 933.3m (*Figure 2*). This will involve the planting of native, locally occurring hedgerow species.

4.3.3 H5 has been removed by a third party before this report was completed. H4 a defunct hedgerow and will require gaps to be filled in with new planting.

4.3.4 *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
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

Information taken from Biodiversity Management Plan - Scott Crawley 2021a.

4.3.5 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.

4.3.6 Hedgerows should be planted with 5 or 6 plants per meter with a minimum of 5 different species every 30 meters and no more than 1 tree every 6 meters to reduce competition.

4.3.7 Planting should be done in a staggered row formation with 250mm between plants within the row and 300mm between each plant and the parallel row as shown in *Figure 3* with a guideline mixture of native species as above.

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 Bird and bat boxes

Bats

4.4.1 Permanent bat boxes will be installed on mature trees, for example, the Crevice bat box. 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, specific recommendations include the installation of Schewegler brand 'Multiple bat tubes 2FR', or 'Bat access panel 1FE'. Alternatively, bat boxes could be installed once construction has been completed, e.g. ' Bat Winter Roost 1WQ'.

4.4.2 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.

4.4.3 It is recommended they be installed in the southeast corner of the site. This is where Cappagh House currently stands 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.

4.4.4 Bat boxes will be placed at least 4m from the ground and in a sunny location that is sheltered from the wind. The bat boxes will be installed with a ratio of 1 bat box for every 5 mature trees. Further guidance on bat boxes can be found in *Appendix D*.

Birds

4.4.5 The planting of new fruit baring 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 1*).

4.4.6 The integration of bird boxes within the structure of the new apartment building will provide the best long-term solution. 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 high on the apartment buildings.

Plate 1: Examples of nest boxes with different entry hole sizes. Wrens prefer smaller entrances as on the left, whereas robins prefers a more open hole as on the right (Cawley, 2021a).

4.4.7 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. The bird boxes will be installed on the ration of 1 bird box for every 5 mature trees.

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

4.4.9 Additionally, areas have been set aside to be planted with a mix of wildflowers and cereals. This will be maintained with an annual, late cut. This will provide foraging habitat and shelter for breeding birds. This cut will be the responsibility of Kelland Homes Ltd, or their management team for the properties. Areas of wildflower planting are shown in *Figure 6*.

4.4.10 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 on the site. 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 hotels that can be constructed for insects, for this development a wooded insect hotel and combined bee house has been selected as an example. This design 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 third section with a long narrow opening in the middle of the wooden panel, and in the last and bottom 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 Plate 2).

Plate 2: Insect hotel design

(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. 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 in the southeastern corner of the site (*Figure 4*). 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 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:

4.6.3 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 6*). 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 (*Plate 5*).
- 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 *Plate 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 *Plate 3.*
- 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.

Plate 3: Suggested hibernaculum design (Julian & Hand, 2018).

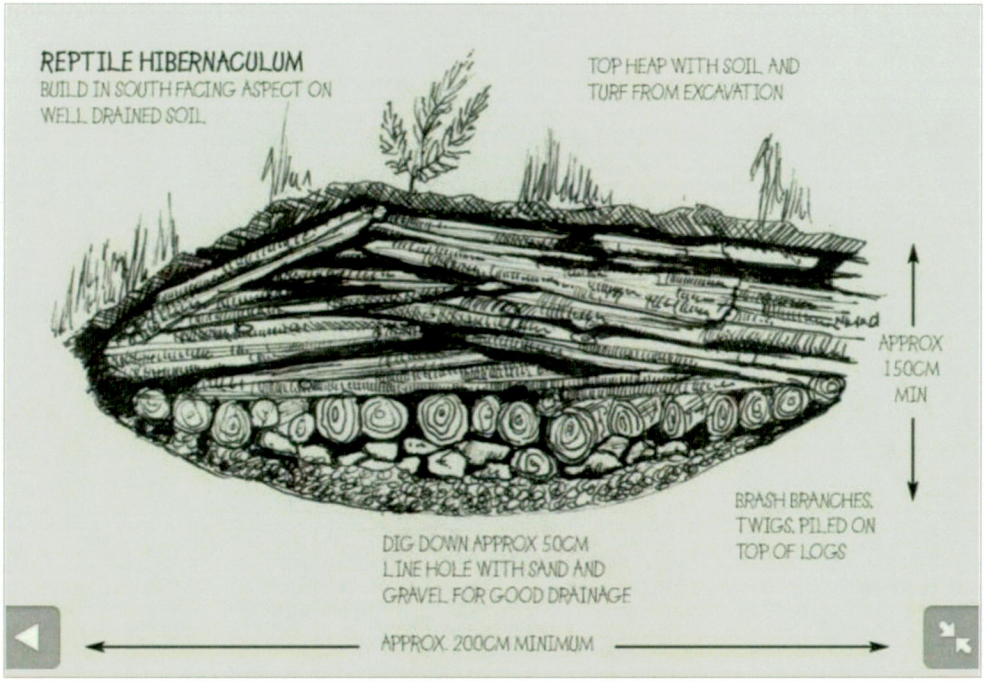

Plate 4: Native Irish aquatic plants (Cawley, 2021a)

Plate 5: Example of pond with ramp made of rocks to allow access for birds, small mammals and amphibians (Cawley, 2021a)

4.7 Wildflower meadow

4.7.1 Native wildflower meadows will be planted in a total area of 2,346.6 m² in a central area running vertically through the site and along the eastern boundary, at the bases of hedgerows (*Figure 6*). 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 harvested from local meadows (if there are no non-native invasive species present in the area) to ensure that local biodiversity is retained.
- Local biodiversity may be retained by translocation. Intact turves may be removed from local donor sites with a suitable excavator and incorporated into a suitable receptor site. Alternatively, 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 *Plate 6.*
- 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.

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

Plate 6: Suitable native Irish wildflowers for pollinators (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 9*). These will be Sedum roofs, 60% of the roof will be covered in PV panels and 40% will be planted with *Sedum* sp. There will be four roofs that will contain green infrastructure, individually they are 322.2 m^2, 115.7 m^2, 54.6 m^2 and 112.1 m^2 , totaling 606.6 m^2.

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 for a period not less than 20 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, 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 mold, diseases, mites and parasites.

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 meadow

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*) which are not, both 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 (*Fallopia 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 plants, if it is found to be a bare root ball specimen, these roots must be bagged before destruction on site. This is to prevent the transportation of soil which could harbor invasive non-native species.

5.8.4 Soil that is required to be imported should be removed prior to planting out and disposed of in a responsible manner (e.g. in a sealed bag).

5.8.5 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 TIMETABLE OF ACTIONS, REPORTING AND MONITORING REQUIREMENTS

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

Table 2 Programme of monitoring requirements

Action	Timing	Frequency of monitoring and reporting	Monitoring to be undertaken by	Measurement of success / remedial action	Responsibility
Trees maintance – pruning and health monitoring	Pre-constuction	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	Pre-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 acnoculation by fungi and biodregable tree guards	Pre-construction ,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 and during	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 933.3m of hedgerow along the perimeter and withing the site to be created to provide high quality species rich habitat.	Pre-construction and during	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 361 new trees	Pre- construction and during	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 home Ltd

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 spreading of non-native species.	During and Post construction	Annually	Kelland Homes Ltd	Kelland Homes Ltd	Kelland Homes Ltd

7.0 MANAGEMENT AND MAINTENANCE PLAN

Table 3 Management and maintenance plan for the first five years and for every five years after until twenty years.

Task	Construction Phase	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10	Year 15	Year 20
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 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 annual weed to encourage perennial growth. Any and 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	Year 15	Year 20
	invasives that need removed and any additional species located.	initial grow back.							

Table 4 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			
	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			
Year 15	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 20	Planting/ maintenance of trees			
	Planting/ maintenance of hedgerows			
	Bird and bat boxes			
	Wildflower meadow			
	Attenuation Pond			
	Insect hotel			
	Invasive species			

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FIGURES

Figure 1. Fossitt Habitats Map. Sourced from RSK (2022a) EcIA

Figure 2. Proposed hedgerow planting (RMDA, 2020)

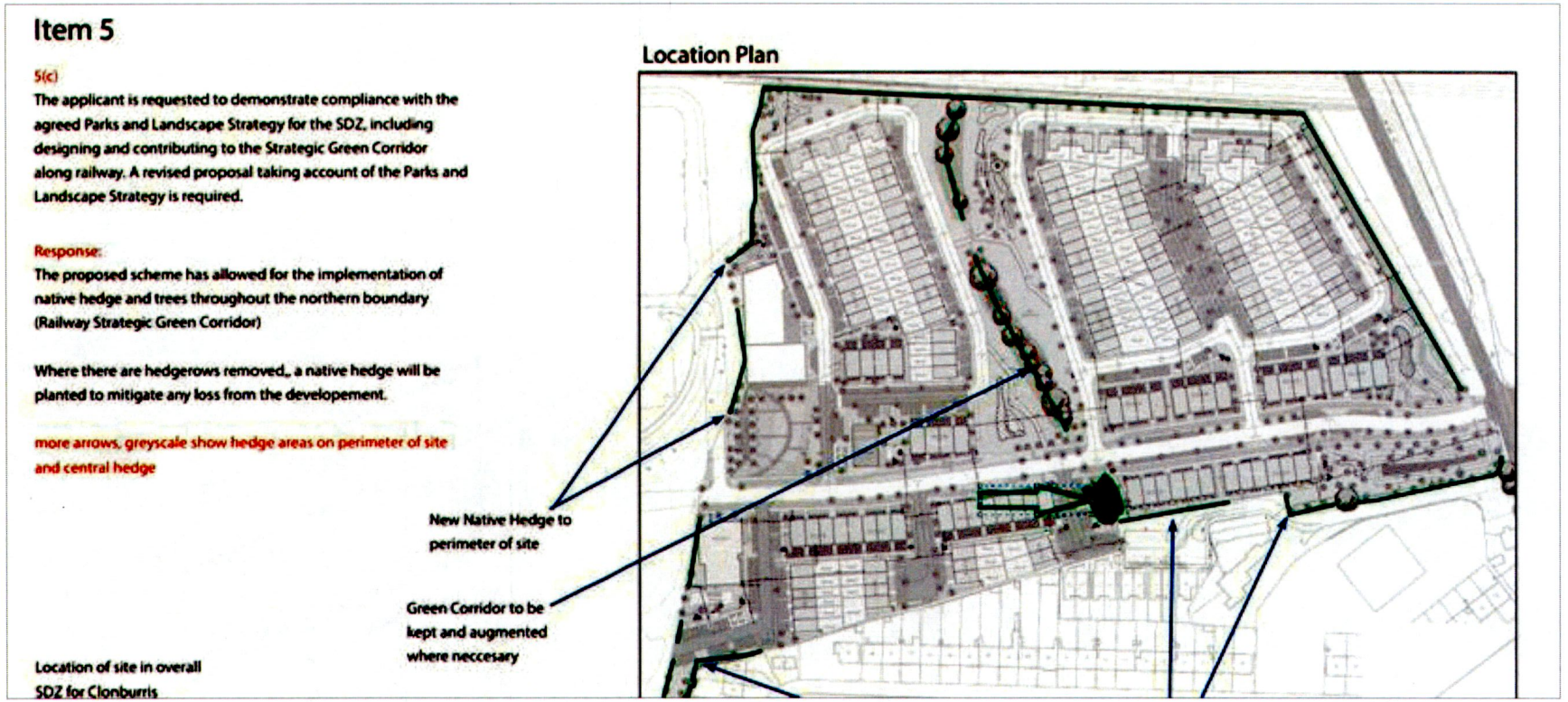


Figure 3. Guidance on spacing for hedgerow planting (DEFRA, 2011)

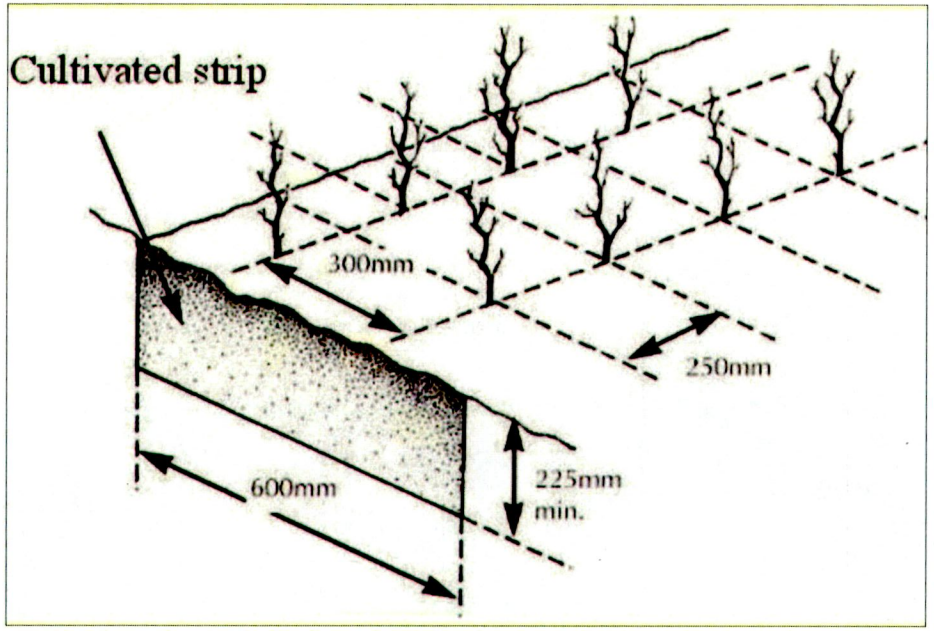


Figure 4: Proposed wildlife pond location (RMDA, 2020).

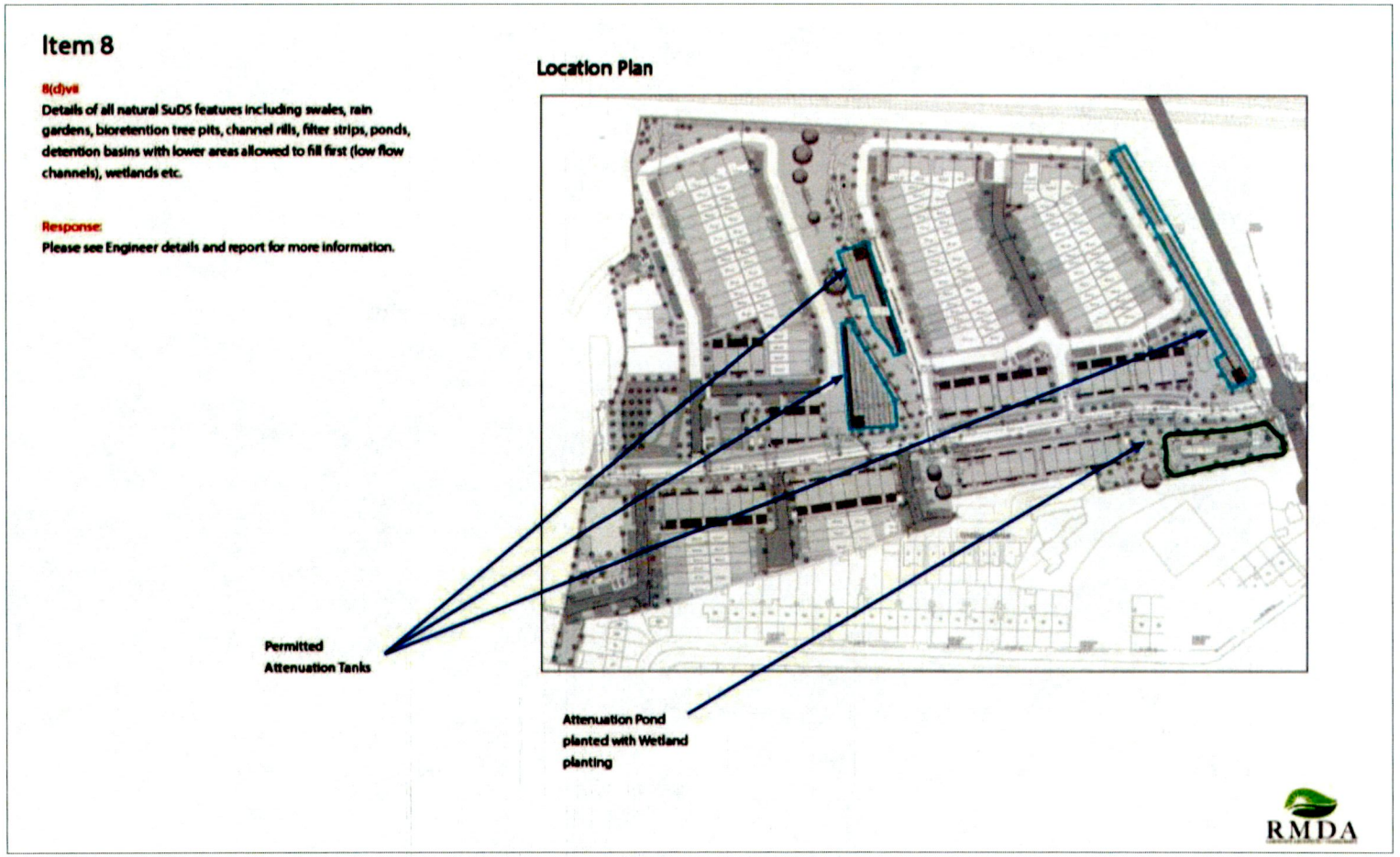


Figure 5. Invasive non-native species map (RSK, 2022a)

Figure 6. Proposed Wildflower and bulb planting (RMDA, 2020)

Item 8

8(d)xix

All areas proposed for taking in charge shall be to a taking in charge standard that ensures ease of maintenance including ease of access. Soft landscape areas intended for taking in charge should predominantly consist of grass, hedges, trees, woodland planting, meadowland or bulb planted areas using predominantly native and/or pollinator friendly species and comply with the requirements of the Clonburris SDZ Biodiversity Management Plan. Trees to be grouped appropriately to enable access to meadows for cutting.

Response:

All soft landscape to be taken in charge standard

- Existing Hedgerow Retained - 97m2
- Proposed Hedge Planting – 676.6m2 (linear metre) (House Fronts & Open Space) Pollinator hedge to front of house & Native hedge to site perimeter – 1060.5m2
- Proposed Shrub Planting - 3,379.3m2
- Proposed Bulb Planting – 193.5m2
- Proposed Wildflower Planting - 2,346.6m2
- Proposed Wetland Planting - 173.7m2

Location Plan

RMDA

Figure 7. Proposed tree planting, shown as green/red dots (RMDA 2020).

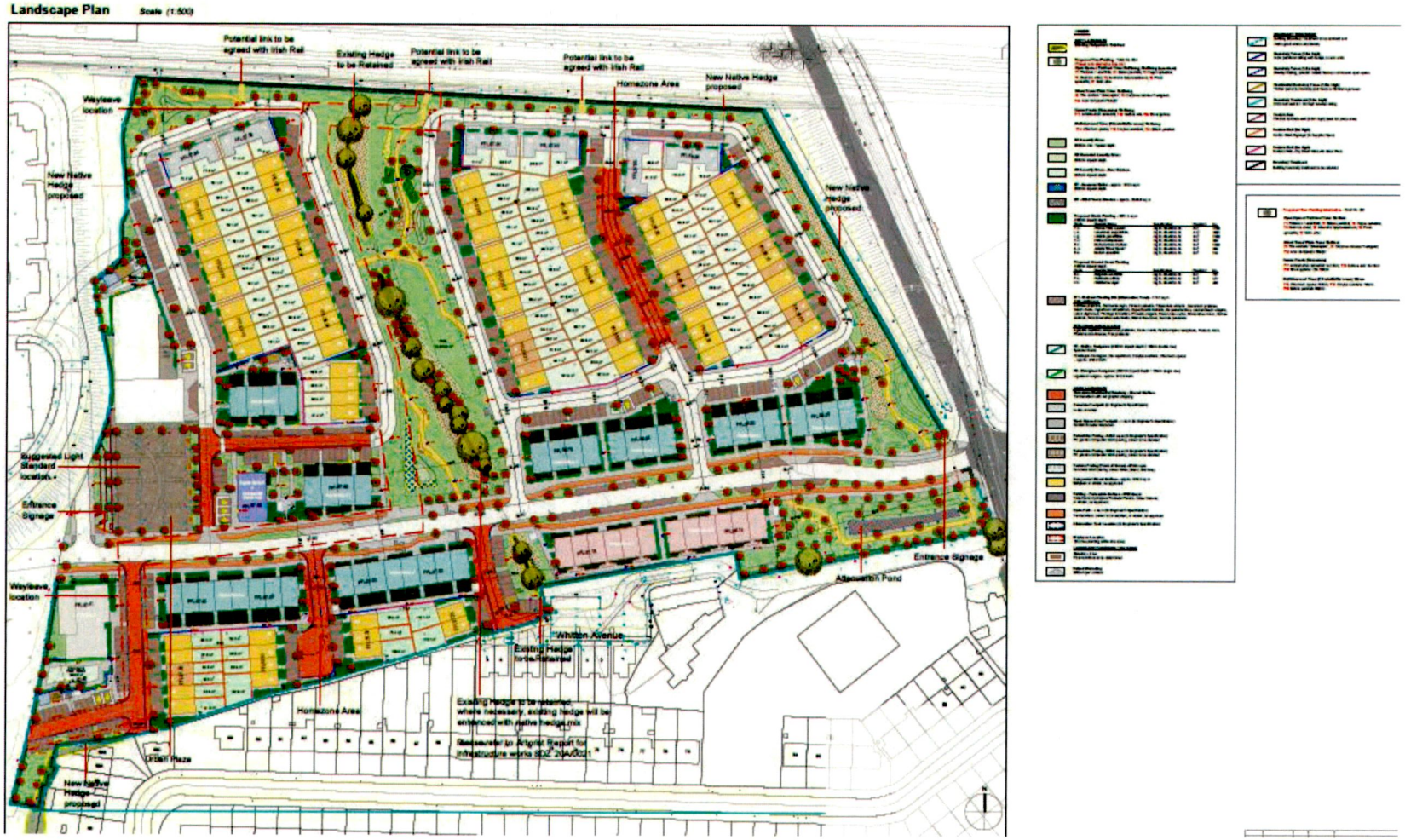


Figure 8 Planned construction work zones and phases (Davey & Smith Architects, 2022)

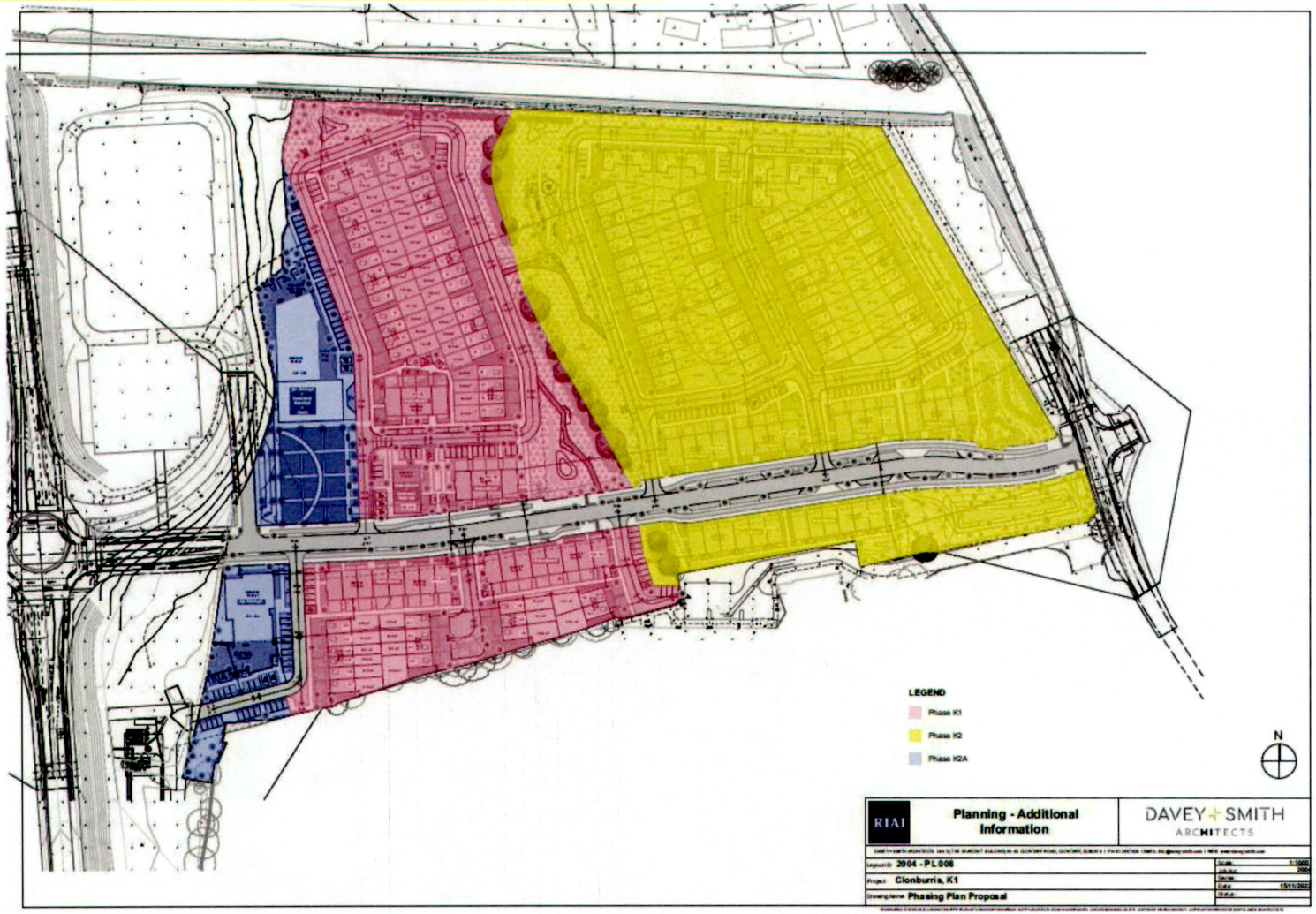
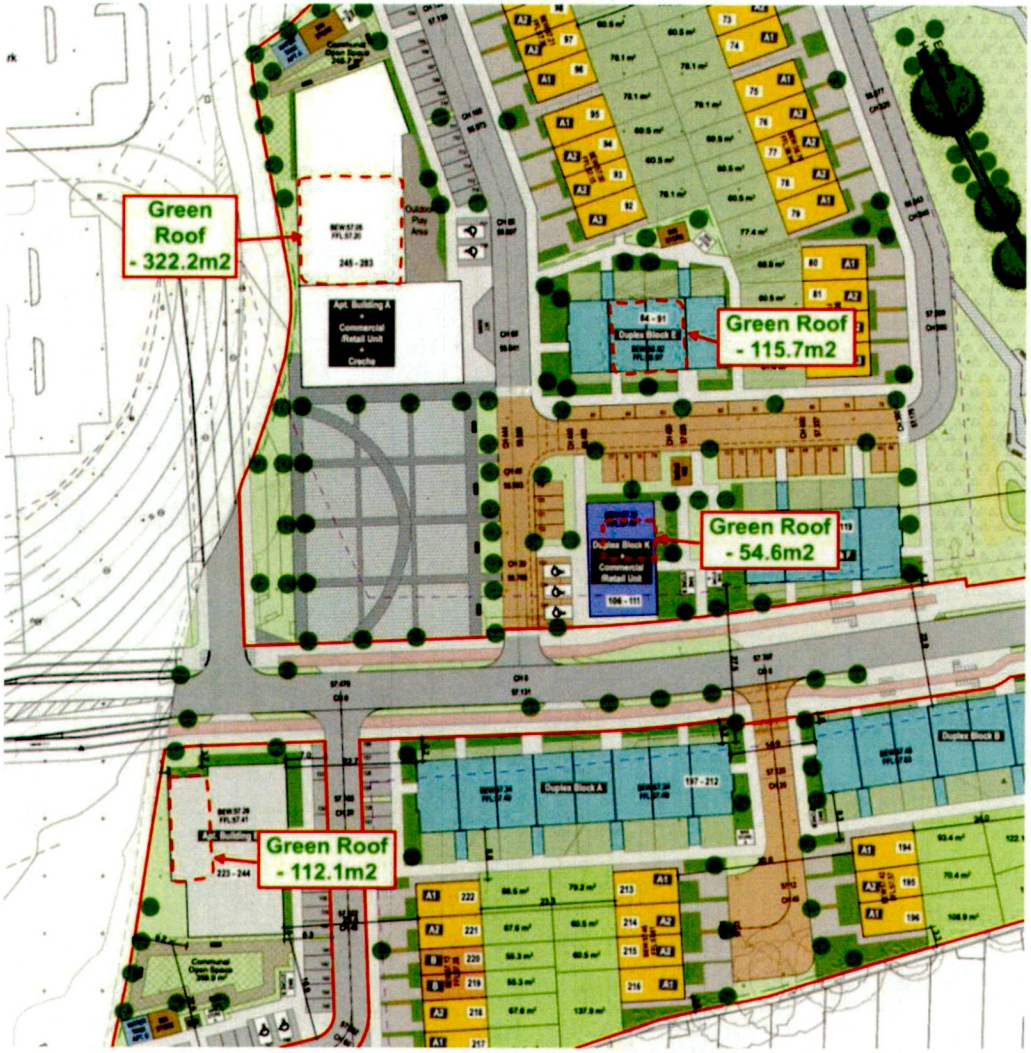
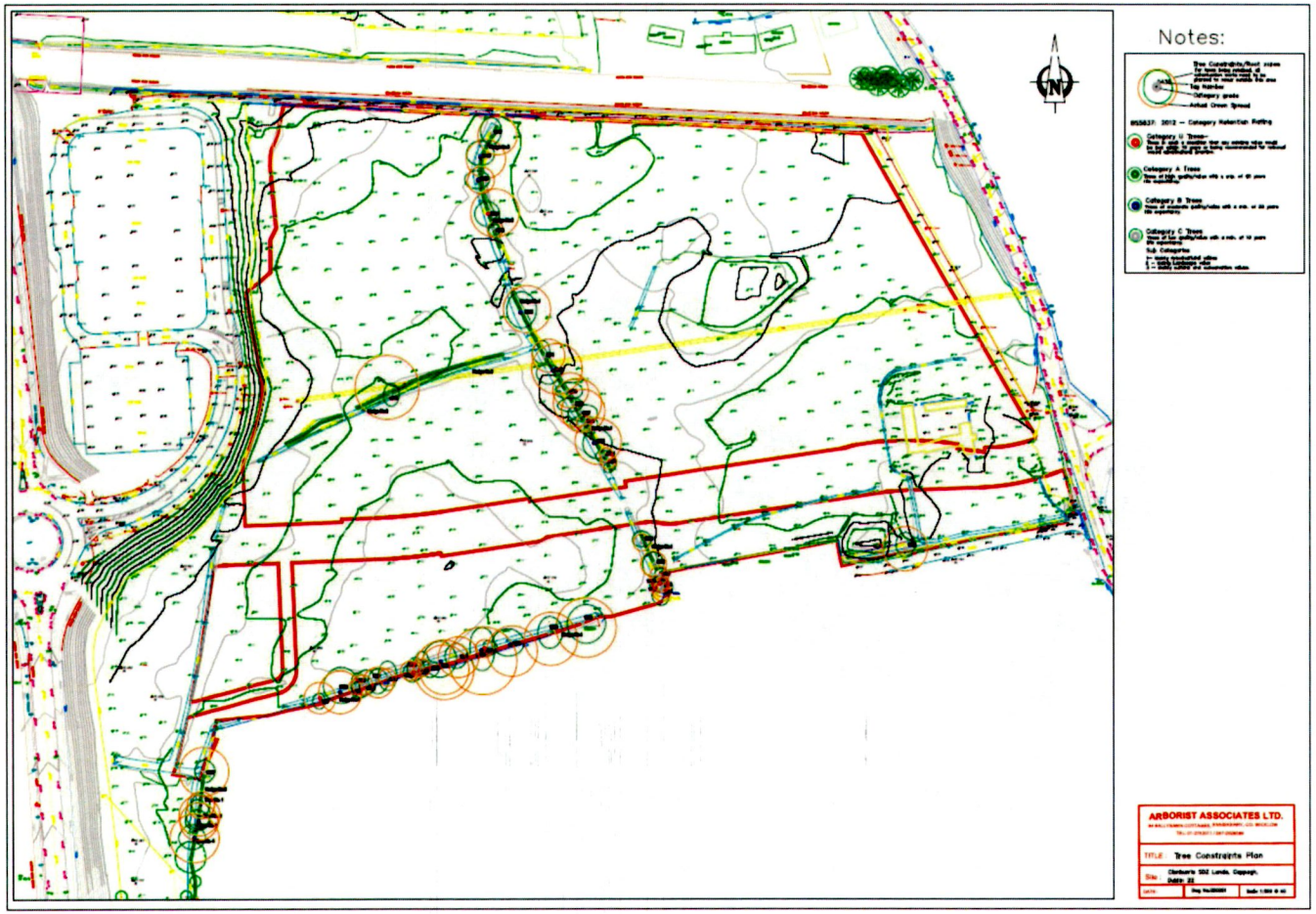


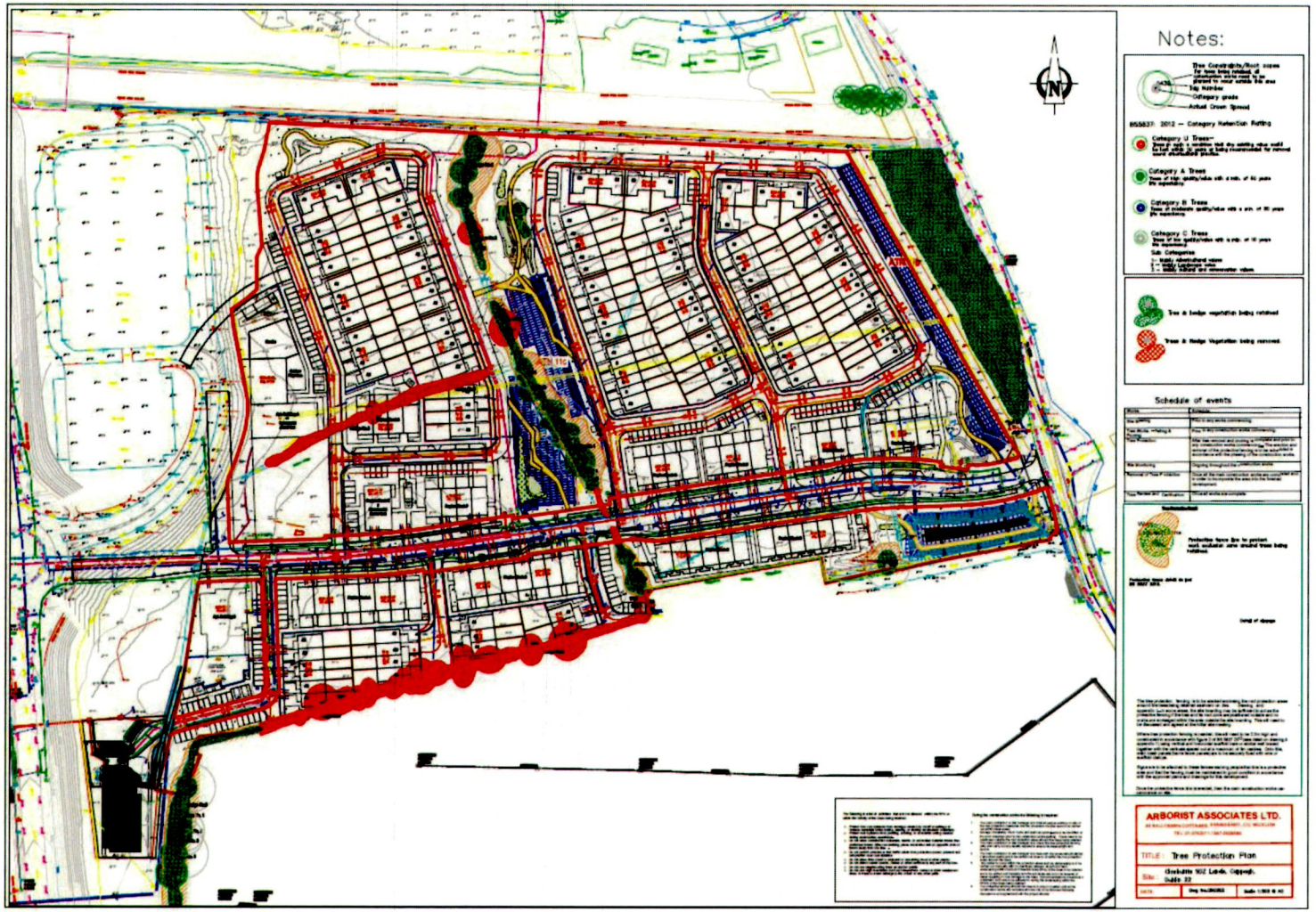
Figure 9 Green Roof placement and size (Davey & Smith Architects, 2022)



APPENDIX A – TREE CONSTRAINTS PLANS



APPENDIX B – TREE PROTECTION PLANS



APPENDIX C – INVASIVE SPECIES CONTROL AND MANAGMENT GUIDANCE

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).

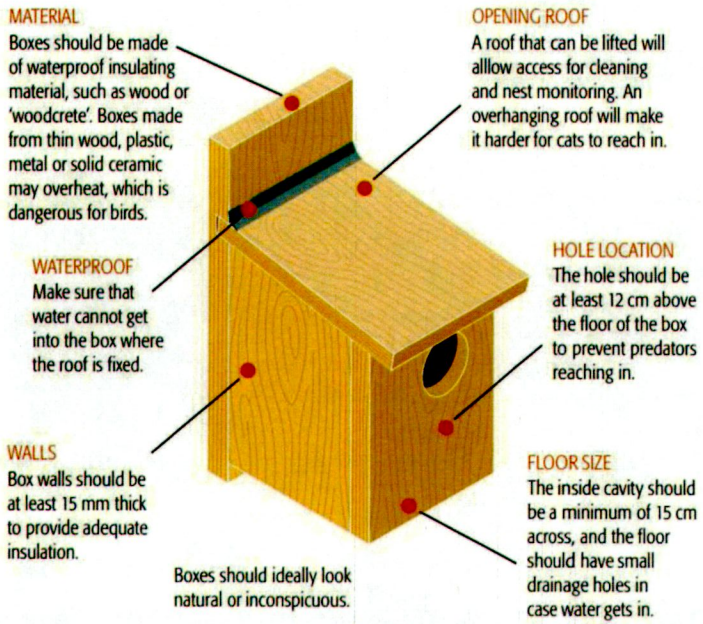
- Involves simple methods like hand removal, cleaning with hard bristle or wire brushes, air/water blasting, desiccation (air drying) as well as the use of physical barriers such as biodegradable geotextiles and plastic wrapping to smother targeted invasive species.
- V-blade cutting can be used to remove 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 BOXES 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 F – ALL-IRELAND POLINATOR PLAN

A. Ground preparation and weed elimination

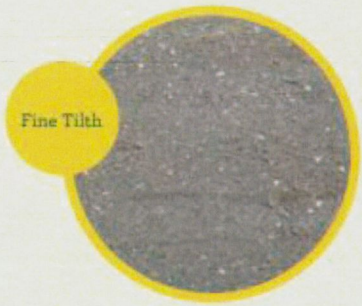
It is vital to prepare a proper seed bed before sowing wildflowers. This can be completed using organic or non-organic methods. Although many people leave this step until the last minute, ground preparation should be done as early as possible (March/April for spring sowing and July/August for Autumn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

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