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Marine & Environmental Consultancy

Ecological Report for a proposed residential dwelling at Cruagh Lane, Rathfarnham, Co. Dublin.

16th November 2021

Prepared by: Bryan Deegan (MCIEEM) of Altemar Ltd.
On behalf of: Sarah-Jane Kearney.

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Introduction

Background

Ecological Impact Assessment (EcIA) has been defined as *'the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components'* (Treweek, 1999). *"The purpose of EcIA is to provide decision-makers with clear and concise information about the likely ecological effects associated with a project and their significance both directly and in a wider context. Protecting and enhancing biodiversity and landscapes and maintaining natural processes depends upon input from ecologists and other specialists at all stages in the decision-making and planning process; from the early design of a project through implementation to its decommissioning"* (IEEM, 2010).

The following EcIA has been prepared by Altemar Ltd. at the request of Berryton Limited, for a proposed Strategic Housing Development (SHD) at a site (0.97ha) located at the rear of 41-49 Terenure Road East, Terenure, Dublin 6.

Study Objectives

The objectives of this EcIA are to:

1. Outline the project and any alternatives assessed;
2. Undertake a baseline ecological feature, resource and function assessment of the site and zone of influence;
3. Assess and define significance of the direct, indirect and cumulative ecological impacts of the project during its construction, lifetime and decommissioning stages;
4. Refine, where necessary, the project and propose mitigation measures to remove or reduce impacts through sustainable design and ecological planning; and
5. Suggest monitoring measures to follow up the implementation and success of mitigation measures and ecological outcomes.

The following guidelines have been used in preparation of this EcIA:

- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002);
- Draft Guidelines on the information to be contained in EIARs (2018);
- Guidelines for Ecological Impact Assessment (EcIA) (IEEM, 2019);
- Advice Notes on current practice in the preparation of EIS's (EPA, 2003);
- Institute of Ecology and Environmental Management Guidelines for EIA (IEEM, 2005).

In addition, the following report should provide sufficient information for the statutory authority to determine the potential for significant effects on Natura 2000 sites.

Altemar Ltd.

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include: residential; infrastructural; renewable; oil & gas; private industry; Local Authorities; EC projects; and, State/semi-State Departments. Bryan Deegan, the managing director of Altemar, is an Environmental Scientist and Marine Biologist with 26 years' experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. He is currently contracted to Inland Fisheries Ireland as the sole "External Expert" to environmentally assess internal and external projects. He is also chair of an internal IFI working group on environmental assessment. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture). Bryan Deegan carried out all elements of this Ecological Impact Assessment (EcIA).

Competency of Assessor

This report has been prepared by Bryan Deegan MSc, BSc (MCIEEM). Bryan has over 26 years of experience providing ecological consultancy services in Ireland. He has extensive experience in carrying out a wide range of bat surveys including dusk emergence, dawn re-entry and static detector surveys. He also has extensive experience reducing the potential impact of projects that involve external lighting on Bats. Bryan trained with Conor Kelleher author of the Bat Mitigation Guidelines for Ireland (Kelleher and Marnell (2007)) and Bryan is currently providing bat ecology (impact assessment and enhancement) services to Dun Laoghaire Rathdown County Council primarily on the Shanganagh Park Masterplan. The desk and field surveys were carried out

having regard to the guidance: Bat Surveys for Professional Ecologists – Good Practice Guidelines 3rd Edition (Collins, J. (Ed.) 2016) and Kelleher and Marnell (2007), Bat Mitigation Guidelines for Ireland.

Project Description

Sarah-Jane Kearney intends to apply for planning permission for a proposed residential dwelling at Cruagh Lane, Rathfarnham, Co. Dublin.

The development shall consist of the construction of a new four-bedroom dwelling house of approximately 187 square-meters on two levels - ground floor & dormer attic; a new site entrance, gate and driveway; two new wastewater treatments plants and associated percolation areas - one of which is to serve the existing adjacent dwelling; and all associated landscape and ancillary site works.

The proposed site outline, location, layout plan and elevations are demonstrated in Figures 1-5.

Summary of Ecological Importance

Site flora and fauna assessments were carried out and a survey of the site for bat presence and a bat emergent survey was carried out. In summary, no terrestrial mammals or signs of terrestrial mammals of conservation importance were noted on site. No flora of conservation importance were noted on site. No evidence of bats utilising the structures and trees on site was noted. However, three bat species were noted foraging on site. No invasive species were noted on site. There is no direct or indirect pathway to designated conservation sites.

Landscape

A Landscape Assessment and Design Rationale has been prepared by Landscape Design Services landscape architects to accompany this planning application. In relation to the proposed landscape strategy for the proposed development site, this report outlines the following:

'The landscape plan and rationale are simple, responding to the orthogonality of the proposed new vernacular contemporary style dwelling to settle it into the sylvan and rural local receiving environment. The landscape design is treated at the scale of domestic housing and the palette of surrounding landscape materials (hard and soft), and in a gentle modern contemporary and naturalistic style.

We propose screening the site from all sides by supplementing existing planting with native specimen and standard and exotic semi-mature trees, an understory of whip planting which will mature in the short-term (5 years), mixed native species transplant hedgerows and planter beds planted with primarily native species perennials. We have taken the approach to limit future garden maintenance and specify plants which will establish easily and improve the biodiversity potential of the existing site.

On the specialist advice of the project bat consultant, a primarily native species planting palette suitable to the upland landscape character of the site has been chosen. The planting palette of native trees, whips and hedging and ornamental shrubs, grasses, and perennials within the site generally, especially along the site boundaries, has been carefully considered and selected to ensure that invasive species have been avoided, and that native species appropriate to the site context have been prioritised. Native tree, understory whips and transplants, hedgerow plantings and ornamental perennials (plants such as groundcovers, bulbs, corms, ferns, grasses, and forbs) are all biodiversity enhancements which will enhance the site, as it is currently mostly 'improved grassland' and is of limited low ecological value.

The specification of Dogwoods, Cherry Laurel, Snowberry and Cotoneaster have been specifically avoided due to the ecologist's advice that such plants have invasive tendencies in woodlands, hedgerows, etc. The specification of plant species that tend to seed abundantly and spread such as Crocosmia spp, and groundcover plants such as Periwinkle (Vinca minor, major) have also been avoided due to their potentially invasive properties in woodland.'

This report continues to outline the following landscape proposals:

'The proposed dwelling has been sited by the Project Designer in such a way that allows it to blend into the contours of the site, so that it does not form a visible or strident feature on the landscape, in compliance with the relevant guidance. Tree and transplant planting has been localised close to the house to help absorb the development into the local landscape. The landscape plan and planting plan which form part of our submission identifies the location, species type and the number of species to be planted on the subject site. We have

specified only native or naturalised species which will establish easily at the site and require little maintenance to survive, while providing benefit for ecology and wildlife.

In consultation with the project consulting ecologist, the palette of specimen non-native trees and ornamental shrubs and perennials within the applicant garden have been carefully selected to ensure that invasive species have been avoided.

To settle the new dwelling into the site, the main landscape proposals are described as follows:

- *Retain as much of the existing boundary hedgerow vegetation and low sod/stone wall treatment along Cruagh Lane as possible, while achieving required vehicular sightlines to the architect's design detail and specification*
- *Pave the site entrance area and splay in locally sourced golden granite setts to match the vernacular treatment*
- *Ensure that replacement planting to this area where existing vegetation must be removed to accommodate the new site entrance and vehicular sightlines is of native Irish-grown species only plants such as groundcovers, hedgerow and woodland transplants and trees*
- *Pave the new driveway serving the dwelling in permeable, locally sourced golden gravel aggregates, with a channel edging of locally sourced granite setts. Overflow surface water draining from this surface can drain directly into the adjacent planter beds*
- *Supplement the existing planting along the road to the rear or dwelling-side with a new clipped Hawthorn hedgerow transplant planting, protective sweet chestnut fence to aid establishment, and a native species tree planting at 8.00m centres to create a 'formal' appearance and character to the new landscape to the rear of this existing stand of vegetation (shown below)*

Figure 10. Photograph (above left) of the existing vegetation on the subject site to be retained where possible; (above right) of the existing Sweet Chestnut (Castanea sativa) to be protected and retained on site as a key design feature.

- *Retain the existing mature Sweet Chestnut Castanea sativa (photograph above) within the site's red line boundary, close to the south-western elevation of the dwelling. The dwelling design is stepped in plan by the project architects to protect the Root Protection Area of this particularly attractive tree and to ensure its retention as a focal element of the architecture*
- *Provide a green-roofed bin dock to house litterbins, provided with stainless steel cables to grow climbing plants on, green roof substrate and planting to welcome pollinators and larch posts drilled for solitary bee nesting*
- *Provide a 'play lawn' to the south-west corner of the new dwelling, screened from the public road by a new woodland transplant planting and enclosed with a sweet chestnut fence*
- *Adding drifts of naturalised bulbs into this area and the planting beds surrounding the house will enliven the landscaping year-round, and welcome pollinators*
- *Provide gently sloped planter beds to surround and enclose the house to the west, south and east to blend it immediately with topography in the landscape to accommodate the house, and to filter the house from views from Cruagh Lane, the public road to the south-east of the site.*
- *Provide a new amenity lawn to the immediate north-west of the dwelling, seeded with a hard-wearing non-ryegrass amenity grass seed mix, and suitable for use as a children's' play area, an orchard or a vegetable garden, enclosed with a clipped Hawthorn hedge to the rear of the lawn.*

- *Provide a stepping-stone path connection set in permeable gravel to provide a pedestrian connection between the gardens of the applicant and the garden of her parents' family home to the south-west*
- *Provide a new winter-green grass/wildflower meadow over the proposed percolation area in the north-western part of the site with a custom conservation seed mix appropriate for an upland meadow, ideal for ecosystem restoration projects, such as the 'SAC01 Range' with minimum 70% of seed volume collected from donor sites on Special Areas of Conservation Meadows; 30% produced from a national wildflower collection of nursery-grown species, with annual, biennial and perennial plants with a height range of 0.30-1.50m*
- *Provide a more 'natural' in character mixed species transplant hedgerow to the site boundaries, with Irish-grown native whip or transplant species such as Hawthorn, Elder, Hazel, Guelder Rose, Crab Apple, Wayfarer Tree, Holly. Adding naturalised transplants such as Lilac into hedgerow mixes can have a positive effect on biodiversity according to ecologists; and we have specified the planting of plants such as Dog Rose, Honeysuckle, and Ivy every 500mm in the boundary hedgerows*
- *Provide new native Irish-grown micro-wooded copses to shelter and screen the new dwelling, particularly to the west.'*

Further, in relation to trees, this report outlines the following:

The presence of the existing mature Sweet Chestnut Castanea sativa has informed the architectural detail design of the dwelling itself, which steps in plan to ensure that the Root Protection Area of the tree is protected from ingression, so that this beautiful mature tree can be retained as a feature in the site.

We have specified a 'resilient' tree planting palette which responds to a hierarchy of open space within the development and contains a mix of native and non-native trees to respond to climate change:

- *Feature trees such as native Scot's Pine are found near the site and such trees create instant impact and provide year-round greening and habitat for wildlife. Pines provide suitable locations for bird boxes to be affixed.*
- *semi-mature trees such as Liquidambar styraciflua 'Fastigiata' or 'Worplesdon' are planted as columnar decorative trees closer to the dwelling.*
- *in the general planting beds and open spaces of the landscape, we have specified smaller multi-stemmed ornamental trees such as Strawberry Tree, Serviceberry Tree, Magnolia, Japanese Maple etc to provide a 'privacy buffer' to the dwelling windows. Such trees have light, open canopies, providing the perfect conditions for grasses, mosses, wood anemones, bluebells, and violets to grow. They also come into flower at different times of the year for pollinators.*

The planting and specification of new trees has been selected with considerations for sustainability over the long-term; suitability for the context and suitability as 'replacement planting'; and in detail with the architect in relation to aesthetics and screening purposes, especially along the site boundaries, and the appearance of the tree planting in the new shelter belts. All tree planting will be in accordance with 'BS8545 Trees from nursery to independence in the landscape'.

The principle of the new tree planting design is to provide differing species of larger semi-mature trees as feature and replacement trees throughout the site which are suitable for the context long-term; particularly long-lived native evergreen Scot's Pine (Pinus sylvestris) and Common and Sessile Oak (Quercus robur and Quercus petraea) to the shelter belts and site boundaries. More decorative 'exotic' smaller or more 'fastigiate' in habit trees such as Betula nigra and Liquidambar styraciflua 'Worplesdon' are placed in the boundaries around the dwelling, which have distinctive autumn colours (these trees are predicted to adapt particularly well to the expected increase in climate temperatures over the next 50 years). Smaller decorative multi-stemmed trees surround the dwelling itself such as the native Arbutus unedo, Magnolia stellata, Acer palmatum and Amelanchier lamarckii.'

The proposed Site landscape plan with outline hard and soft landscape materials and Site landscape and planting plan are demonstrated in Figures 6 & 7.

Figure 1. *Proposed site outline and location*

Figure 2. *Proposed site outline*

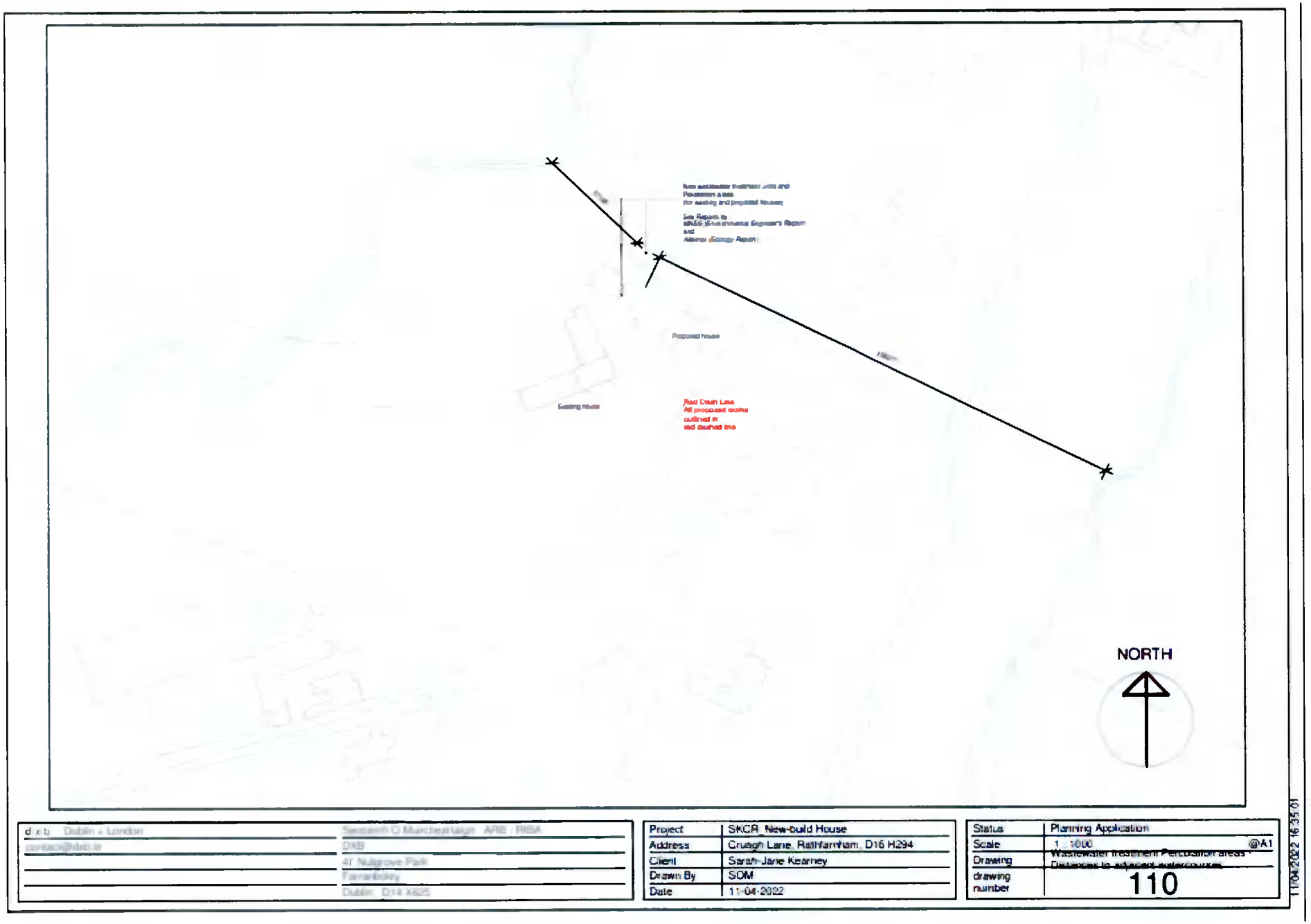


Figure 3. *Site location and distance to adjacent watercourses*

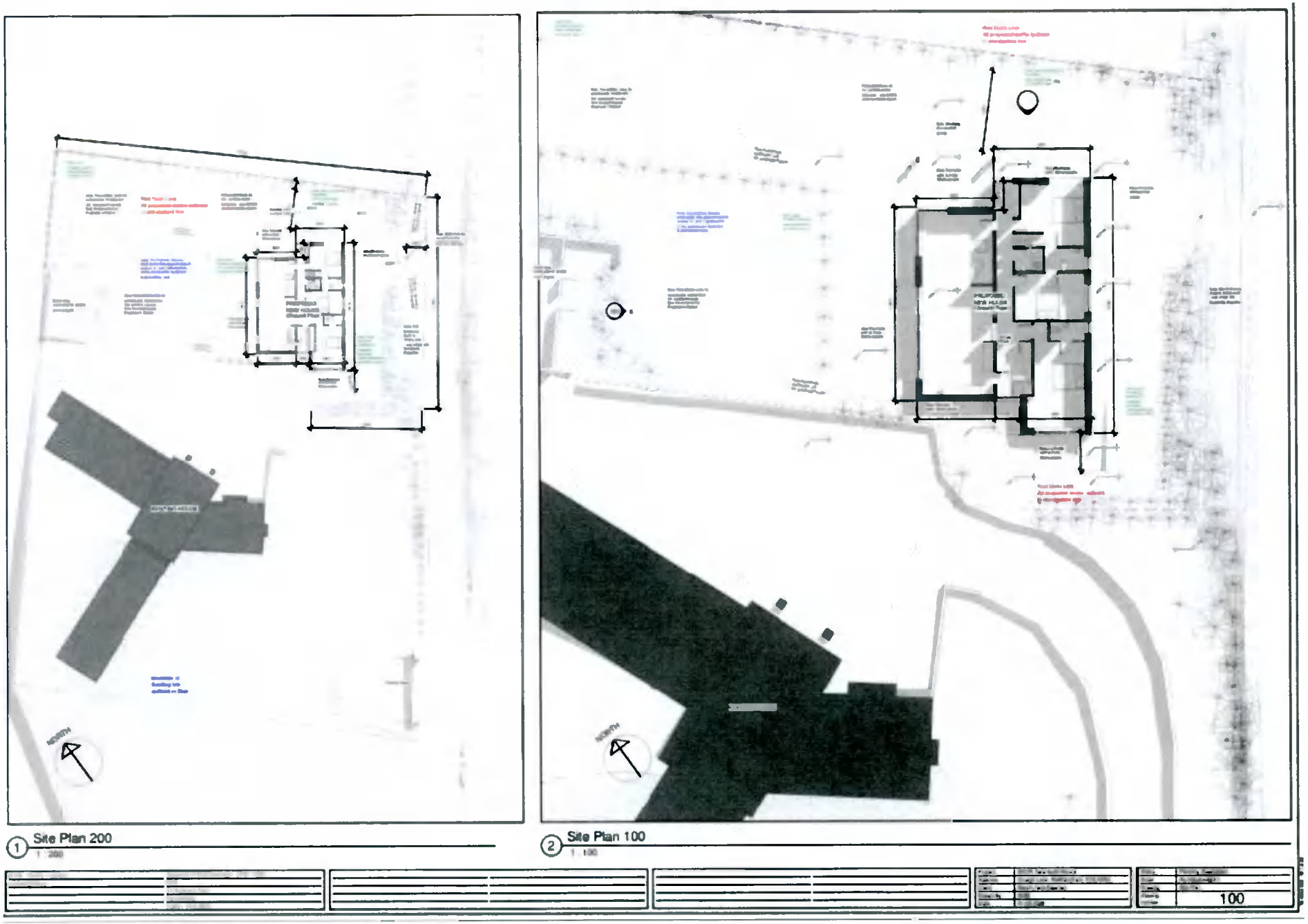


Figure 4. *Proposed site plan*

Figure 5. *Sections and elevations*

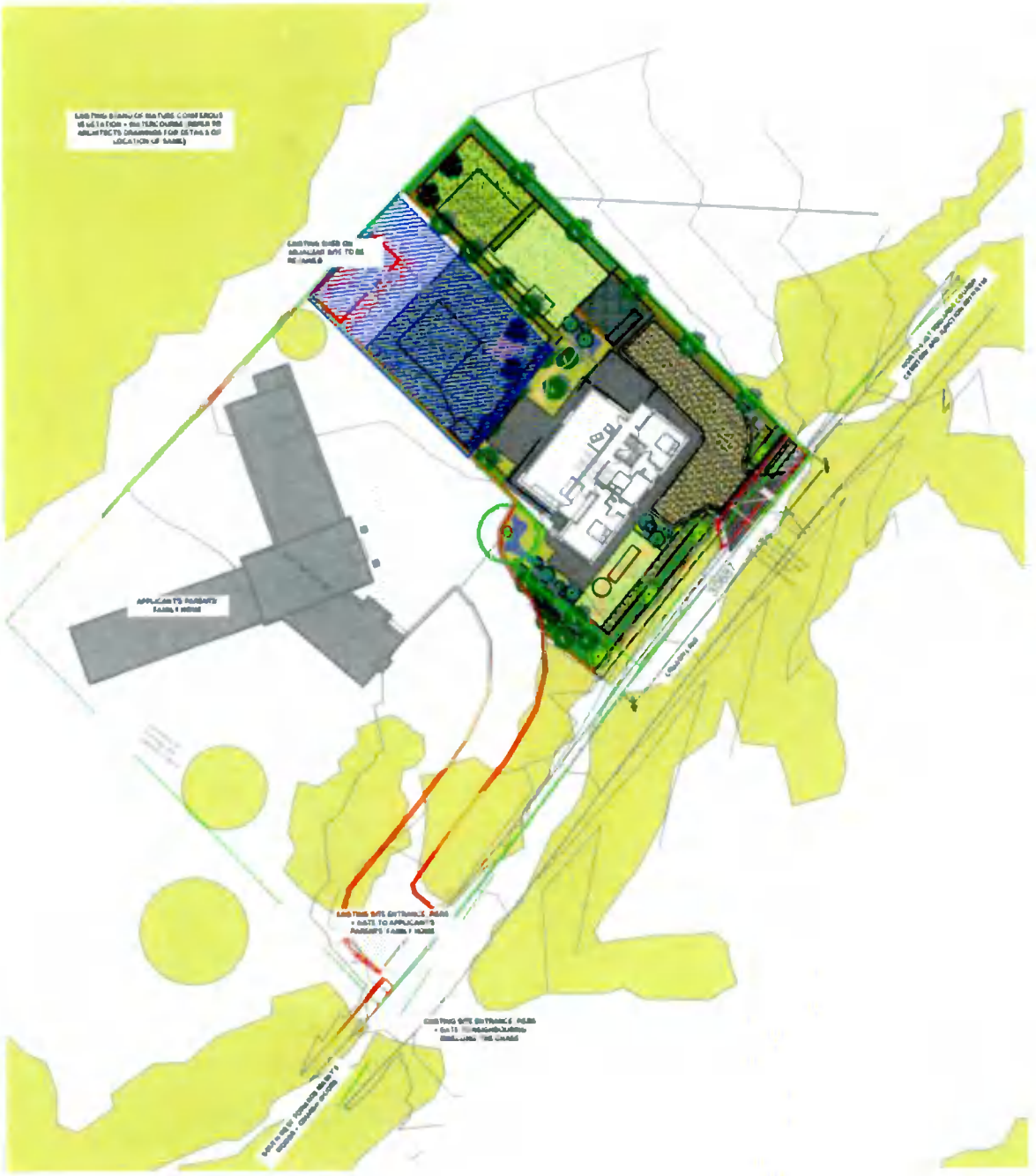


Figure 6. *Site landscape plan with outline hard and soft landscape materials*

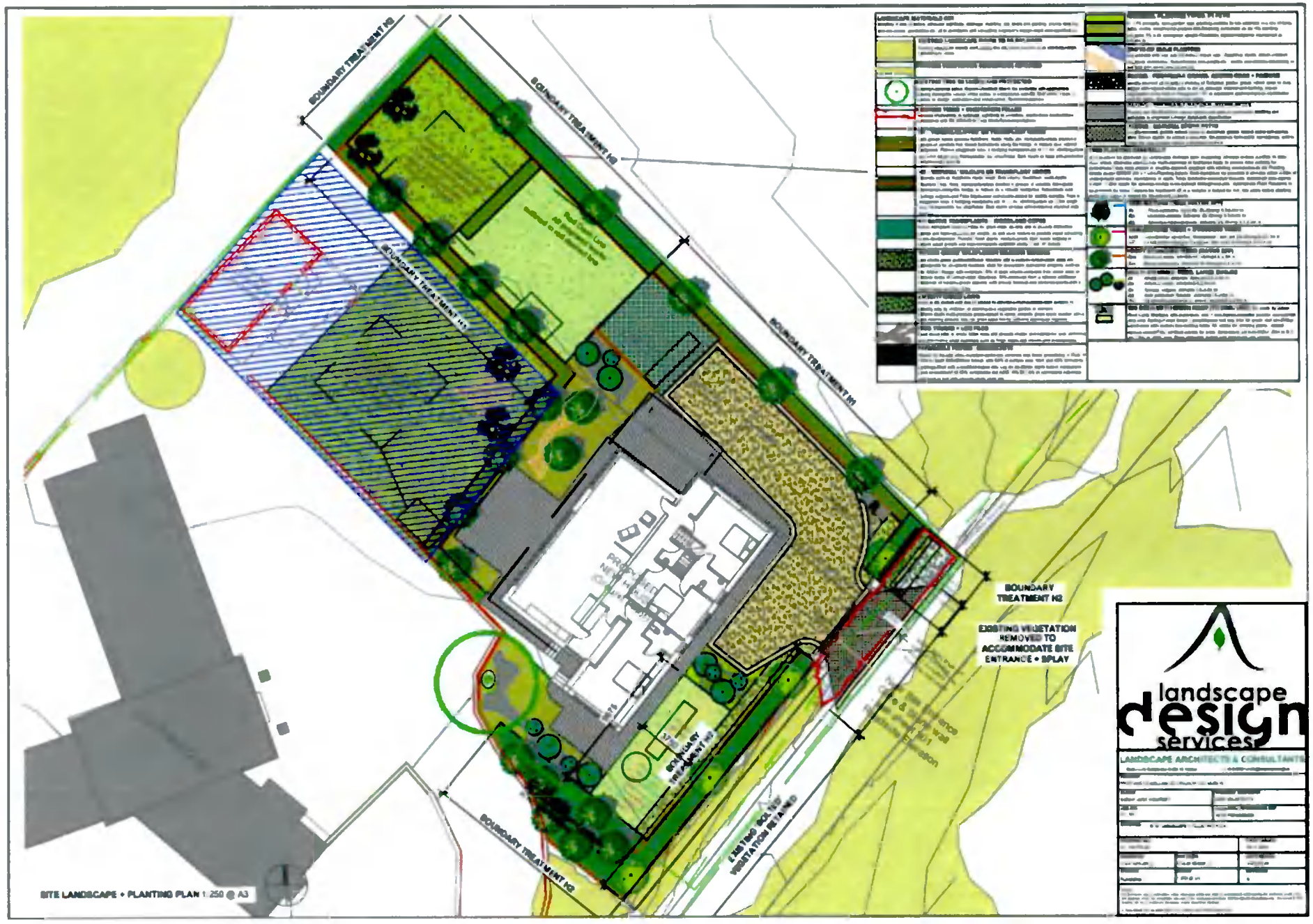


Figure 7. *Site landscape and planting plan*

GENERAL SPECIFICATION NOTES

For Proposed Tree, Hedge, and Shrub/herbaceous perennial Planting - implementation and maintenance

Site preparation: Imported Topsoil Imported topsoil shall be to BS 3882: 2007: Specification for topsoil and requirements for use, and be of medium texture with a high proportion of loamy material. It shall be free from subsoil, rubbish, roots of perennial weeds and other injurious to plant growth. All topsoil shall be stacked in heaps, not exceeding 2m high. During storage, topsoil heaps shall be kept free from contamination, compaction and weeds. Imported topsoil shall be from an approved source and a sample submitted and analyzed/tested at an independent approved laboratory. Soil Handling: Soil handling shall only take place during the driest parts of the year to prevent compaction of the insitu soils. Preparation for Topsoil Re-spread Topsoil shall be spread following completion of all hard landscape building works following a thorough clearance and removal of building debris. The formation levels shall be as follows: Tree pits: 2m x 2m x 1m deep; bottom of pit broken up to a depth of 150- 200mm and scarify sides. Shrub & Hedge trenches and Shrub areas: minimum 0.45m deep

Meadow Areas: Meadow sections of swale to have 150mm deep of free draining topsoil mix (75% topsoil / 25% coarse compost), 600mm below planted and meadow sections to be broken up to aid infiltration.

Root Protection: Area beneath Existing Trees: Cultivation to a depth of 400-450mm for shrub planting to be undertaken by hand using hand tools only to minimize root damage. If significant roots are encountered, these will be left undamaged and dug around; Where new topsoil is required, existing soil shall be removed by hand and backfilled with new topsoil by hand to existing levels.

Backfilling with Topsoil: Tree pits and Shrub beds shall be backfilled, in layers, with topsoil thoroughly mixed with planting organic compost and slow release fertilizer shall be used to plant all shrubs and hedges. All finished levels shall be 25mm above adjacent paving. The shrubs shall be shaken during backfilling to avoid air pockets and the soil must be firmed as the hole is filled.

Cultivation: Topsoil shall be cultivated to a minimum of 450mm deep on planting areas to a medium tilth, removing all rubbish, vegetation, perennial weeds, roots, stones over 50mm in any one dimension and raked to even levels.

PLANTING

Plant Stock and Timing: Plant material shall conform to BS 3936 Part 1: 1992, Part 2: 1990; Part 9: 1998; Part 10: 1990 and BS4043: 1989 and shall be protected at all times in transit to the site. The planting season shall be from 1st October to the 31st March. Planting shall not be carried out during periods of frost, drought, cold drying winds, or when the soil is waterlogged.
The planting shall be carried out in the first planting season following practical completion of the building and hard landscaping. Planting outside the planting season will require adequate watering to ensure establishment.

Planting: All trees, hedges & shrub planting shall be planted upright at the same depth as the nursery soil level and evenly spaced, leaving room for growth. Allow at least 300mm clearance between the rootball and the edge of the pit to facilitate staking/anchoring and to allow adequate amount of backfill around the root ball.

Trees in soft landscape (open public space) shall be staked and braced with a cross member. Immediately following planting, all plants shall be watered-in to field capacity. Irrigation pipes shall be included at the base of each individual tree and shall be 80mm flexible plastic perforated pipe of a suitable length to wrap around the full circumference of the rootball with a 'T' piece allowing sufficient pipe to extend just above the finished ground level with a plastic cap.

Mulching: Prior to the application of mulch, the planting areas shall be completely weed free and watered sufficiently to achieve field capacity. The surface of the planting areas shall be mulched with a layer of Organic Compost Mulch or Fine Composted Bark Mulch composted for 2-4 weeks with a particle size of 0-8mm, to a depth of 50mm, ensuring that the low branches of shrubs and herbaceous plants are not smothered. The mulch shall be topped-up to maintain, after settlement, a depth of not less than 50mm.

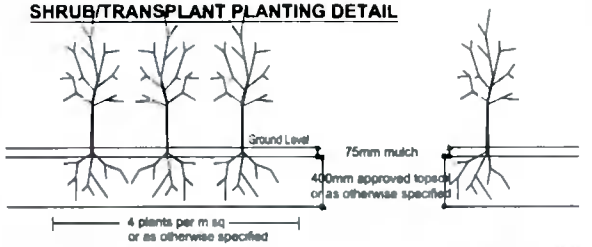
IMPLEMENTATION

All tree, shrub planting areas shall be carried out in the first planting season after all the building works and the hard landscaping areas have been set out and completed
-Deciduous trees and shrubs - Late October to late March
-Herbaceous plants: September/October and March/April
-Container grown plants: At any time if conditions are favorable
All construction works to be carried out to manufactures recommendations regarding climatic conditions and controls.

AFTER CARE PERIOD

Maintenance: The Aftercare Period shall extend for an 18 month period. During the Aftercare Period maintenance visits shall be carried out, at least monthly from April to September and twice during the dormant season to carry out the following operations to establish healthy growing plants in weed free areas. Maintenance operations shall include: watering, firming-up, pest and disease control, grass cutting, general pruning, weed control, top up mulch and autumn tidying. Replacement Planting. All plants, which have died, are missing or have failed to thrive, shall be noted and replaced with the same size and species as originally planted, in the following planting season.

SHRUB/TRANSPLANT PLANTING DETAIL

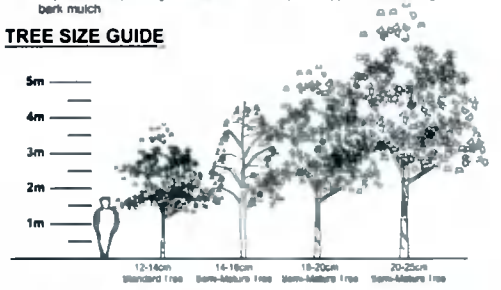


ELEVATION/SECTION SECTION

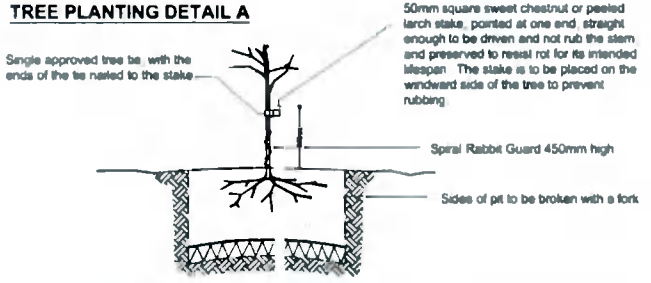
NOTES

1. All shrub planting beds to min. 300mm depth of quality approved topsoil to BS 3882 or as otherwise specified.
2. Break up the soil in the base of each pit.
3. Mix the dug soil with a slow release fertiliser and a specified soil ameliorant.
4. Planting is to be carried out to densities specified.
5. Once planted, back-fill with the remaining soil and firm as before.
6. Top dress the planting area with a 75mm depth of approved medium-grade bark mulch.

TREE SIZE GUIDE

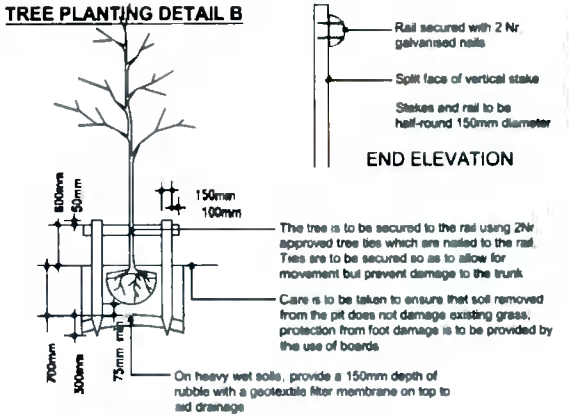


TREE PLANTING DETAIL A



1. The tree pit should be excavated to allow adequate clearance between the root ends (when fully spread) and the side of the pit. The depth of the pit should be a minimum of 700mm, and at least 75mm greater than the depth of the root system.
2. Fork the bottom and sides of the pit to break up the subsoil. Back-fill as shown to the level of the roots. Mix the dug soil with a slow release fertiliser and an approved soil ameliorant.
3. Prior to planting, prune back all damaged roots to healthy growth; soak the trees in water whilst waiting to be planted; dip all bare-rooted trees in an approved root dip. Drive in the stake so that it is a minimum of 300mm below the bottom of the pit, and 600mm above the ground level.
4. Plant the tree ensuring that the original depth is maintained and that the roots are spread to their fullest extent.
5. Carefully work the prepared backfill soil between the roots while shaking the tree slightly.
6. Backfill in layers up to the existing ground level, firming by treading, taking care not to damage the roots.
7. Fix the tree to the stake. Spread 75-100mm depth of medium-grade bark mulch over a minimum area of 1m diameter around the tree, and maintain until the spring following the first growing season.

TREE PLANTING DETAIL B



NOTES

1. The tree pit should be excavated to allow adequate clearance between the perimeter of the root-ball and the side of the pit.
2. The depth of the pit should be a minimum of 700mm and at least 100mm greater than the depth of the root-ball.
3. Fork the bottom and sides of the pit to break up the subsoil.
4. Mix the dug soil with a slow release fertiliser and an approved soil ameliorant.
5. Drive in the stakes so that they are a minimum of 300mm below the bottom of the pit and 650mm above ground level. The stakes and rail are to be sweet chestnut or peeled larch poles, pointed at one end, preserved to resist rot for their intended lifespan, and strong enough to take nails without splitting.
6. Plant the tree, ensuring that the original depth is maintained and the soil is carefully firmed back up to the existing ground level.
7. Secure the rail to the stakes with 2 No. galvanised nails per stake.
8. Secure the tree to the rail as described in the notes above.
9. Spread 75mm depth of medium-grade mulch over an area of 1m diameter around the tree, and maintain it until the spring following the first growing season.
10. Protect the tree base from damage by using a tree guard.
11. The stakes and rail are to be removed as soon as the tree is anchored securely by its own roots (at the start of the third growing season after planting).

landscape design services

LANDSCAPE ARCHITECTS & CONSULTANTS

Figure 8. *General specification notes and planting details*

Ecological Assessment Methodology

Desk Study

A desk study was undertaken to gather and assess ecological data prior to undertaking fieldwork elements. Sources of datasets and information included:

- The National Parks and Wildlife Service
- National Biological Data Centre
- Satellite, aerial and 6" map imagery
- ESRI (QGIS)

A provisional desk-based assessment of the potential species and habitats of conservation importance was carried out in July 2021. Altemar assessed the project, the proposed construction methodology and the operation of the proposed development. It was determined that, given the scale of the proposed development and the minimum distance to the nearest designated conservation site (2km to Wicklow Mountains SPA), the proposed development had little to no potential to impact beyond the site outline and into the surrounding environment.

The proposed development site is proximate to two watercourses. There is a watercourse located 30m to the West of the site, identified as Jamestown within the EPA WFD Maps. The Owenadoher is located 130m to the East of the site. The Jamestown watercourse outfalls to the Owenadoher, which in turn outfalls to the Dodder River, then the River Liffey, and ultimately outfalls to the marine environment at Dublin Bay. Given the topography of the subject site, and given that the subject site is bordered by hedgerows and fencing and the proposed development primarily slope towards the road and eastern portion of the site, it is considered that surface water runoff will not outfall to either watercourse. Foul wastewater will be directed to a tank that is to be constructed on-site in the absence of mitigation.

Spatial Scope and Zone of Influence

As outlined in CIEEM (2018) '*The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries.*' In line with best practice guidance an initial zone of influence be set at a radius of 2km for non-linear projects (IEA, 1995).

In the absence of mitigation and the small and localised scale of the proposed development, there is little potential for light, noise, and surface water runoff impacts. It is considered that the impacts of the proposed works in the absence of mitigation, would not extend beyond the site outline, with the exception of potential for soil on adjacent roads during excavation, mammal and avian activity where the proposed site may form part of a larger territorial of foraging range. The project would also involve clearance of the hedgerow, excavations and construction, which may impact beyond the site through noise, surface water, dust and light impacts. Standard construction phase controls need to be implemented to limit the potential impact of the proposed development into the surrounding environment. The ZOI of the operation of the proposed development would be the immediate area of the proposed development site.

Field Survey

Field survey of the proposed development site at Cherrywood was carried out by Altemar Ltd. on the 18th August 2021. The purpose of the field surveys was to identify species and habitats in the vicinity of the proposed project. A bat survey (emergent and detector) was also carried out and assessed the site for roosting potential. At dusk a bat detector survey was carried out onsite using a Batbox Duet heterodyne/frequency division detector to determine bat activity. Bats if present were identified by their ultrasonic calls coupled with behavioural and flight observations.

Surveys were carried out having regard to the following guidelines:

- Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016);
- Bat Mitigation Guidelines for Ireland (NPWS, 2006); and,
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (NRA, 2006).

Survey Limitations

The surveys covered appropriate seasons for flora and bat assessments. The survey was outside the optimal time of year for terrestrial mammal assessments. The site consisted primarily of open ground, is fenced securely and

there was no evidence of mammal activity on site. All areas of the site were accessible and there are no limitations seen in relation to the surveys.

Impact Assessment Significance Criteria

This section of the EcIA examines the potential causes of impact that could result in likely significant effects to the species and habitats that occur within the ZOI of the proposed development. These impacts could arise during either the construction or operational phases of the proposed development. The following terms are derived from EPA EIAR Guidance and are used in the assessment to describe the predicted and potential residual impacts on the ecology by the construction and operation of the proposed development.

Magnitude of impact and typical descriptions

Magnitude of impact (change)		Typical description
High	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Medium	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Low	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring
Negligible	Adverse	Very minor loss or alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.

Criteria for Establishing Receptor Sensitivity/Importance

Importance	Ecological Valuation
International	Sites, habitats or species protected under international legislation e.g. Habitats and Species Directive. These include, amongst others: SACs, SPAs, Ramsar sites, Biosphere Reserves, including sites proposed for designation, plus undesignated sites that support populations of internationally important species.
National	Sites, habitats or species protected under national legislation e.g. Wildlife Act 1976 and amendments. Sites include designated and proposed NHAs, Statutory Nature Reserves, National Parks, plus areas supporting resident or regularly occurring populations of species of national importance (e.g. 1% national population) protected under the Wildlife Acts, and rare (Red Data List) species.
Regional	Sites, habitats or species which may have regional importance, but which are not protected under legislation (although Local Plans may specifically identify them) e.g. viable areas or populations of Regional Biodiversity Action Plan habitats or species.
Local/County	Areas supporting resident or regularly occurring populations of protected and red data listed-species of county importance (e.g. 1% of county population), Areas containing Annex I habitats not of international/national importance, County important populations of species or habitats identified in county plans, Areas of special amenity or subject to tree protection constraints.
Local	Areas supporting resident or regularly occurring populations of protected and red data listed-species of local importance (e.g. 1% of local population), Undesignated sites or features which enhance or enrich the local area, sites containing viable area or populations of local Biodiversity Plan habitats or species, local Red Data List species etc.
Site	Very low importance and rarity. Ecological feature of no significant value beyond the site boundary

Quality of Potential Impacts on Biodiversity

	Impact Description
Negative /Adverse Impact	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Neutral Impact	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Positive Impact	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).

Significance of Impacts

Significance of Impact	Description of Potential Impact
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An impact which obliterates sensitive characteristics.

Duration of Impact

Duration of Impact	Description
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting less than a year
Short-term	Effects lasting one to seven years.
Medium-term	Effects lasting seven to fifteen years.
Long-term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Extent of Effects	Description
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.

Results

Proximity to Designated Conservation Sites

Designated conservation sites (National and international) within 15km of the proposed development are seen in Figures (9-12) and Tables 4 & 5. It should be noted that the proposed development site is not within a designated conservation area. The closest Natura 2000 sites are Wicklow Mountains SAC and Wicklow Mountains SPA, located 2.1km and 2km respectively from the proposed development site. There are no designated Natural Heritage Areas (NHA) within a 15km radius. The nearest Proposed NHA (Dodder Valley pNHA) is located 3.9 km from the site (Figure 11). The closest RAMSAR Site is Sandymount Strand/Tolka Estuary at 9.3 km (Figure 12). There is no direct hydrological pathway to designated conservation sites. Watercourses and designated conservation sites within 15km of the subject site are demonstrated in Figures 13-18.

Table 1. Natura 2000 sites within 15km of the proposed site

Site Code	NATURA 2000 Site	Distance
Special Areas of Conservation		
IE002122	Wicklow Mountains SAC	2.1 km
IE001209	Glenasmole Valley SAC	3.9 km
IE001209	Knocksink Wood SAC	7.6 km
IE000210	South Dublin Bay SAC	9.2 km
IE000713	Ballyman Glen SAC	10.5 km
IE000206	North Dublin Bay SAC	14 km
IE003000	Rockabill to Dalkey Island SAC	14.1 km
Special Protection Area		
IE004040	Wicklow Mountains SPA	2 km
IE004024	South Dublin Bay and River Tolka Estuary SPA	9.1 km
IE004172	Dalkey Islands SPA	14 km
IE004006	North Bull Island SPA	14.1 km
IE004063	Poulaphouca Reservoir SPA	14.6 km

Table 2. (proposed) NHAs within 15km of the proposed development site

Status	Site Name	Distance
Ramsar	Sandymount Strand/Tolka Estuary	9.3 km
Ramsar	North Bull Island	14.1 km
Proposed NHA	Dodder Valley	3.9 km
Proposed NHA	Glenasmole Valley	3.9 km
Proposed NHA	Fitzsimons Wood	4.5 km
Proposed NHA	Lugmore Glen	6.9 km
Proposed NHA	Ballybetagh Bog	7.3 km
Proposed NHA	Knocksink Wood	7.6 km
Proposed NHA	Glencree Valley	7.7 km
Proposed NHA	Dingle Glen	8.2 km
Proposed NHA	Grand Canal	8.2 km
Proposed NHA	Booterstown March	9.1 km
Proposed NHA	South Dublin Bay	9.3 km
Proposed NHA	Slade of Saggart and Crooksling Glen	9.4 km
Proposed NHA	Powerscourt Woodland	9.9 km
Proposed NHA	Ballyman Glen	10.4 km
Proposed NHA	Royal Canal	10.9 km
Proposed NHA	Loughlinstown Woods	11.2 km
Proposed NHA	Liffey Valley	11.2 km
Proposed NHA	Dalkey Coastal Zone and Killiney Hill	11.8 km
Proposed NHA	Dolphins, Dublin Docks	11.8 km
Proposed NHA	North Dublin Bay	12.3 km
Proposed NHA	Dargle River Valley	12.4 km
Proposed NHA	Great Sugar Loaf	13 km
Proposed NHA	Powerscourt Waterfall	13.1 km
Proposed NHA	Poulaphouca Reservoir	14.6 km

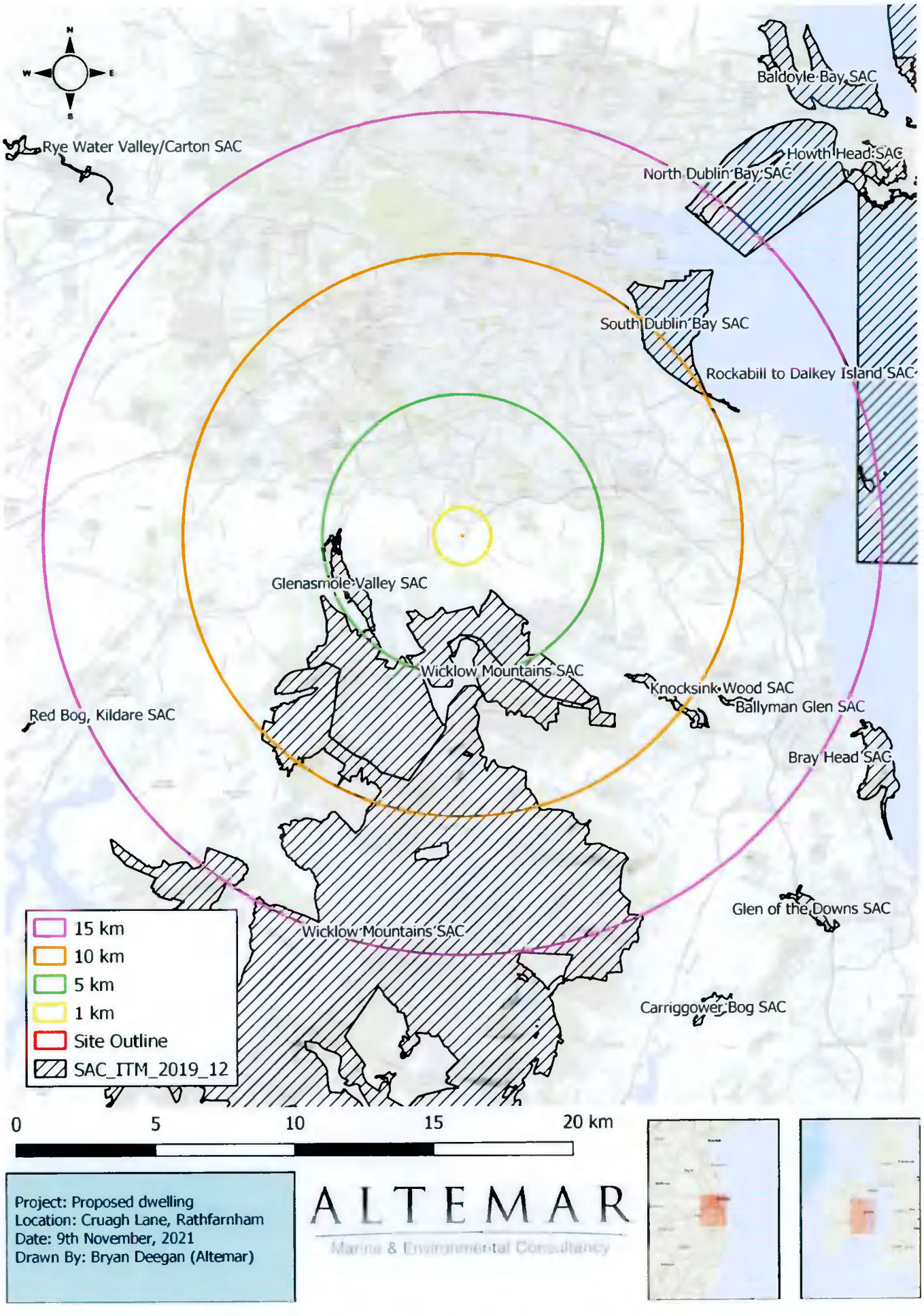


Figure 9. *Special Areas of Conservation (SAC) within 15km of proposed development*

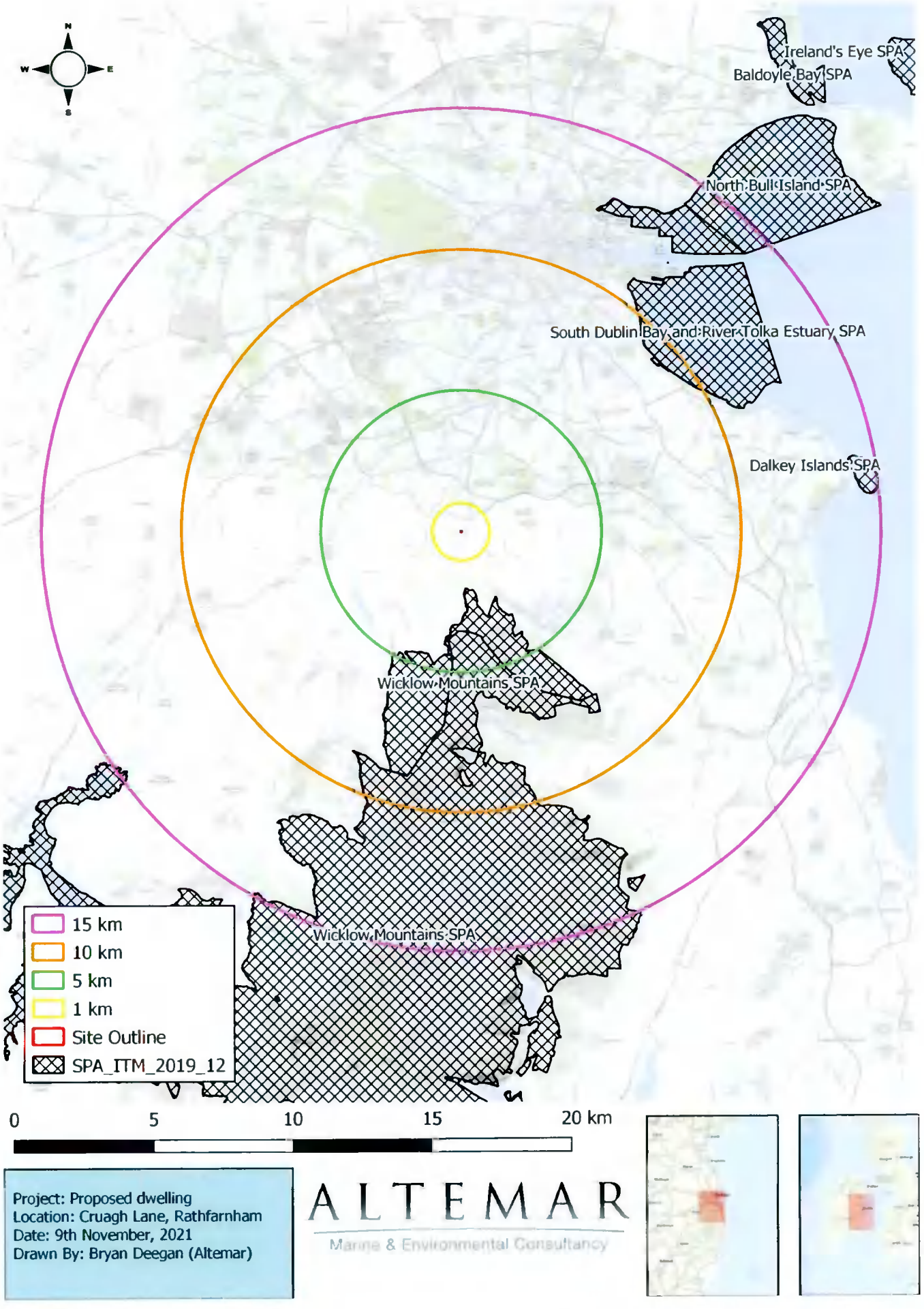


Figure 10. *Special Protection Areas (SPA) within 15km of proposed development*

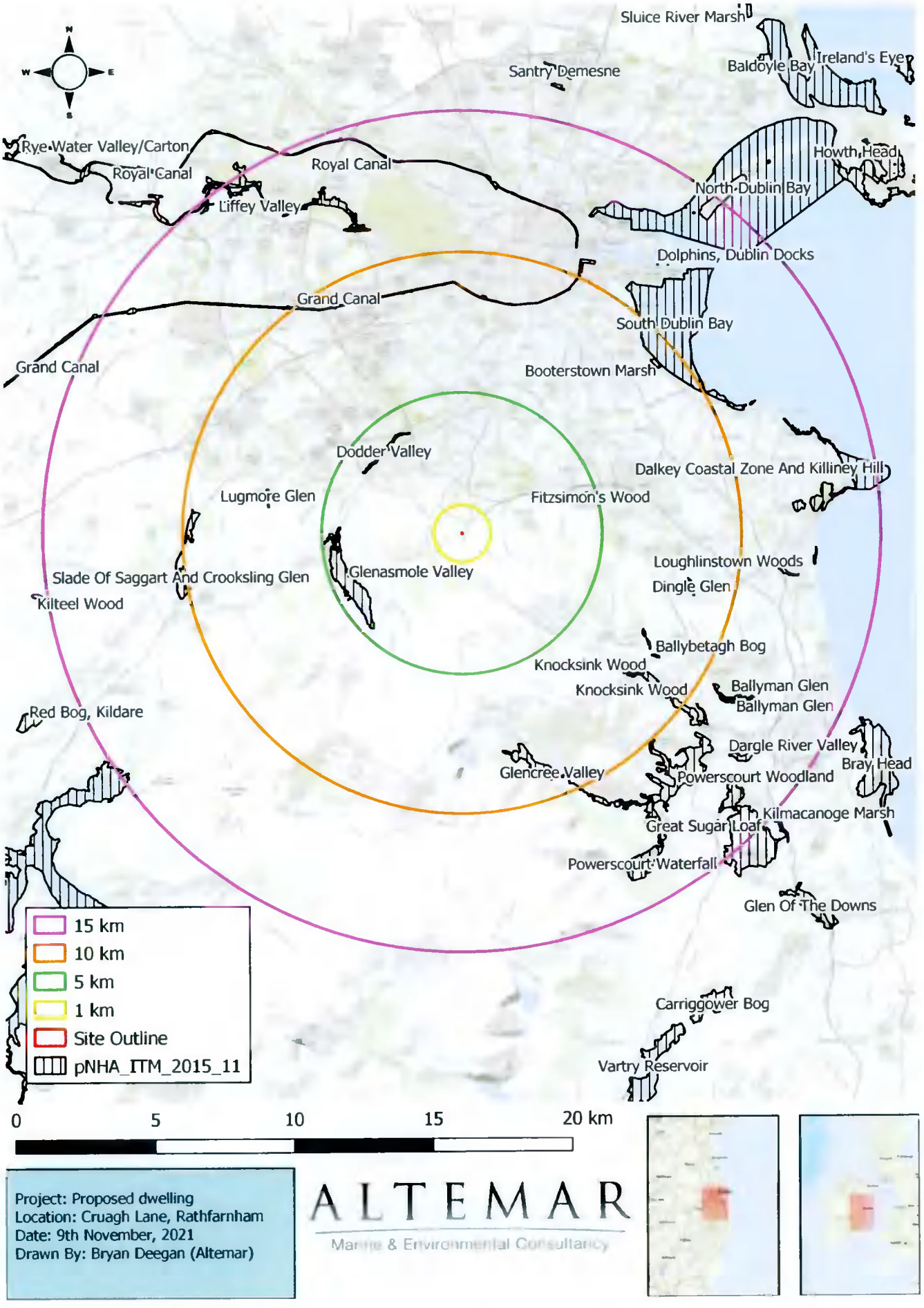


Figure 11. *Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA) within 15km of proposed development*

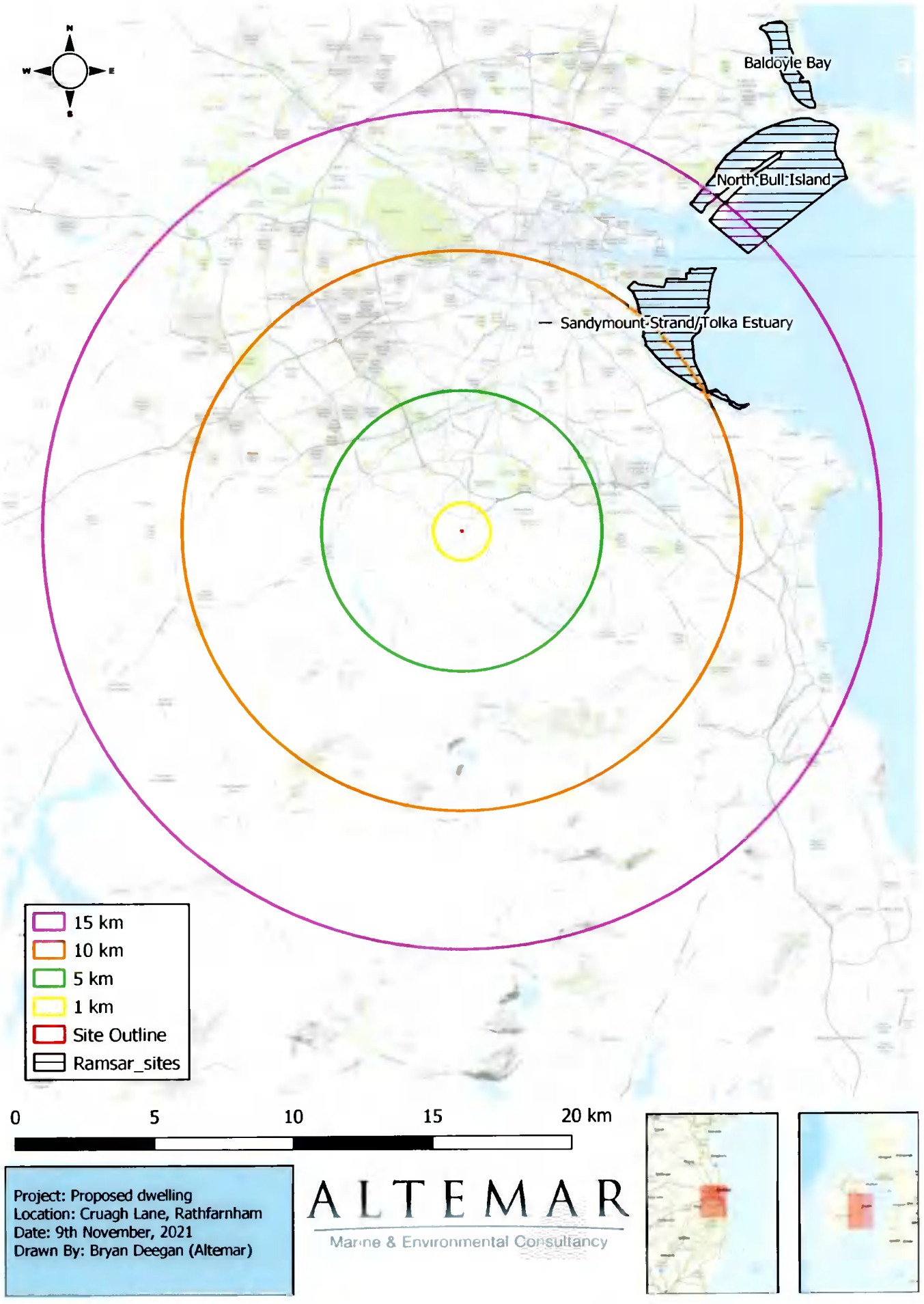


Figure 12. *Ramsar sites within 15km of proposed development*

Figure 13. *Watercourses within close proximity to the subject site*

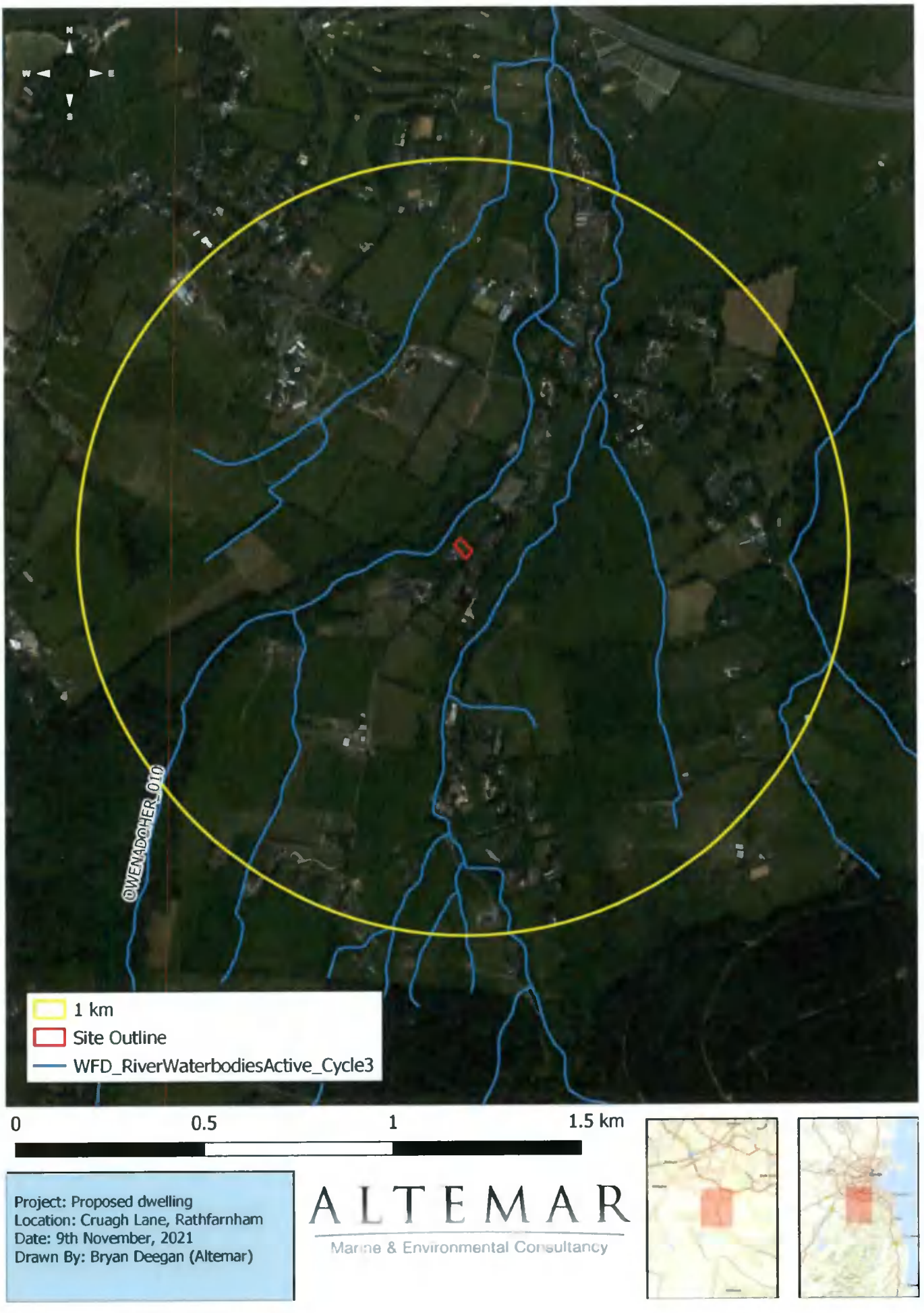


Figure 14. *Watercourses within 1km of the subject site*

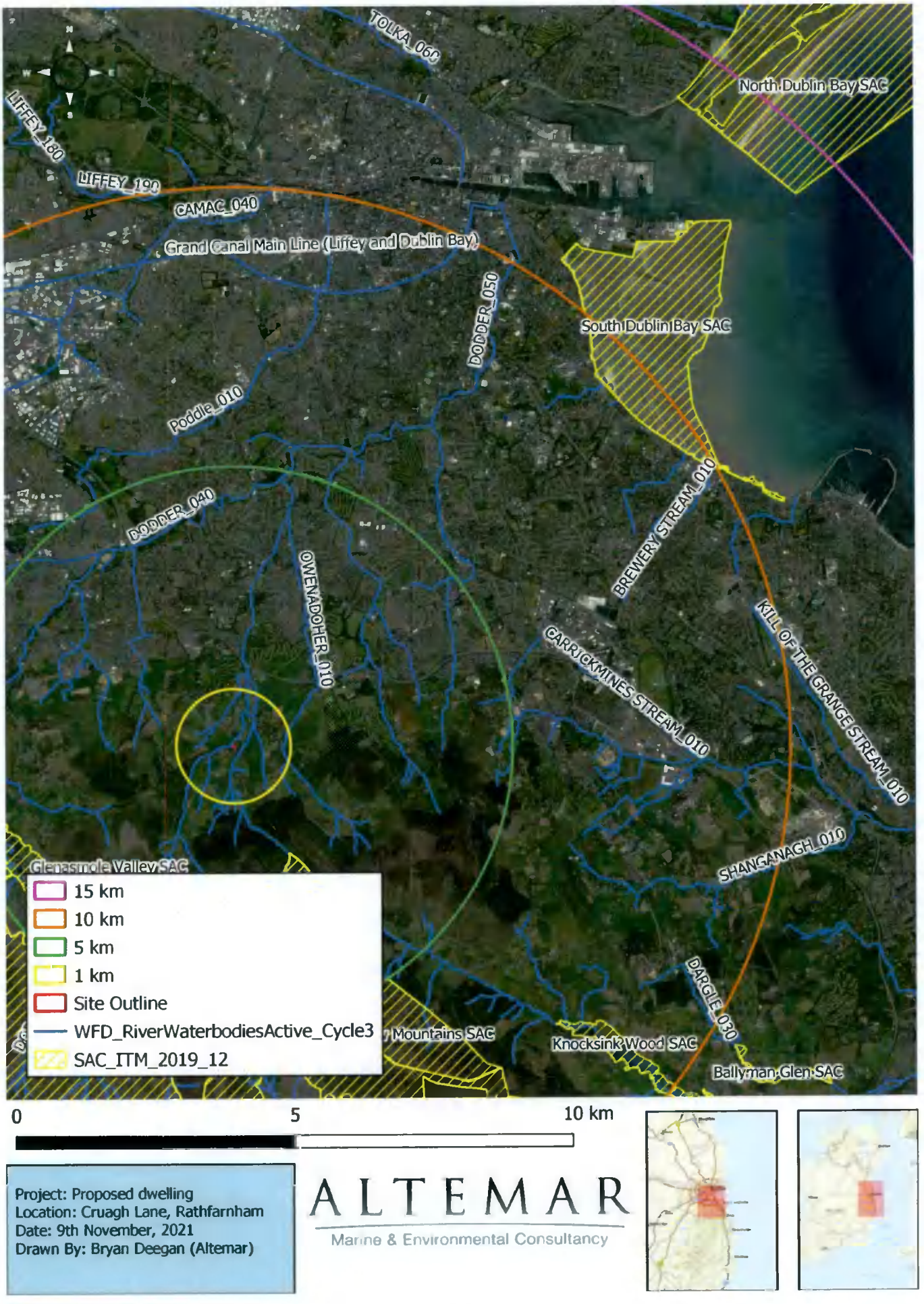


Figure 15. *Watercourses and SACs within 15km of the subject site*

Project: Proposed dwelling
Location: Cruagh Lane, Rathfarnham
Date: 9th November, 2021
Drawn By: Bryan Deegan (Altemar)

ALTEMAR
Marine & Environmental Consultancy

Figure 16. *Watercourses and SPAs within 15km of the subject site*

Figure 17. *Watercourses and pNHAs within 15km of the subject site*

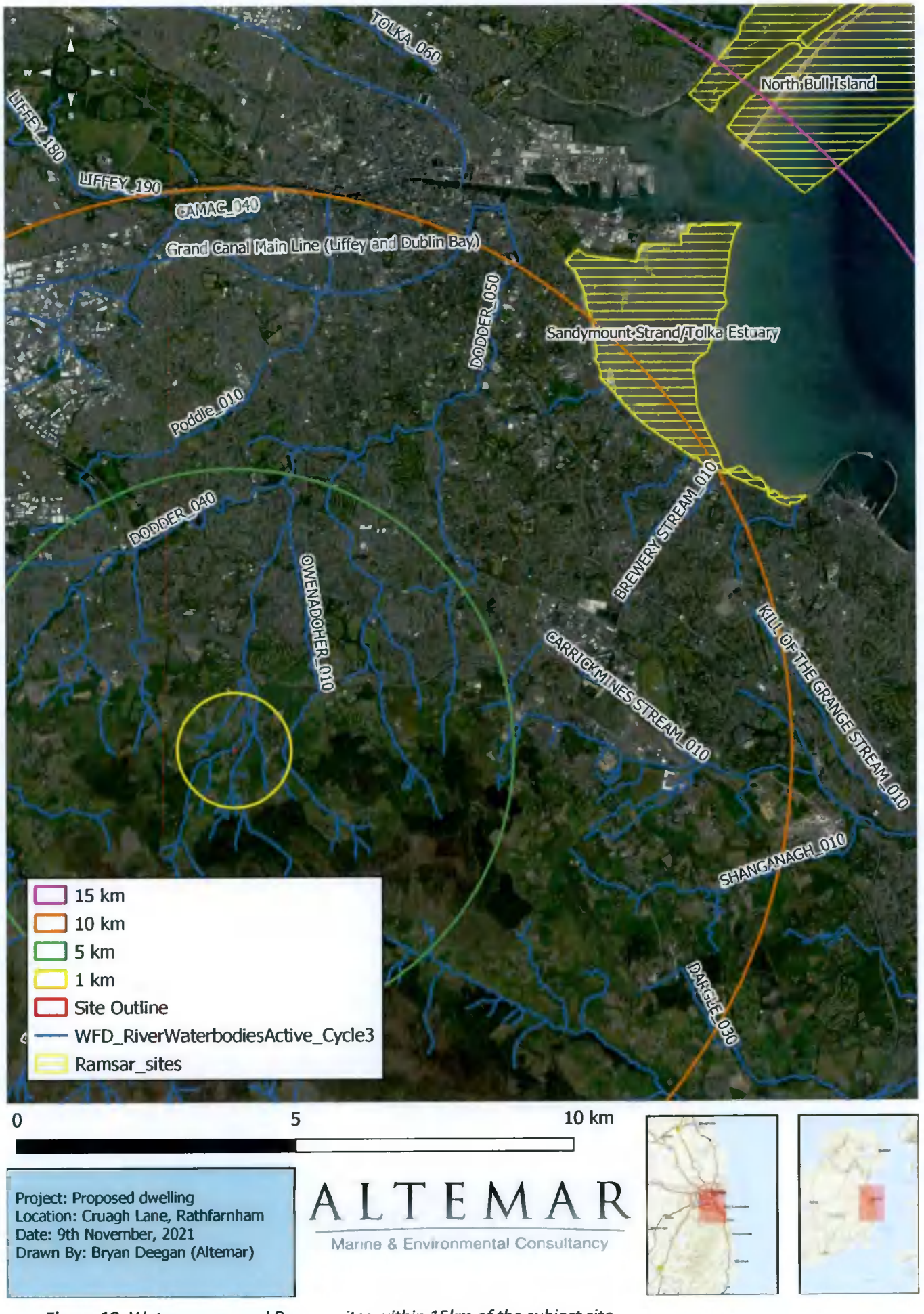


Figure 18. *Watercourses and Ramsar sites within 15km of the subject site*

Historic Records of Biodiversity

The National Biodiversity Data Centre's online viewer was consulted in order to determine the extent of biodiversity and/or species of interest in the area. First, an assessment of the site specific area was carried out and it recorded no species of interest in the site area. Following this a 2km^2 grid (O12H) was assessed. Table provides a list of all species recorded in both grid areas that possess a specific designation, such as Invasive Species or Protected Species. An assessment of files received from the NPWS (Code No. 2020_185) which contain records of rare and protected species and grid references for sightings of these species was carried out as part of this EcIA. There are no recorded sightings within the site itself, however there are some records for grids that are in close proximity to the subject site. The following table provides a summary of the species identified, the year of identification, survey name and Grid Reference.

Sample ID	Species	Survey Name	Year
5199	Sika Deer (*cervus nippon*)	Deer data Coillte	2004
16102	Otter (*Lutra lutra*)	Otter NPWS data	2004
3814	Common Frog (*Rana temporaria*)	Frog IPCC data	2003
6357	Badger (*Meles meles*)	Hare Survey of Ireland 2006/2007: Non-hare Records	2007
12426	Irish Stoat (*Mustela erminea subsq. hibernica*)	Mustela erminea subsq. hibernica Records	1967

Table 3. Recorded species, associated designations and grid references

Date of Record	Species Name	Designation
27/02/2018	Common Frog (*Rana temporaria*)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
31/12/2011	Common Kestrel (*Falco tinnunculus*)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/07/1991	Common Kingfisher (Alcedo atthis)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/07/1991	Common Linnet (*Carduelis cannabina*)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/07/1991	Common Swift (*Apus apus*)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/07/1991	House Sparrow (*Passer domesticus*)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/07/1991	Sand Martin (Riparia riparia)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
02/11/2017	Himalayan Honeysuckle (Leycesteria formosa)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
31/12/2008	Eurasian Badger (Meles meles)	Protected Species: Wildlife Acts
15/06/2020	West European Hedgehog (Erinaceus europaeus)	Protected Species: Wildlife Acts

Review of local bat records

The review of existing bat records (sourced from Bat Conservation Ireland's National Bat Records Database) within a 2km^2 grid (Reference grid O12H) encompassing the study area reveals that none of the nine known Irish species have been observed locally. The National Biodiversity Data Centre's online viewer was consulted in order to determine whether there have been recorded bat sightings in the wider area. This is visually represented in Figures 20-23. The following species were noted in the wider area: Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Natterer's Bat (*Myotis nattereri*), Whiskered Bat (*Myotis mystacinus*), Nathusius's

Pipistrelle (*Pipistrellus nathusii*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), and Pipistrelle (*Pipistrellus pipstrellus sensu* lato) (Figures 20-23).

Figure 20. Brown Long-eared Bat (*Plecotus auritus*) (yellow) and Daubenton's Bat (*Myotis daubentonii*) (purple) (Source NBDC) (Site – red circle)

Figure 21. Natterer's Bat (*Myotis nattereri*) (purple) and Whiskered Bat (*Myotis mystacinus*) (yellow)(Source NBDC) (Site – red circle)

Figure 22. Nathusius's Pipistrelle (*Pipistrellus nathusii*) (purple) (Source NBDC) (Site – red circle)

Figure 23. Pipistrelle (*Pipistrellus pipistrellus sensu lato*) (purple) (Species aggregate), Soprano Pipistrelle (*Pipistrellus pygmaeus*) (yellow), and both Pipistrelle and Soprano Pipistrelle (orange) (Source NBDC) (Site – red circle)

Specifically, NBDC records show sightings of bat species in locations that are in close proximity to the subject site:

1. Brown Long-eared Bat (*Plecotus auritus*) in grid reference O1424. Recorded on 02/09/2009 and approximately 650m East of the subject site.
2. Natterer's Bat (*Myotis nattereri*) in grid reference O1424. Recorded on 02/09/2009 and approximately 650m East of the subject site.
3. Soprano Pipistrelle (*Pipistrellus pygmaeus*) in grid reference O1424. Recorded on 02/09/2009 and approximately 650m East of the subject site.
4. Pipistrelle (*Pipistrellus pipistrellus sensu lato*) in grid reference O1424. Recorded on 02/09/2009 and approximately 650m East of the subject site.
5. Soprano Pipistrelle (*Pipistrellus pygmaeus*) in grid reference O148241. Recorded on 18/09/2008 and approximately 650m East of the subject site.

Habitats and Species

GA2-Amenity Grassland

As can be seen from figure 2 the vast majority of the proposed development site consists of an area of an existing garden with amenity grassland. This area is fastidiously mown and has a low sward. Species within the amenity grassland included, creeping buttercup (*Ranunculus repens*), dandelion (*Taraxacum spp.*), docks (*Rumex spp.*), daisy (*Bellis perennis*), clover (*Trifolium repens*), plantains (*Plantago spp.*) and thistles (*Cirsium vulgare*). No flora or fauna of conservation importance were noted in these areas.

WL1-Hedgerow

A hedgerow is located on the eastern boundary within the redline. It is proposed to make the driveway through this hedgerow and reinstate the existing stone wall. This hedgerow at the location of the proposed driveway entrance was on steep sloped ground, quite scrubby and not a formal dense hedgerow. Species in the hedgerow included bramble (*Rubus fruticosus agg.*), cow parsley (*Anthriscus sylvestris*), daisy (*Bellis perennis*), thistles (*Cirsium arvense & C. vulgare*), holly (Ilex aquifolium) and a ground cover of ivy (*Hedera helix*). The proposed driveway location is in an area where the hedgerow is quite thin and transparent. However, it would result in the loss of one large holly tree. It is recommended that compensatory planting is provided for this tree as it is of both nesting and foraging importance for garden birds.

Bats

A bat survey was carried out. There are no buildings or trees of bat roosting potential on site. Trees in the vicinity of the proposed driveway entrance do not have features of bat roosting potential. Bat activity was moderate on site with three species foraging in the proposed development area i.e. (Leisler's bat (*Nyctalus leisleri*), common pipistrelle (*Pipistrellus pipistrellus*) & soprano pipistrelle (*Pipistrellus pygmaeus*)) (Figure 19). No trees of bat roosting potential would be removed for the proposed development.

Birds

The bird species noted on site are seen in Table 6. The species noted on site are traditional garden birds with no species of conservation importance were noted on site.

Table 4. Natura 2000 sites within 15km of the proposed site

Common Name	*Scientific Name*
Woodpigeon	*Columba palumbus*
Wren	*Troglodytes troglodytes*
Robin	*Erithacus rubecula*
Blackbird	*Turdus merula*
Blue tit	*Parus caeruleus*
Starling	*Sturnus vulgaris*
Great tit	*Parus major*
Song Thrush	*Turdus philomelos*

Figure 19. Bat foraging on site (Leisler's bat (yellow), Common pipistrelle (orange) & Soprano pipistrelle (blue)). No trees of bat roosting potential located in the vicinity of the proposed development.

Evaluation of Habitats
No rare or protected habitats were noted.

Plant Species
The plant species encountered at the various locations on site are detailed above. No protected species were noted. Records of rare and threatened species from NPWS were examined. No rare or threatened plant species were recorded in the vicinity of the proposed site.

Mammals
No signs of mammals were noted on site. Hedgehogs have been recorded by NBDC within the 2km of the subject site. No hedgehogs were seen during the site visit. No mammal burrows were located in the hedgerow.

Amphibians
The common frog (*Rana temporaria*) or newts (*Triturus vulgaris*) were not observed on site. Frogs have been recorded by the NBDC within the 2km square grid, but not at finer resolution.

Predicted and residual impact of the proposal

Potential Impacts

This report has been prepared to outline the proposed project, in addition to detailing the potential impacts on sensitive receptors within the Zone of Influence (ZOI). No terrestrial fauna species or avian species are noted in the vicinity of the proposed project. There is no evidence of a current or past bat roost in the trees proximate to the site, therefore no negative impacts on roosts these animals are expected to result from the proposed redevelopment.

Construction Impacts

The construction of the proposed development, would potentially impact on the existing ecology of the site and the surrounding area. These potential construction impacts would include impacts that may arise during the site clearance, re-profiling of the site and the building of the house.

Works have the potential to lead to silt laden and contaminated runoff entering on to the road. The proposed development is not within a designated conservation site and there are no Natura 2000 sites with a hydrological pathway. There are no qualifying interests of conservation sites that would migrate through or be seen on this proposed development site.

Terrestrial Ecology. During the site visits no protected flora or terrestrial mammal species of were recorded on site or in NPWS or NBDC records.

Common mammalian species. Loss of habitat and habitat fragmentation may affect some common mammalian species and there is expected to be mortality during construction. No protected mammals were noted on site.

Amphibians and reptiles. Frogs and reptiles were not observed on site.

Bat Fauna. There are no features on site that could form a bat roost. Therefore, no significant negative impacts on the roosting of these animals are expected to result from the proposed development. Foraging activity could be impacted if lighting is directed towards the hedgerow on site.

Birds. If hedgerow clearance is carried out during bird nesting season there is potential to injure or kill garden birds.

Designated Conservation sites. No significant impacts on designated sites are likely during operation.

Operational Impacts

Once constructed all onsite drainage will be connected to separate foul and surface water systems. Surface water runoff will drain to on site systems. The biodiversity value of the site would be expected to improve as the landscaping matures. It would be expected that the ecological impacts in the long term would be positive once landscaping has established. Onsite lighting could potentially impact on bat foraging on site.

Designated Conservation sites. No significant impacts on designated sites are likely during operation.

Terrestrial Ecology. As the landscaping elements improve with maturity it would be expected that the biodiversity value of the site to birds and flora would also increase.

Birds. The landscape strategy has been developed in consultation with Altemar to enhance the biodiversity of the site. This is particularly important for bird species where native trees and plants have been selected to encourage foraging of insects and plants on site.

Mitigation Measures & Monitoring

Standard construction and operational controls will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the Zone of Influence (ZoI).

Designated Conservation sites. No mitigation is required for the protection of designated sites.

Biodiversity

- Local silt traps during enabling works near the site entrance.
- Stockpiling of loose materials will be kept at least 10m away the hedgerow to prevent runoff
- Dewatering of excavations may be necessary. Appropriate monitoring of groundwater levels during site works will be undertaken. Standard construction phase filtering of surface water for suspended solids will be carried out. Unfiltered surface water discharges or runoff are not permitted from the site.
- The project will maintain a 3m vegetated strip and vehicle exclusion zone between the works and the hedgerow.
- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent. This would include nesting gulls on buildings if present.
- Works should commence out of bird nesting season and the areas where works are not proposed should be fenced off and no works carried outside the proposed redline.
- Additional nesting resources for birds by providing specific nest boxes (5) for a range of garden bird species that would be placed in strategic locations on site proximate to appropriate habitat for that bird species.
- The landscape strategy has been prepared in consultation with Altemar to provide significant nesting and foraging resources for birds and insects and should be followed.
- As discussed with the architect during the project design, bats on site would be sensitive to light spill. As a result a low impact lighting strategy has been developed. All lighting will comply with Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers December 2010[1]

[1] https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIrelandGuidelines_Lighting.pdf

Adverse Effects likely to occur from the project (post mitigation)

With the successful implementation of standard mitigation measures to limit impacts on the surface water runoff and biodiversity, no significant impacts are foreseen in the medium to long term. In the short term there will be low adverse not significant impacts on biodiversity of the site, but these impacts are minor in nature and would be offset by the mitigation proposed. Residual impacts of the proposed project will be localised to the immediate vicinity of the proposed development.

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on biodiversity through the application the standard construction and operational phase controls as outlined above.

Residual Impacts and Conclusion

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on the sensitive receptors through the application the standard construction and operational phase controls. The overall impact on the ecology of the proposed development will result in a long term neutral residual impact on the ecology of the area and locality overall.

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