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Conclusion

Overall, the proposed development is expected to result in a net positive impact on population and human health once operational, principally in that it will deliver a high volume of high-quality housing in the context of an ongoing housing crisis, in a manner that is consistent with national and regional level policy. Notwithstanding the proposal's positive impacts, in the absence of mitigation, the following likely, significant, negative effects on population and human health have also been predicted to occur as a result of the operational phase of the proposed development:

- A negative, localised, long-term and significant impact on on-site residents due to potential improper storage, management and disposal of solid waste.

Mitigation

Where relevant, mitigation measures to address the potential impacts of noise, air traffic etc. on people are included in the appropriate chapters of this EIAR. No likely significant impacts have been identified for population, or land use, accordingly no mitigation measures are required for the Operational Phase.

The proposed development has been designed to avoid significant impacts in relation to local amenities and recreational facilities by:

- Incorporating the provision of a new childcare facility within the design proposal;
- The provision of 73,754.8sq.m (c.7.37 hectares) of public open space which equates to c. 36% of the site area;
- Providing new pedestrian and cyclist links to local amenities and facilities,
- Providing a new east-west road connecting Oldcourt Road to Bohernabreena Road.

Accordingly, no further mitigation measures are required.

Monitoring

No additional monitoring is proposed for the Operational Phase other than that proposed in other Chapters of this EIAR.

Reinstatement

It is not considered that reinstatement works are required during the Operational Phase.

4.7. Predicted Impacts

The predicted impacts on human health below are compiled from the relevant chapters of this EIAR.

4.7.1 Human Health - Land, Soil and Geology

It is stated in Chapter 6 'Land, Soils & Geology' of this EIAR, prepared by Pinnacle Consulting Engineers, that predicted impacts on human health from soils and the geological environment can occur during construction, i.e. dust generation occurring during extended dry weather periods as a result of construction



traffic. However, with the implementation of mitigation measures, the likelihood of such events occurring would be local and not significant.

4.7.1.1 Construction Phase

This section found that there would be a loss of agricultural lands due to the proposed development. It is noted that this area is zoned for residential development and that there are other agricultural lands in the surrounding area. This assessment identified no likely significant impacts to human health during the construction phase in terms of land, soils and geology due to the mitigation measures proposed. As such the predicted impact is considered to be short-term, imperceptible with a neutral impact on quality.

4.7.1.2 Operational Phase

This assessment concluded that there are no likely significant impacts to human health during the operational phase in terms of land, soils and geology. As such the impact is considered to be long term, imperceptible with a neutral impact on quality.

4.7.1.3 Cumulative Impact

Section 6.7.1 of this EIAR assesses cumulative impacts in respect of Land, Soils and Geology. This assessment found that there will a potential risk to human health due to the associated works during construction is the direct contact, ingestion, or inhalation of receptors (i.e., construction workers) with any soils which may potentially contain low level hydrocarbon concentrations from site activities (potential minor leaks, oils, and paint).

No human health risks associated with long term exposure to contaminants (via direct contact, ingestion, or inhalation) resulting from the proposed development are anticipated, as the construction stage will be temporary (short-term).

4.7.2. Human Health - Water

This section has been informed by Chapter 7 'Water' prepared by Pinnacle Consulting Engineers.

4.7.2.1 Construction Phase

Due to the mitigation measures proposed and the fact that the water in the surrounding area is not used as a potable water supply, the impacts to human health during the construction phase are not considered to be significant.

4.7.2.2 Operational Phase

During the operational phase, the surface water drainage network has been designed in accordance with the CIRIA SUDS Manual and the Greater Dublin Strategic Drainage Scheme. The appropriate interception mechanisms and treatment train process has been incorporated into the design. A detailed SUDS maintenance manual has been provided under a separate cover.

Surface water outflow will be restricted to or below the equivalent greenfield runoff rate from the proposed detention basin as per the drainage design, in accordance with South Dublin County Council requirements.

Sustainable urban drainage measures, including permeable paving, swales, and rain gardens will be provided to improve water quality.



A petrol interceptor will be installed to prevent hydrocarbons entering the local drainage system at the outfall.

A maintenance regime for the SuDS features will be incorporated to the Operation and Maintenance manual for the development. Surface SuDS features can typically be maintained as part of the regular maintenance of the landscape, incorporating litter picking, grass cutting, and inspections.

All private outfall manholes will be built in accordance with the Greater Dublin Regional Code of Practice for Drainage Works. No private drainage will be located within public areas.

Drains will be laid in accordance with the requirements of the Building Regulations, Technical Guidance Document H.

All SuDS and surface water drainage networks proposed in the public domain will be constructed to the standards required for Taking in Charge.

Water metering via district meters will be installed to Uisce Éireann requirements. Monitoring of the telemetry data will indicate any excessive water usage which may indicate the potential for a leak in the watermain network. Early identification of potential leaks will lead a faster response in determining the exact location of leaks and completion of remedial works.

It is not envisaged that any further remedial or reductive measures will be necessary upon completion.

4.7.2.3 Cumulative Impact

There are no anticipated construction stage cumulative impacts arising from the proposed development, or any further development in the locality in relation to water, other than a neutral, imperceptible, and temporary increase in water supply demand and increase to foul flows generated.

There are no anticipated cumulative impacts arising from the proposed development, or any further development in the locality in relation to water, other than a neutral, imperceptible, and permanent increased water supply demand and increase to foul flows generated.

This is based on the current EIAR assessment of the masterplan lands as a whole rather than just the subject application site. Mitigation measures noted throughout this report apply to the full masterplan lands and their subsequent planning application and not just the subject application.

There is a risk to Human Health should the ground water or the existing water supply become contaminated during the construction or operational stages, and the water is consumed. In order to mitigate these risks, the measures outlined previously will be adopted.

4.7.3 Human Health - Air Quality

This section has been informed by Chapter 8 'Air Quality' prepared by AWN Consulting, which states that Dust emissions from the construction phase of the proposed development have the potential to affect human health through the release of PM₁₀ and PM_{2.5} emissions. The surrounding area is of low sensitivity to dust related human health impacts. It was determined that there is an overall low risk of dust related human health effects as a result of the construction phase of the proposed development.

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed



development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the effect of construction of the proposed development is likely to be **direct, short-term, negative** and **not significant** with respect to human health which is overall **not significant** in EIA terms.

Traffic related air emissions have the potential to affect air quality which can affect human health. As the operational phase air dispersion modelling has shown that emissions of air pollutants are significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are **direct, long-term, negative** and **not significant** which is overall **not significant** in EIA terms.

4.7.3.1 Construction Phase

An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a low risk of dust-related human health impacts during the construction phase of the proposed development. Best practice mitigation measures will be implemented during the construction phase to ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is direct, short-term, negative, localised and not significant with respect to Population and Human Health during the construction phase.

4.7.3.2 Operational Phase

Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the proposed development will not cause a significant change in air pollutant emissions in the locality. It has been assessed that emissions will be in compliance with the ambient air quality standards which are set for the protection of human health. Impacts will be long-term, localised, direct, negative and not significant.

4.7.3.3 Cumulative Impact

The proposed development has been assessed as having a medium risk of dust soiling impacts during the construction phase. A number of mitigation measures have been proposed in order to ensure significant dust impacts do not occur. Provided these measures are in place for the duration of the construction phase, significant cumulative construction dust impacts from the construction of the proposed development and other cumulative developments within 500m are not predicted. Cumulative impacts to air quality will be **direct, short-term, localised, negative** and **imperceptible** which is overall **not significant** in EIA terms.

There is the potential for cumulative impacts to air quality during the operational phase as a result of traffic associated with other existing and permitted developments within the area. The traffic data provided for the operational stage air quality assessment included specific cumulative developments within the wider area, specifically SD23A/0083, SD22A/0356, SD23A/0149 and SHD3-ABP-310578-21. The impact to air quality during the operational phase of the proposed development will be **direct, long-term, negative** and **not significant** which is overall **not significant** in EIA terms.

4.7.4 Human Health - Noise and Vibration

This section has been informed by Chapter 10 'Noise' prepared by AWN Consulting

4.7.4.1 Construction Phase

The assessment undertaken by AWN found that potential impacts on human health may arise from noise



and vibration nuisance. Human health impacts arising from outward noise from the proposed development will relate to traffic flows to and from the development site onto the public roads, mechanical and electrical services used to service the residential properties and the creche external play area. The implementation of mitigation measures, including the adherence to good practice noise reducing measures will ensure that the residual impact on human health is negative, moderate and short-term.

4.7.4.2 Operational Phase

Potential noise impacts during the operational phase include the following:

- Vehicular traffic accessing and moving around the site;
- Building and mechanical services plant; and
- Creche playground noise breakout.

The predicted change in noise level associated with additional traffic on the existing road network, is negligible in magnitude. Therefore, a **negative, not significant**, and **long term** effect of impact is predicted.

The predicted increase in noise levels associated with building services plant in the vicinity of the proposed development is of long-term, not significant impact.

The predicted increase in noise levels used for amenity spaces such as gardens and patios noise is **Neutral, Not significant** and **Long-term**.

4.7.4.3 Cumulative Impact

During the construction phase of the proposed development, construction noise on site will be localised and will therefore likely be the primary noise source at the nearest noise sensitive receivers. There is a development currently under construction to the east of the proposed development. Should construction of both sites occur simultaneously there is potential for cumulative noise impacts at noise sensitive receivers equidistant from the sites.

In this scenario, liaison between construction sites will be on-going throughout the duration of the construction phase. Contractors shall schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise impacts are expected to be **negative, significant** and **short-term** at times of high activity on both sites.

In the context of the operational phase, permitted developments are included in the traffic impact and therefore the potential for a cumulative effects of impact has been assessed (and found to be **negative, negligible**, and **long-term**).

4.7.5 Human Health - Material Assets: Traffic and Transport

This section is informed by Chapter 12 'Material Assets: Transportation' prepared by Pinnacle Consulting Engineering. This assessment found that potential risks to human health arise from increased traffic, changes to air quality, and risks from traffic accidents.

4.7.5.1 Construction Phase

During the construction stage, the risk of accidents associated with the proposed development are not predicted to cause unusual, significant or adverse effects to the existing public road network. The vast



majority of the works are away from the public road in a controlled environment. Measures will be put in place to reduce the risk of road traffic accidents during the construction phase. Furthermore, it is expected that the risk of accidents would be low during the construction of the proposed development considering the standard construction practices which are to be used and no unusual substance or underground tunnelling works required or predicted.

A number of temporary risks to human health may occur during construction phase related to noise, dust, air quality and visual impacts which are addressed in other sections of this EIAR. Traffic impacts are considered to be negligible due to the implementation of mitigation measures identified.

4.7.5.2 Operational Phase

There will be a slight increase in traffic on the local road network. In this way, no significant impacts on human health were identified.

4.7.5.3 Cumulative Impact

It is considered that the cumulative impact on population and human health would be likely, positive and long term as a result of the improved infrastructure being provided. It is anticipated that the proposed development will encourage walking and cycling, will in turn promote increased accessibility to public transport options locally.

4.7.6 Human Health – Material Assets: Water Supply, Drainage and Utilities

This section is informed by Chapter 11 'Material Assets: Built Services' prepared by Pinnacle Consulting Engineers.

4.7.6.1 Construction Phase

Any potentially damaging fluids that spill on natural soils may have an impact on the natural hydrogeological environment. At construction phase, construction workers will require the short-term use of potable water and will create short term foul wastewater.

The contractor will be required to implement best practice measures in accordance with SDCC planning requirements during construction. Accidental spills and leaks are to be managed.

4.7.6.2 Operational Phase

During the operational phase, the proposed scheme and associated development will utilise additional potable water. If capacity is not available within the existing public networks, upgrades may be required.

The assessed predicted effects at operational stage without mitigation measures on the Water Supply Infrastructure would be negative, permeant and significant in EIAR terms on Water Supply Infrastructure.

The proposed scheme and associated development will generate additional wastewater. Arrangements have been made within the planning design in liaising with Irish Water on the capacity and the aforementioned pumping stations assist with capacity issues.

The assessed predicted effects at operational stage without mitigation measures on the Wastewater Drainage Infrastructure would be negative, permeant and significant in EIAR terms on Wastewater Drainage Infrastructure.

Surface water from the proposed development will be reduced from current levels to match a greenfield



equivalent rate utilising a number of detention basins, swales and permeable paving. Surface water will be treated by infiltration into the ground below the detention basins.

Flood waters from the surrounding area have been assessed with allowance for the proposed development. The development is not subject to any forms of flooding. Appropriate protection has also been provided to adjacent areas to prevent flooding of habitable areas and other associated areas.

Surface water from the development will be managed within the site, with flows reduced to minimise the effect on the adjacent surface water network.

Floodwaters resulting from the development will be facilitated within the existing areas without negatively affecting the surrounding buildings. Further information regarding flood risk is available in the 'Site Specific Flood Risk Assessment' as prepared by Kilgallen & Partners Consulting Engineers and which is submitted as a separate document as part of the LRD planning application. The assessed predicted effects at operational stage without mitigation measures on the Surface Water Drainage Infrastructure would be negative, permeant and significant in EIAR terms on Surface Water Infrastructure

There is potential for adverse impact on human health of maintenance personnel arising from maintenance activities, from a possible reduction in utility service, and from pollution of ground and surface water. The implementation of standard health and safety measures and mitigation measures ensure that these potential impacts are not significant.

4.7.6.3 Cumulative Impact

The proposed development will increase demand on local Water Infrastructure. The cumulative effects of the operation would be permeant during the operation of the proposed development including:

- Slight negative and not significant in EIAR terms on surface Water Infrastructure.

The cumulative effects of the operation would be permeant during the operation of the proposed development including:

- Slight negative and not significant in EIAR terms on surface Wastewater Drainage Infrastructure.

The cumulative effects of the operation would be permeant during the operation of the proposed development including:

- Neutral and not significant in EIAR terms on the Surface Water Drainage Infrastructure.

4.8. Residual Impacts

4.8.1 Construction Phase

Assuming the proper and full implementation of the mitigation measures in this EIAR (summarised above in relation to population and human health), the following significant, negative, residual impacts on population and human health are predicted:

- The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures (as set out in Chapter 10), will ensure that noise and vibration impacts are **negative, not significant to moderate to significant** and have a **short-term** effect of impact on the surrounding environment. These impacts will entail nuisance and daytime disturbance only, and that the nature of noise levels generated will be typical of urban construction works of this nature. As such, it is considered that this potentially significant, negative, residual impact on the local population is commensurate with the proposed development and acceptable considering the net merit



of the proposal.

- *Significant and unavoidable, negative residual visual impacts* on surrounding areas as a result of the proposed works, as follows:

Construction phase impacts are an inevitable consequence of the proposed development and are considered to be Short-term tending to Medium term.

- **Landscape:** Construction stage landscape impacts are deemed to be no greater than Moderate within the immediate surroundings of the site, reducing to Moderate-Slight within the wider study area. The quality of the construction stage visual effects will be Negative. Construction Phase landscape effects are not considered to be significant.
- **Visual:** Construction stage visual impacts are deemed to be no greater than Moderate, reducing to Moderate-Slight within the wider study area. The quality of the construction stage visual effects will be Negative. Construction Phase visual effects are not considered to be significant.

No other significant, negative residual impacts are predicted in relation to population and human health.

4.8.2 Operational Phase

Assuming the proper and full implementation of the mitigation measures in this EIAR (summarised above in relation to population and human health), *no significant, negative, residual impacts are predicted to occur during the operational phase in the long-term*. However, as discussed below, there is the potential for *significant, negative, short-term visual impacts* to occur.

The number and quality of landscape elements shall be an addition to the built environment of Bohernabreena / Oldcourt by providing quality amenity for the residents.

As stated above, the net operational phase impact on population and human health is predicted to be positive, principally because the proposed development will deliver a high volume of high-quality housing in the context of an ongoing housing crisis, in a manner that is consistent with national and regional-level planning policy.

4.8.3 Conclusion

The residual effects of the construction and operational phase of the project on the socio-economic character of the area and the local community (i.e. population and human health), subject to the implementation of the various mitigation measures outlined in this EIAR are identified as follows:

- The development will facilitate the implementation of the CDP and LAP proposals for the subject lands.
- The proposed development will provide a new east-west main link street connecting Oldcourt Road to Bohernabreena Road.
- The proposed development will create over 7Ha of new public open spaces for the community and future residents

4.9. Interactions

As noted above, there are numerous inter-related environmental topics described in detail throughout this EIAR which are of relevance to human health. During the Construction Phase noise, air, traffic and



consumption of materials will be the key environmental factors that will have an impact on population and human health.

This chapter of the EIAR has been instructed by updated guidance documents reflecting the changes within the 2014 EIA Directive. These documents are the Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA in May 2022 and the Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems, published by the Department of Environment, Community and Local Government in May 2017. In line with the guidance documents referred, this chapter of the EIAR focuses primarily on the potential likely and significant impact on Population and Human Health in relation to health effects/issues and environmental hazards from the other environmental factors and interactions that potentially may occur.

Where there are identified associated and inter-related potential likely and significant impacts which are more comprehensively addressed elsewhere in this EIAR document, these are referred to.

During the Operational Phase, it is anticipated that water and traffic will be the key environmental factors impacting upon population and human health during the Operational Phase as a new residential landscape will be created. The increase in population will result in increased traffic and increased demands on water supply and increased requirements for wastewater treatment. These are addressed in the appropriate sections of this EIAR.

4.10. Reinstatement

There are no reinstatement works proposed specifically with respect to population and human health.

4.11. Cumulative Impacts

An increase in local housing, and some increase in employment opportunities and service provision (childcare facility) have the potential to generate direct, indirect impacts. The visual appearance of the landscape will be altered with the introduction of the proposed built elements including infrastructure, in cumulation with other development in the area. Implementation of the remedial and reductive measures in respect of noise/traffic management etc. in the EIAR would ensure a minimal impact on the existing communities of this area during the construction phase.

The development of the proposed scheme will open up the lands to improved connectivity from Oldcourt Road to the east to Bohernabreena Road to the west, and beyond to local existing services and facilities, e.g. retail, recreational and educational etc. and will require works that will likely entail some localised impacts to residents. An Outline Construction Traffic Management Plan is submitted with the planning application, the objective of which is to minimise the short-term disruption to existing local residents.

There will be some short-term impacts during the construction phase as the infrastructural / site development works are undertaken, particularly in respect of traffic management with regards to sensitive receptors. This may cause local short term inconvenience and disturbance to residents in the vicinity of the works. However, the works would normally be undertaken in sections on a phased/rolling programme so that the number of persons experiencing local inconveniences at any one time is kept to a minimum.

4.12. Difficulties Encountered in Compiling



No difficulties were encountered when compiling this Chapter.

4.13. 'Do Nothing' Scenario

A do-nothing scenario would result in the site remaining in greenfield use. If the proposed development were not to proceed there would be no immediate impact on the existing population, or economic activity for residents living in the area.

If the lands were to remain undeveloped, this would be an under-utilisation of zoned lands from a sustainable planning and development perspective, particularly considering the location of the lands and the objectives of both the CDP and LAP. The positive benefits to the national, regional and local community arising from implementing the residential development proposals of the CDP and LAP for the subject lands would therefore not materialize.

4.14. Conclusion

This Chapter has assessed the potential of the proposed development to result in significant impacts on population and human health during the construction and operational phases. It has found that, while the net impact of the proposed development is expected to be positive (in that its completion will create a high volume of high quality housing in the context of an ongoing housing crisis), it likely that negative impacts will also arise as a result of the proposal. These negative predicted impacts are commensurate with the nature and scale of the proposed development and are predominantly short-term impacts associated with the proposed construction and demolition works (such as noise, dust, and traffic). A suite of corresponding mitigation measures are described throughout the EIAR, which in most cases will ensure that significant negative impacts are avoided. The following potentially significant negative residual impacts cannot be avoided, however:

- Given the nature of the proposed works and the proximity to residential receptors; the possibility remains for *short-term, negative, slight to significant noise impacts to arise*. These impacts will entail nuisance during daytime hours only, and the nature of noise levels generated will be typical of urban construction works of this nature.
- *Significant and unavoidable, negative, short-term visual impacts* on surrounding areas as a result of the proposed works.
- There is the potential for *short-term significant, negative visual impacts* to viewpoints in the surrounding area upon the completion of the proposed development, but that these are expected to ameliorate to an overall neutral to positive visual impact in the long-term, once the proposed development has become established in its surroundings.

4.15. References

- Central Statistics Office www.cso.ie
- CSO (2017). *Census 2016 Small Area Populations Statistics*.
- CSO (2023). *Census 2022 Small Area Populations Statistics*.
- South Dublin County Development Plan 2022-2028
- Ballycullen – Oldcourt Fortunestown Local Area Plan 2014
- Health in Ireland Key Trends 2023

5.0. Biodiversity

5.1. Introduction



5.1.1 Overview and Aims

Enviroguide Consulting was commissioned by Capami Ltd to prepare this Biodiversity Chapter of an Environmental Impact Assessment Report (EIAR) as part of an application for a Large-scale Residential Development (LRD) in Firhouse, Dublin 24, hereafter referred to as 'Proposed Development' or 'Site' when referring to the site area of the Proposed Development.

A separate stand-alone Appropriate Assessment (AA) Screening Report is also included in the planning application documentation. Under Article 6(3) of the Habitats Directive a screening for 'appropriate assessment' of projects must be carried out to determine if significant effects are likely to arise to 'European sites' or 'Natura 2000 sites'. This assessment is carried out by the competent authority, in this case South Dublin City County Council.

This Biodiversity Chapter details the Ecological Impact Assessment (EclA) of the Proposed Development and assesses the potential effects of the Proposed Development on habitats and species; particularly those protected by national and international legislation or considered to be of particular nature conservation importance on or adjacent to the Site. This chapter will describe the ecology of the Site, with emphasis on habitats, flora and fauna, and will assesses the potential effects of the Construction and Operational Phases of the Proposed Development on these ecological receptors. The chapter follows Guidelines for Ecological Impact Assessment in the UK and Ireland, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and supplemented by the National Roads Authority (2009) guidelines for Assessment of Ecological Impacts of National Road Schemes. The purpose of this chapter is to:

- Set out the methodologies used to inform the assessment.
- Identify Key Ecological Receptors (KERs) within the Zone of Influence (ZOI).
- Assess the impacts from the Proposed Development on the KERs and the resulting significant effects.
- Set out measures to avoid or mitigate negative impacts.
- Assess the residual effects after the incorporation of agreed avoidance or mitigation measures to ensure legal compliance.
- Set out agreed measures to offset significant residual effects.
- Set out opportunities for ecological enhancement.

5.1.2 Quality Assurance and Competence

Enviroguide Consulting is a multi-disciplinary consultancy specialising in the areas of the Environment, Waste Management and Planning. All of our consultants carry scientific or engineering qualifications and have a wealth of experience working within the Environmental Consultancy sectors, having undergone extensive training and continued professional development. Enviroguide Consulting as a company remains fully briefed in European and Irish environmental policy and legislation. Enviroguide staff members are highly qualified in their field. Professional memberships include the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. The following ecologists from Enviroguide contributed to the preparation of this report via desk studies, field surveys and authorship:

- SH – Ecologist
- WMC – Ecologist
- BMC – Ecologist (Ornithologist)
- BT – Ecologist



- CBH – Ecologist
- WS – Intern Ecologist
- SA – Ecologist (no longer with Enviroguide)

BMC is an Ecologist and experienced Ornithologist with 12 years of bird survey experience. BMC is a longstanding and active member of Bird Watch Ireland and has provided Ornithology survey work for ecological consultancies, e.g., vantage points surveys of gulls, terns, raptors, waders, and wildfowl; hinterland surveys of the above as well as riverine species; and breeding waders and country birds. BMC is highly experienced with all survey methodologies and with surveying all species groups of Irish birds and migrants.

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

CBH is an experienced Ecologist with Enviroguide and has a BSc. (Hons) in Wildlife Biology from Munster Technological University (formerly ITT). CBH has a wealth of experience in desktop research, literature review and reporting, as well as practical field and laboratory experience including experience in surveying habitats, plants, bats, birds, mammals, and invasive species. CBH has prepared several PEA, EclA, and Stage I/Stage II AA Reports, as-well as ornithology reports for renewable energy projects (wind and solar technology). Additionally, CBH has completed, and supported the preparations of several Biodiversity Chapters for Environmental Impact Assessment Reports (EIAR). CBH is also a Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

SH has a B.Sc. (Hons) in Zoology and a Ph.D. in Marine Ecology from University College Dublin, and a wealth of experience in desktop research, bioinformatics analyses, literature review and reporting, as well as practical field and laboratory experience including habitat mapping, invasive species surveys, terrestrial fauna surveys (incl. mammal presence and bat activity surveys), freshwater and marine fish surveys and environmental DNA analysis. SH has prepared several Stage I and Stage II Appropriate Assessment Reports and Ecological Impact Assessments (EclA). Additionally, SH has authored and supported the preparations of a number of Biodiversity Chapters for Environmental Impact Assessment Reports.

WMC has a B.Sc. in Applied Freshwater and Marine Biology from Galway-Mayo Institute of Technology. WMC has four years of experience in ecological surveying and in this time, he has covered a wide range of ecological topics including ornithological surveying, bat surveying, badger surveying/exclusions, otter surveying, macroinvertebrate surveying and habitat surveying among others. WMC has also completed the field and report work of numerous planning surveys including Preliminary Ecological Appraisals (PEA), Appropriate Assessment (AA), Natura Impact Statements (NIS) and Ecological Clerk of Works (ECoW) surveys.

5.1.3 Legislative and Policy Context

An EclA is a process of identifying, quantifying, and evaluating potential effects of development-related or other actions on habitats, species and ecosystems (CIEEM, 2018). When an EclA is undertaken as part of



an EIA process (in the form of an EIAR Biodiversity Chapter) it is subject to the EIA Regulations (under the Planning and Development Regulations 2001-2023). An EclA is not a statutory requirement, however it is a best practice evaluation process. The EclA detailed within this Biodiversity Chapter is provided to assist the Competent Authority with its decision making in respect of the Proposed Development.

There is a number of pieces of legislation, regulations and policies specific to ecology which underpin this assessment. These may be applicable at a European, National or Local level. Legislation at the International level relevant to the Proposed Development are listed below:

- *Council Directive 92/43/EEC* on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter the 'Habitats Directive'.
- *Directive 2009/147/EEC*, hereafter the 'Birds Directive'.
- *Directive 2011/92/EU*, hereafter the 'EIA Directive'.
- EU Regulation 1143/2014, on Invasive Alien Species.
- Convention on the Conservation of European Wildlife and Natural Habitats 1982, hereafter the 'Bern Convention'
- The Convention on the Conservation of Migratory Species of Wild Animals 1983, hereafter the 'Bonn Convention'.
- *Ramsar Convention on Wetlands 1971*, hereafter referred to as 'Ramsar'.
- Water Framework Directive 2000/60/EC, hereafter the 'WFD'.

National legislation and policy relevant to the Proposed Development are listed below:

- Wildlife Act 1976, as amended in 2000.
- Flora (Protection) Order 2022.
- The Planning and Development Act 2000.
- National Biodiversity Plan 2023-2030.

Additionally, Natural Heritage Areas (NHAs) are designations under the Wildlife Acts to protect habitats, species, or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with Special Areas of Conservation (SAC) and/or Special Protection Area (SPA) sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning policy which normally requires that planning authorities give recognition to their ecological value.

Local plans and policies relevant to the Proposed Development are listed below:

- South Dublin County Development Plan 2022-2028 (SDCDP 2022-2028).
- South Dublin County Biodiversity Action Plan (SDCBAP 2020-2026).
- Ballycullen – Oldcourt Local Area Plan (2014).

Further details on legislation and policy relevant to the Proposed Development are detailed in Appendix 5.1.

5.2. Consultation

Consultation was undertaken between the client and South Dublin County Council through the various

LRD preapplication stages with regard to the Proposed Development. No further consultation with external bodies in terms of biodiversity was deemed necessary based on the nature of the Site of the Proposed Development and its inherent lack of significant ecological value based on the assessments detailed in this chapter.

5.3. Description of the Proposed Development

5.3.1 Site Location

The Proposed Development Site is located to the east of Bohernabreena Road, north and east of Bohernabreena cemetery, south and south-east of St. Anne's GAA club, south and south-west of the Dodderbrook residential estate, west of the Ballycullen Gate residential development (currently under construction) and west of Oldcourt Road (the R113).

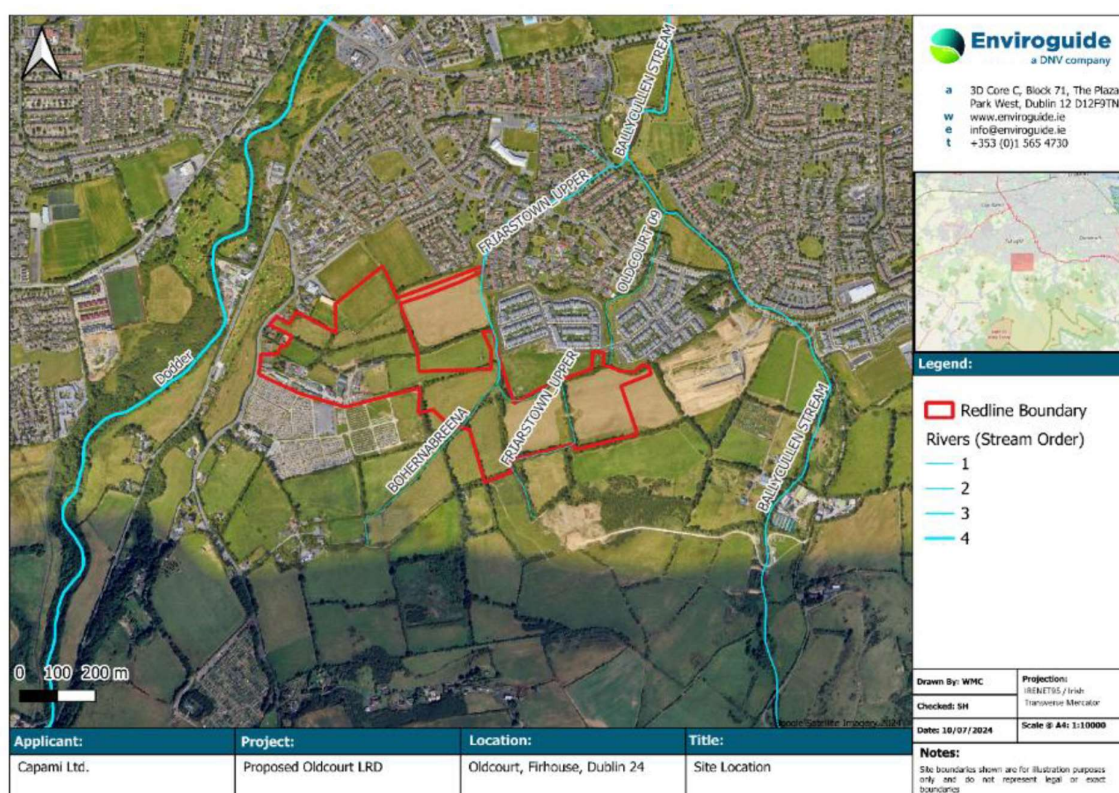


Figure 5-1. Site Location (Source: Enviroguide)

5.3.2 Proposed Development Description

The Proposed Development consists of 523 no. residential units comprised of 255 no. 2, 3 & 4 bed, 2 & 3 storey, detached, semi-detached and terraced houses, 206 no. 1, 2 & 3 bed duplex units in 20 no. 2 & 3 storey blocks, and 62 no. 1, 2 & 3 bed apartments in 4 no. 2-3 & 3-4 storey blocks, along with a 2 storey childcare facility of c. 457sq.m.

Private amenity space for the residential units is provided in the form of rear gardens for houses and ground floor terraces / upper floor balconies for apartments and duplex units. The proposed development provides for a total of c. 7.3Ha of public open space, and c. 5,505sq.m of communal open space associated with proposed residential units.

Vehicular access to the development will be via 4 no. access points, as follows: (i) from the west of the site, via 2 no. accesses, located off Bohernabreena Road, (ii) from the north of the site, via 1 no. access at Dodderbrook Place, and (iii) from the east of the site, via Oldcourt Road (R113) and via adjoining residential development at Ballycullen Gate. The proposed development includes for pedestrian and cyclist connections and accesses throughout the proposed development and to adjoining lands to the north at Dodderbrook Avenue and to the north-west into St. Anne's GAA club.

The proposed development includes the demolition of all existing structures on site, including 2 no. single storey dwellings and outbuildings/sheds (total demolition area: c. 4,152.06sq.m).

The Proposed Development also includes all associated site development works, demolition of existing buildings/structures, landscaping works, boundary treatments, SuDS features, drainage infrastructure, services infrastructure, bin stores, bicycle stores, car parking areas (including EV parking facilities), public lighting etc.

The subject site has been broken down into 4 No. neighbourhood zones. Neighbourhood Zone 01 is located to the southeast of the site, Neighbourhood Zone 02 is central to the site, Neighbourhood Zone 03 is to the northwest of the development and Neighbourhood Zone 04 is located to the southwest of the site (see Figure 5-2).

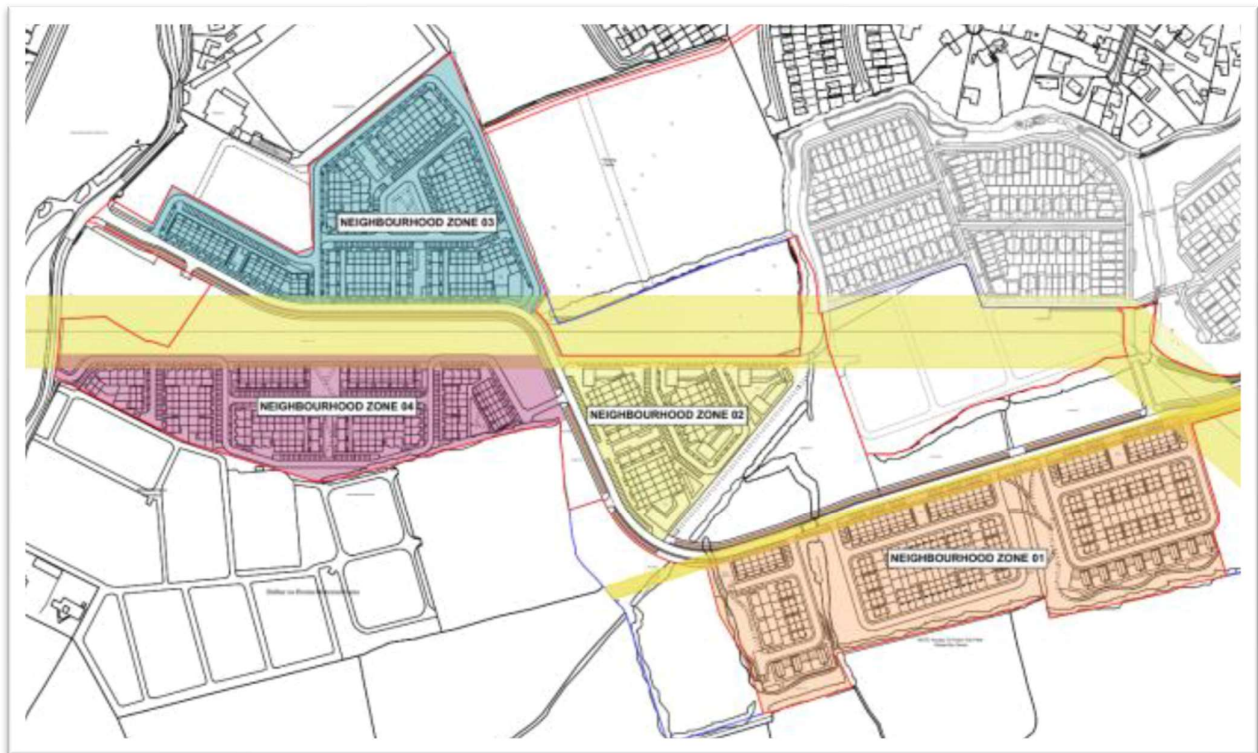


Figure 5-2. Neighbourhood Zoning Layout (Davey+Smith, 2024)

5.3.3 Drainage

Site drainage information is excerpted from the Engineering Planning Report that accompanies this submission (Pinnacle, 2024).

5.3.3.1 Foul Water

5.3.3.1.1 Existing Network adjacent to the Site

According to the Uisce Éireann (Irish Water) GIS records and the site-specific topographical survey, there is an existing Ø225mm foul sewer on the west of the site, draining northwards, providing service to the existing private dwellings. A portion of this existing foul sewer shall remain outside of the site boundary and tie into the new proposed foul sewer network. Where the existing line crosses the subject site, it shall be integrated into the proposed foul network prior to being discharged into the existing foul sewer to the northeast, the discharge shall ultimately outfall at the same location in Allenton Drive.

There are existing foul water networks within both existing northeastern Dodderbrook developments, although the westernmost of the two developments is not yet available on Uisce Éireann (Irish Water) GIS.

The foul water from the subject site shall ultimately connect to the existing surrounding public foul water sewer network from where it shall discharge to the Ringsend Wastewater Treatment Works (WWTW). See Figure 5-3 for the existing foul water services, as extracted from Uisce Éireann (Irish Water) GIS records.



Figure 5-3. Existing Foul Water Network (Pinnacle, 2024)

5.3.3.1.2 Proposed Foul Water Drainage Strategy



The foul drainage from the subject site will be discharged to the existing public foul water network via 4 No. outfall connections (see Figure 5-4).

- Connection 1: to the northwest of the site, the connection is proposed into the aforementioned existing Ø225mm public sewer.
- Connection 2: to the north of the site, it is proposed that a connection be made into the existing public Ø225mm foul sewer, located within Ely View Road in the northern located residential development. It is proposed that a foul connection be made into this existing sewer via an existing manhole (Uisce Éireann asset number: SO10251607).
- Connection 3: to the north of the site, it is proposed that a connection be made into the existing public Ø225mm foul sewer, located with Dodder Lawn Road in the northern located residential development of OCIL Phase 1.
- Connection 4: to the northeast of the site, it is proposed that a connection be made into the existing public Ø225mm foul sewer, located with Dodder Glade Road in the northern residential development of OCIL Phase 1.

All on-site gravity foul sewers have been designed to be a minimum of Ø150mm/225mm uPVC Class SN8 pipes, with gradients designed to achieve self-cleansing velocities and in compliance with Irish Wastewater Code of Practice (COP) Section 3.6 and COP Appendix B.

Foul water drains will be laid to comply with the Building Regulations 2010 and in accordance with the recommendations contained in the Technical Guidance Documents, Section H – Drainage and Wastewater Disposal, dated 2016.

All manholes will be constructed as block work, suitable precast products or cast in-situ concrete. Construction details for the proposed drainage systems are included in the accompanying planning submission drawing.

All standard drainage details including manhole details, pipe bedding, channels, hydrants etc. will be provided and are included in the accompanying planning drawings. Details of the types and construction methods will be agreed upon with Uisce Éireann (Irish Water) and the Local Authority, prior to construction. Drains generally will consist of PVC (to IS 123) or concrete spigot and socket pipes to IS 6. Strict separation of surface water and foul sewerage will be imposed on the development. Drains will be laid out to minimise the risk of inadvertent connections of sinks, dishwashers etc. to the surface water system.

All works are to be carried out in accordance with Uisce Éireann's (Irish Water) Code of Practice for Wastewater Infrastructure, dated July 2020: Document IW-CDS-5030-03 & with Uisce Éireann's (Irish Water) Code of Practice for Water Infrastructure, dated July 2020: Document IW-CDS-5020-03 and any subsequent revisions thereof.

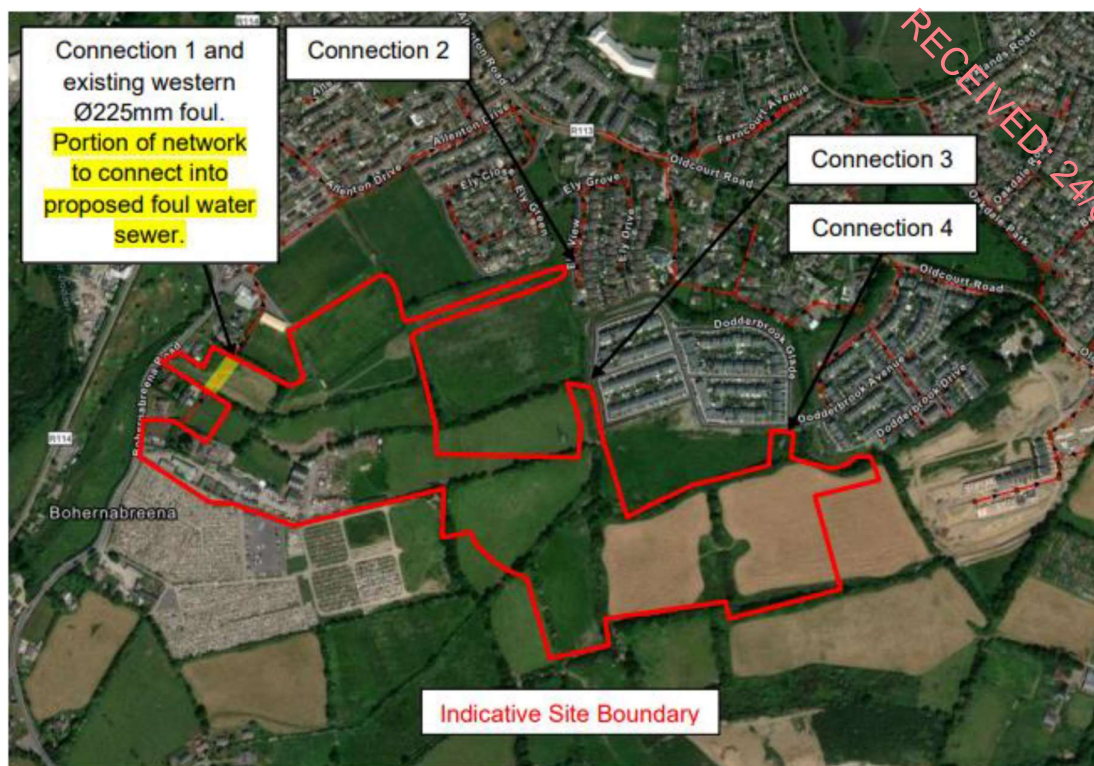


Figure 5-4. Indicative Foul Water Connection Points (Pinnacle, 2024)

5.3.3.2 Surface Water

5.3.3.2.1 Existing Surface Water Network

There are several existing agricultural ditches across the site, conveying surface water runoff from the south northwards across the subject site. The surrounding ditches ultimately discharge into the Dodder River (see Figure 5-5).

According to South Dublin County Council GIS record Information and site-specific topographical survey, there is an existing Ø450mm surface water sewer on the west of the site. The existing Ø450mm sewer conveys surface water from the Bohernabreena cemetery northwards through the Proposed Development.

A Site-Specific Flood Risk Assessment (SSFRA) will be completed during the planning submission by Kilgallen and Partners Consulting Engineers. A provisional review of the SDCC SFRA indicated that the entire site is within Flood Zone C.

The existing Ø450mm surface water sewer shall be diverted to connect to a new proposed surface water pipeline following the Proposed Development road networks, refer to Figure 6-2. The final detailed design of the diversion within the Proposed Development road network shall be agreed upon with the SDCC drainage department.

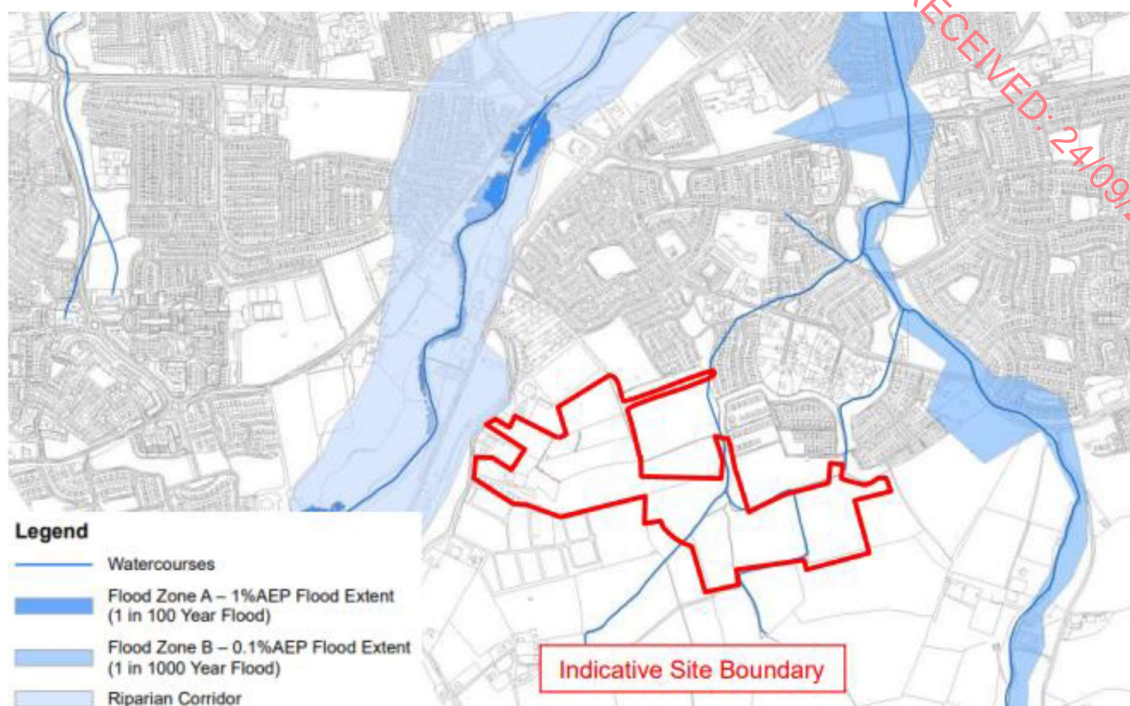


Figure 5-5. Existing Surface Water Records (Pinnacle, 2024)

5.3.3.2.2 Proposed Surface Water Drainage

The Surface Water Drainage design and SuDS Assessment carried out for the subject site have been undertaken in compliance with the requirements of the SDCC County Development Plan, the guidelines set by the Greater Dublin Strategic Drainage Study (GDSDS), the CIRIA SuDS Guideline and the Sustainable Drainage Explanatory Design & Evaluation Guide 2022.

The concept design intends to employ SuDS drainage measures to manage the post-development surface water runoff in such a manner that the urban drainage network mimics the natural drainage process as far as possible, limiting the impact on the downstream receiving environment.

5.3.3.2.3 Overall Catchment Characteristics:

The subject site, in its current state, is predominantly greenfield, consisting of existing agricultural lands and operating farmlands. A small portion to the southwest of the subject site is an existing hardstanding area proposed to be demolished and developed into residential units. It is unlikely that the existing portion of the hardstanding area to the southwest is currently being attenuated, the proposed residential development of this area shall improve the surface water runoff by limiting the site surface water runoff rate to greenfield conditions.

The subject site, in its current condition, drains northwards via existing ditches which ultimately discharge into the nearby Dodder River. The attenuated post-development surface water runoff shall discharge into the existing ditches at a restricted rate equal to the Greenfields runoff rate. Where the subject site shall have multiple surface water outlets in the existing ditches, each sub-catchment shall discharge surface water at a restricted rate, proportional to the area of the contributing sub-catchment.



5.3.3.3 SuDS Measures incorporated into the Surface Water Design

As per the SDCC Development Management Plan and the Sustainable Drainage Explanatory Design & Evaluation Guide 2022, surface water should be managed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) Regional Drainage Policies Volume 6, for New Developments and CIRIA guidelines. These documents specify that surface water run-off should be managed as close to its source as possible, with the re-use of rainwater within the buildings and infiltration prioritised.

Sustainable Urban Drainage Systems (SuDS) have been developed and are in use to alleviate the detrimental effects of traditional urban stormwater drainage practices that typically consist of piping runoff of rainfall from developments to the nearest receiving watercourse. Surface water drainage methods that take account of quantity, quality and amenity issues are collectively referred to as SUDS. They are typically made up of one or more structures, built to manage surface water run-off. The use of SUDS to control run-off also provides the additional benefit of reducing pollutants in the surface water by settling out suspended solids, and in some cases providing biological treatment.

A stormwater management or treatment train approach ensures that run-off quantity and quality are improved and mimics the greenfield condition for the subject site as far as possible. The following objectives of the treatment train provide an integrated and balanced approach to help mitigate the changes in stormwater run-off flows that occur as land is urbanised and to help mitigate the impacts of stormwater quality on receiving systems:

- Source control: conveyance and infiltration of run-off; and
- Site Control: reduction in volume and rate of surface run-off, with some additional treatment provided.

It is proposed that the surface water from the proposed development will be captured by various naturebased sustainable urban drainage systems (SuDS) interventions over the use of a conventional gully and piped surface water network, as guided by the SDCC Sustainable Drainage Explanatory Design & Evaluation Guide 2022.

Due to the steep nature of the site, a piped surface water conveyance system has been added to the design as a redundancy and shall only be engaged by the overtopping or bypassing upstream SuDS features. The piped conveyance network will seek to capture any surface water that has potentially bypassed or exceeded the SuDS features capacity and discharge the surface water at a safe strategic outlet location, reducing the risk of overland flooding.

The proposed SuDS interventions have been implemented to ensure runoff is treated to the standards outlined in the Greater Dublin Strategic Drainage Study and to add bio-diversity value, improving the aesthetic design of the development. All the proposed SuDS measures are subject to the findings from a ground investigation, including infiltration and observations of any potential water tables. All proposed surface water and SuDS standard details shall comply with SDCC Taking In Charge (TIC) standards.

The below points on the SuDS measures on Site provide a description of the SuDS measure as well as the proposed implementation of the SuDS measure on Site:

Permeable Pavements:

Permeable pavements are alternative paving surfaces to standard finishes that allow stormwater run-off to filter through voids in the pavement surface into an underlying stone reservoir, where it is temporarily stored and/or infiltrated.



Permeable paving will be utilised for the surface level car parking area to provide treatment and storage to rainwater falling on these areas. The primary use of the permeable paving subbase will be used for attenuation purposes and interception. The design will include a perforated pipe to convey surface water to the site-wide drainage system. Permissible infiltration from the proposed permeable paving shall be subject to the findings from a site-specific ground investigation.

Swales:

Swales are shallow, landscaped depressions designed to store and/or convey run-off and remove pollutants. They may be used as conveyance structures to pass the run-off to the next stage of the treatment train and can be designed to promote infiltration where soil and groundwater conditions allow. Swales will be used for access road surface water treatment, where possible, to treat water at the source before conveying it to the downstream attenuation facilities.

Green Roofs:

As well as providing ecological benefits, green roofs contribute the following positive effects to surface water drainage design:

- The retention of water, through storage in the growing medium and evapotranspiration from the roof's plants and substrate, reducing run-off volumes and the burden on the drainage network.
- Due to the time for water to infiltrate and permeate the substrate, there is also a reduction in peak rates of run-off, helping to reduce the risk of flooding.
- They improve water quality through the filtration of pollutants during the process of water infiltration. This provides treatment in line with the CIRIA SuDS Manual management train.

The retention of water, through storage in the growing medium and evapotranspiration from the roof's plants and substrate, reducing run-off volumes and the burden on the drainage network.

Due to the time for water to infiltrate and permeate the substrate, there is also a reduction in peak rates of run-off, helping to reduce the risk of flooding.

Several areas of green roofs are proposed, specifically on the proposed apartment blocks. The green roofs shall provide on-roof attenuation to greenfield runoff rates for the corresponding roof areas.

Filter Drains:

Filter Drains are shallow trenches filled with gravel and wrapped in a geotextile membrane to treat and temporarily store surface water run-off.

Filter Drains are provided for the footpath and podium level surface water treatment to treat surface water at the source before conveying it to the site-wide surface water drainage network.

Bio-retention rain gardens and tree pits:

As well as providing ecological benefits, bio-retention elements contribute the following positive effects to surface water drainage design:

- The retention of water, through storage in the growing medium and evapotranspiration from the



- roof's plants and substrate, reducing run-off volumes and the burden on the drainage network.
- Due to the time for water to infiltrate and permeate the substrate, there is also a reduction in peak rates of run-off, helping to reduce the risk of flooding.

They improve water quality through the filtration of pollutants during the process of water infiltration. This provides treatment in line with the CIRIA SuDS Manual management train.

Bio-retention tree pits shall be utilized extensively alongside roads acting as the first capture device for road surface runoff and an essential treatment for potential contaminants from the road surface.

Bio-retention rain gardens shall be utilized in selected private areas as small containment private planters, receiving runoff from private roofs.

Public Park areas will have selected bio-retention rain gardens as source control, treating surface water runoff from the immediate surrounding area as well as surface water pipe to the control area.

Attenuation Facilities and Flow controls:

Attenuation facilities, proposed in the form of detention basins, are used to create surface-level storage for the temporary storage of surface water before controlled release to the receiving existing watercourses to the north of the subject site.

Flow Control devices are used to restrict the outfall from the surface water drainage system to the equivalent of the existing greenfield run-off rate. This ensures the development will not give rise to flooding downstream of the site.

Several detention basins are proposed on the lower-lying northern open space within the subject site. The onsite post-development runoff shall be attenuated prior to discharging into the existing receiving watercourse at a restricted greenfield runoff rate.

Suitable vegetation shall be incorporated into the attenuation facility to ensure visually appealing aesthetics and water quality treatment.

The proposed basins shall have a maximum side slope of 1:3.

Hydrocarbon Interceptor:

A hydrocarbon interceptor is a trap used to filter out hydrocarbon pollutants from rainwater run-off. It is typically used in road construction to prevent fuel contamination of water courses carrying away the run-off.

Hydrocarbon interceptors work on the premise that some hydrocarbons such as petroleum and diesel float on the top of water. The contaminated water enters the interceptor typically after flowing off roads and entering a drain before being deposited into the first tank inside the interceptor. The first tank builds up a layer of the hydrocarbon as well as other scum preventing it from entering the water course.

Hydrocarbon Interceptors will be installed, upstream of the proposed attenuation facilities as a final treatment.

5.3.4 Landscape Design

The landscape design is rooted in the idea of preserving and enhancing local biodiversity. Retaining as much of the existing treelines and hedgerows is in the centre of the landscape plan. The plan also incorporates a relatively large park with a wetland area (Figure 5-6, Figure 5-7, and Figure 5-8).

Figure 5-6.

Site zonation and main park areas.

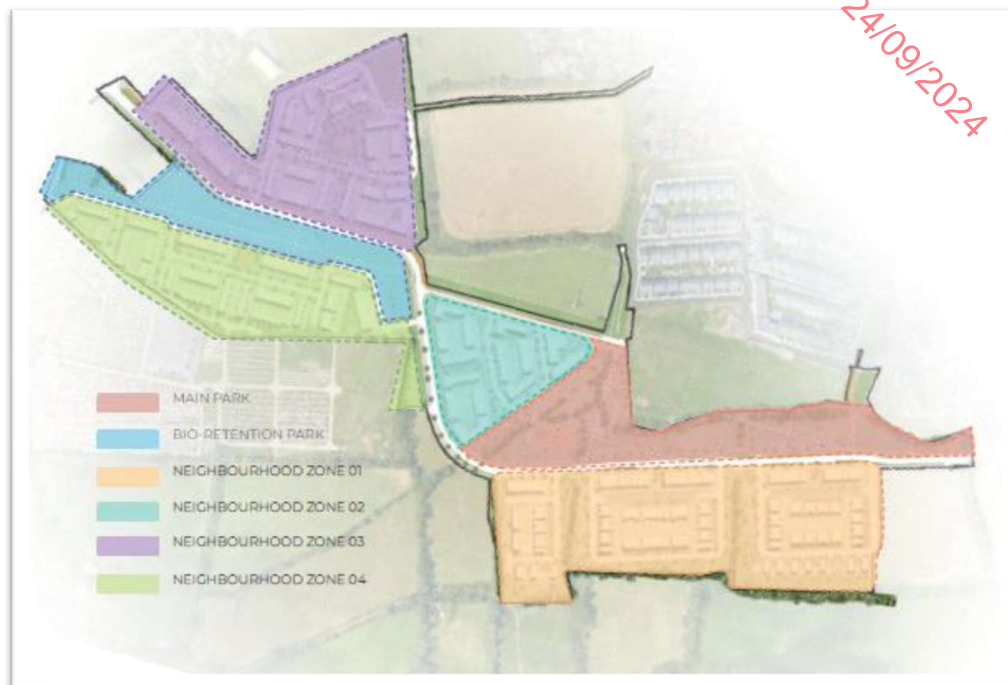


Figure 5-7. Western half of Proposed Development layout (source: Landscape Rationale, Gannon and Associates (2024)).





**Figure 5-8. Eastern half of Proposed Development layout
(source: Landscape Rationale, Gannon and Associates (2024)).**

An outline of the main landscape features with respect to ecology is given below.

- Hedgerows will be retained to the greatest extent possible, with removal considered only when necessary for the implementation of larger connecting structures, such as distributor roads.
 - Where removal is required, it will be carried out gradually over time.
 - Where existing hedgerows are fragmented or low quality, they will be improved by for example supplemental planting of native species and improving soil quality.
- The relevant SUDS will be planted with native species to enhance and supplement the local flora.
- Planting across the Site will predominantly consist of native and/or pollinator friendly species.

The overall green strategy for the Site aims to maintain ecological connectivity through the Site and into the wider landscapes south of the Site (Figure 5-9).

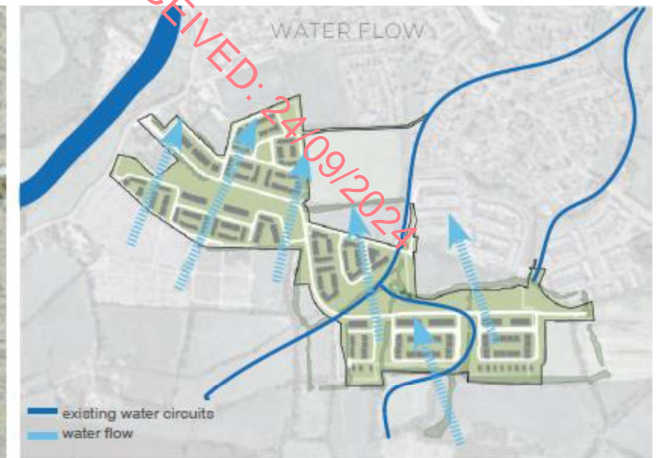


Figure 5-9. Envisioned green corridors through the Proposed Development Site (source: Landscape Rationale, Gannon and Associates (2024)).

5.3.5 Lighting Design

A lighting plan has been developed by Renaissance Engineering (2024) for the Proposed Development in consultation with the landscape and ecology design teams. The lighting plan retains dark corridors throughout the Site to prevent light spill onto potential ecological corridors. The plan further accommodates the new bat foraging area through the provision of dark corridors into the parkland areas within the Site and the wider rural landscape south of the Site (Figure 5-10, Figure 5-11 and Figure 5-12).

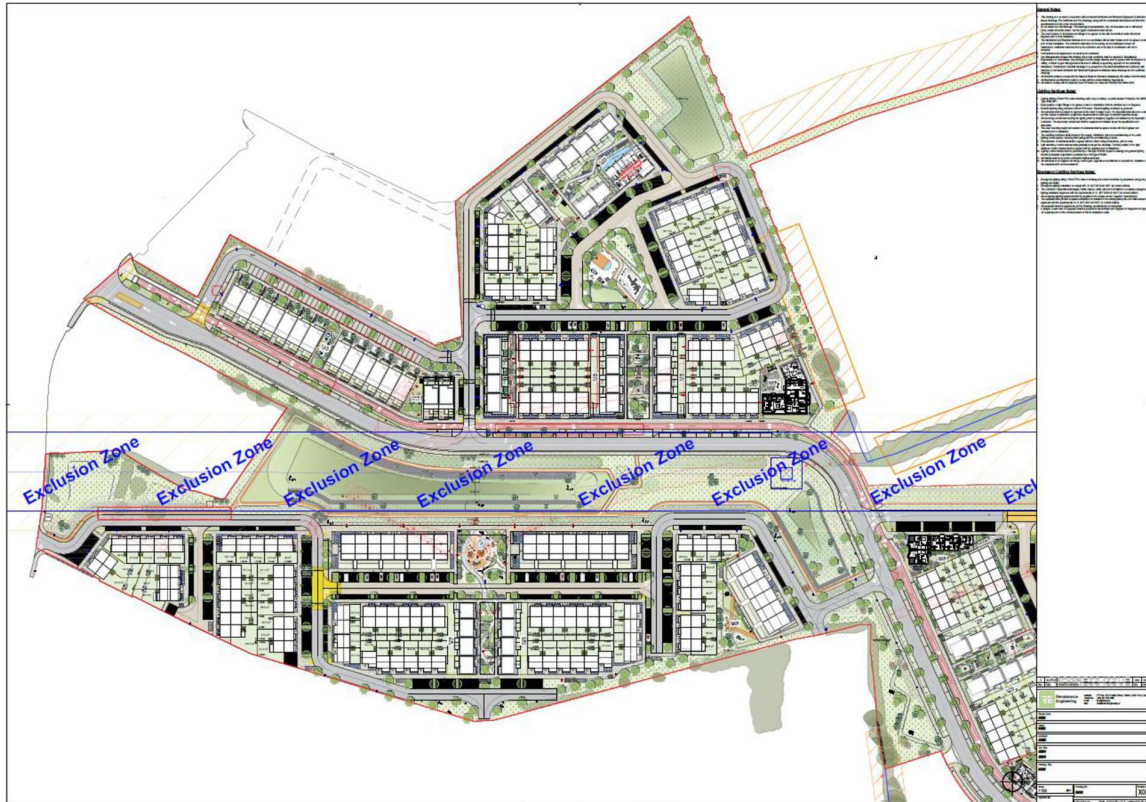


Figure 5-10. Western Proposed Lighting Plan (source: Renaissance Engineering, (2024)).

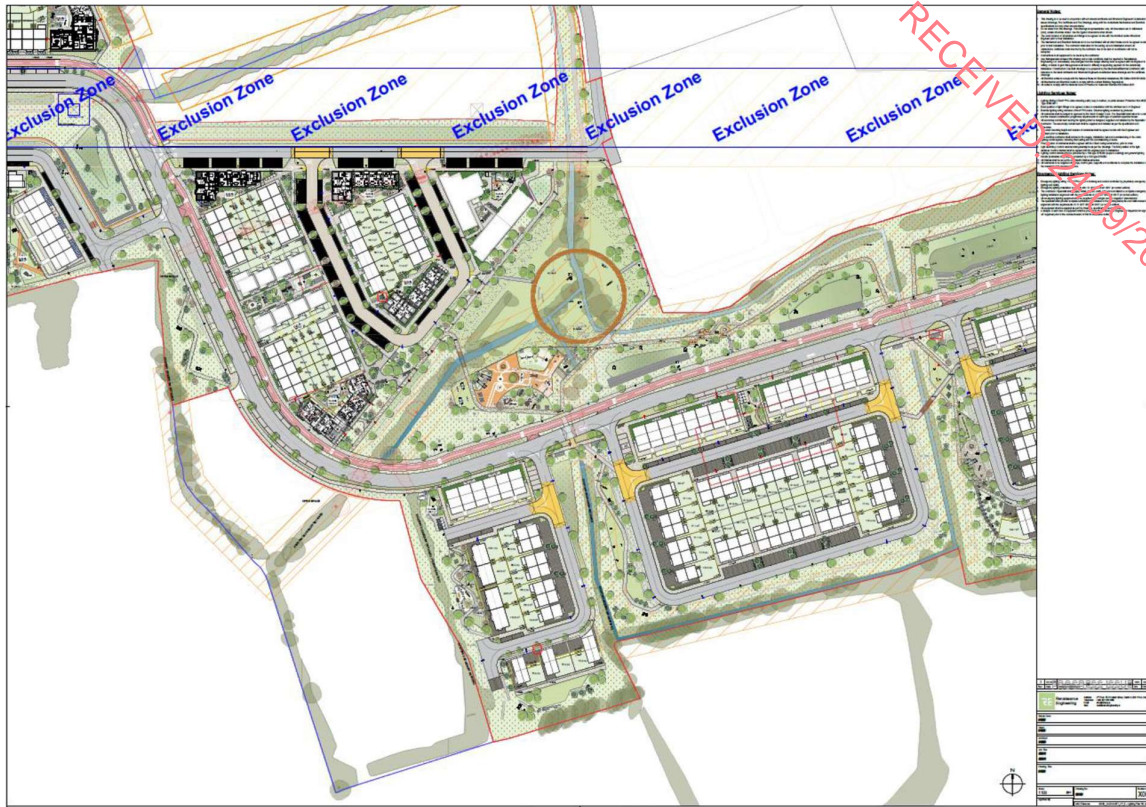


Figure 5-11. Central Proposed Lighting Plan (source: Renaissance Engineering, (2024)).



Figure 5-12. Eastern Proposed Lighting Plan (source: Renaissance Engineering, (2024)).



5.3.6 Description of the Construction Phase

Construction is expected to take place over a timeframe of 7 years. Below is a description of the construction phasing (Phase 1 – Phase 6) to be carried out at the Proposed Site:

Phase 1: will commence at the south-eastern end of the application site, in Neighbourhood Zone 1, delivering:

- Part of the east-west link road, continuing on from what is currently under construction to the immediate east at Ballycullen Gate,
- associated public open space, including the construction of “Oldcourt Park”,
- and approximately 94 no. dwellings.

Phase 2: will consist of the completion of Neighbourhood Zone 1, to the immediate west of Phase 1, delivering:

- Continuation of the east-west link road, continuing on from what is currently under construction to the immediate east at Ballycullen Gate,
- associated public open space, including completion of “Oldcourt Park” and opening of same to the public;
- delivery of proposed pedestrian and cycle links from Neighbourhood Zone 1 to Dodderbrook to the north (at Dodderbrook Avenue),
- and approximately 62 no. dwellings.

Phase 3: will be in the north-western part of the site, in the western part of Neighbourhood Zone 3 and will deliver:

- Northern most access off the Bohernabreena Road and part of east-west link road,
- Crèche,
- associated public open space;
- associated infrastructural services including drainage outfalls through third party lands (upon agreement),
- and approximately 86 no. dwellings

Phase 4: will be in the north-western part of the site, consisting of the completion of Neighbourhood Zone 3 and commencement of Neighbourhood Zone 4, and will deliver:

- Continuation of the northern most access off the Bohernabreena Road and part of east-west link road,
- associated public open space;
- and approximately 112 no. dwellings

Phase 5: will be in the centre of the site, in Neighbourhood Zone 2 and will deliver:

- Central piece of east-west link road, thus completing same,
- associated public open space,
- vehicular, cycle and pedestrian links from Neighbourhood Zone 2 to Dodderbrook to the north (at Dodderbrook Place),
- and approximately 101 no. dwellings.



Phase 6: will be the final phase, in the western part of the site, adjacent to Phase 4 and completing Neighbourhood Zone 4, and will deliver:

- the southern most access off the Bohernabreena Road,
- associated public open space,
- and approximately 68 no. dwellings

5.3.7 Description of the Operational Phase

The Operational Phase of the Proposed Development will comprise the occupancy of the completed residential development.

5.4. Methodology

This study has been undertaken to support the Proposed Development planning application and assesses the potential impacts that the Proposed Development may have on the ecology of the Site and its environs. Where potential for a risk to the environment is identified, mitigation measures are proposed on the basis that by deploying these mitigation measures the risk is eliminated or reduced to an insignificant level.

This section details the steps and methodology employed to undertake an ecological impact assessment of the Proposed Development.

5.4.1 Scope of the Assessment

The specific objectives of the study were to:

- Undertake a baseline ecological survey of the site and evaluate the nature conservation importance of the site;
- Identify and assess the direct, indirect, and cumulative ecological implications or impacts of the project during its lifetime;
- Where possible, proposed mitigation measures to remove or reduce those impacts at the Design, Construction and Operational Phases; and

5.4.2 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the site's natural environment. The desk study, completed in July 2024, relied on the following sources:

- Information on species records and distributions, obtained from the National Biodiversity Data Centre (NBDC) at <https://maps.biodiversityireland.ie/>
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at www.gis.epa.ie,
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at www.gsi.ie,
- Information on the network designated conservation sites, site boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at www.npws.ie,
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland;
- Information on the existence of permitted development, or developments awaiting decision, in the vicinity of the proposed development from Dublin City Council, available at:



https://mapzone.dublincity.ie/MapZonePlanning/MapZone.aspx?map=PlanningApplication&search=Plan_Ref&tooltip=Plan_Ref and An Bord Pleanála .

- Information on the extent, nature and location of the proposed development, provided by the applicant and/or their design team.

A comprehensive list of all the specific documents and information sources consulted in the completion of this report is provided in 5.13, References.

5.4.3 Zone of Influence

The ZOI for a project is the area over which ecological features may be affected by changes as a result of the Proposed Development and associated activities. This is likely to extend beyond the development site, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2018). The ZOI will vary with different ecological features, depending on their sensitivities to an environmental change.

Furthermore, ZOI in relation to European sites is described as follows in the 'OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021):

"The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework and not by arbitrary distances (such as 15 km)."

5.4.4 Identification of Relevant Designated Sites

To determine the ZOI of the Proposed Development for designated sites, reference was made to the OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021), a practice note produced by the Office of the Planning Regulator, Dublin. This note was published to provide guidance on screening for AA during the planning process, and although it focuses on the approach a planning authority should take in screening for AA, the methodology is also readily applied in the preparation of Biodiversity Chapters such as this to identify all relevant designated sites potentially linked to the Proposed Development.

As noted above, the most recent guidance advises against the use of arbitrary distances that serve as precautionary ZOI (e.g., 15km), and instead recommends the application of the Source-Pathway-Receptor (S-P-R) model in the identification of designated sites, stating that *"This should avoid lengthy descriptions of European sites, regardless of whether they are relevant to the proposed development, and a lack of focus on the relevant European sites and issues of importance"*. Although this statement refers to European sites, it is also applicable to other designated sites.

Thus, the methodology used to identify relevant designated sites comprised the following:

- Identification of potential sources of effects based on the Proposed Development description and details;
- Identification of potential pathways between the Site of the Proposed Development and any designated sites within the ZOI of any of the identified sources of effects. Water catchment data from the EPA (www.epa.ie) were used to establish or discount potential hydrological connectivity between the Proposed Development and any designated sites.
- Groundwater and bedrock information used to establish or discount potential hydrogeological connectivity between the Proposed Development and any designated sites.



- Air and land connectivity assessed based on Proposed Development details and proximity to designated sites.
- Consideration of potential indirect pathways, e.g., impacts to flight paths, *ex-situ* habitats, etc.
- Review of Ireland's designated sites to identify those sites which could potentially be affected by the Proposed Development in view of the identified pathways, using the following sources; European sites and nationally designated sites (e.g., NHAs and pNHAs) from the NPWS (www.npws.ie);
- Ramsar sites from the Irish Ramsar Wetland Committee (<https://irishwetlands.ie/irish->);
 - Other internationally designated sites e.g., UNESCO Biosphere's; and
 - Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

5.4.5 Field Survey Work

A range of field surveys have been carried out at the Site in preparation for this planning application. A summary of the surveys is provided in below.

Survey	Surveyor	Dates
Multidisciplinary walkover surveys (incl. habitat mapping, flora and fauna)	Enviroguide Consulting (SH, SA, WMC)	20.09.2022 07.10.2022 04.06.2024
Bird Scoping Survey	Enviroguide Consulting (BMcC, BT)	04.05.2023
Breeding Bird Surveys	Enviroguide Consulting (BMcC)	10.05.2023 19.06.2023 05.07.2023
PBRA	Enviroguide consulting (CBH, WMC)	04.07.2023 13.07.2023 04.06.2024
Bat Dusk Transect Surveys	Enviroguide Consulting (various)	01.09.2022 (Eastern half) 08.09.2022 (Western half) 16.05.2023 (full site) 21.06.2023 (full site) 09.08.2023 (full site)

Table 5-1. Summary of field survey work carried out at the Site of the Proposed Development

Detailed methods for each of these surveys is given in the following sections.

5.4.4.1 Habitat surveying, mapping and evaluation

Habitat surveys of the site of the Proposed Development were carried out by Enviroguide Ecologists on the 20th of September 2022, 7th of October 2022 and 4th of June 2024. Habitats were categorised according to the Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000) to Level 3. The habitat mapping exercise had regard to the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2010) published by the Heritage Council. Habitat categories, characteristic plant species and other ecological features and resources were recorded on field sheets. Habitats within the surrounding area of the Proposed Development were classified based on views from the site and satellite imagery where necessary (Google Earth, Digital Globe and OSI).

5.4.4.2 Bats

In view of their sensitive status across Europe, all species of bat have been listed on Annex IV of the EC 'Habitats Directive and some, such as the lesser horseshoe bat, are given further protection and listed on Annex II of this Directive. The obligations of the Habitats Directive have been transposed into Irish law and combined with the Wildlife Acts 1976 to 2018, ensure that individual bats and their breeding sites and resting places are fully protected. This has important implications for those who own or manage sites where bats occur.

All bat species are protected under the Wildlife Acts which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species; however, the Acts permit limited exemptions for certain kinds of development.

5.4.4.2.1 Bat Landscape Suitability

The Bat Conservation Ireland Landscape Suitability Model (Lundy et al., 2011) provides a habitat suitability index for bat species across Ireland. The model divides the country into 1 km grid squares and ranks the habitat within the squares according to its suitability for various bat species. The scores are divided into five qualitative categories of suitability, namely:

- 0.000000 - 13.000000: Low
- 13.000001 - 21.333300: Low – Medium
- 21.333301 - 28.111099: Medium
- 28.111100 - 36.444401: Medium – High
- 36.444402 - 58.555599: High

5.4.4.2.2 Preliminary Bat Roost Assessment

A daytime inspection of the Site was undertaken on three occasions; the 4th of July 2023, 13th of July 2023 and 4th of June 2024. The 2023 inspections covered the full Site in two separate visits, and the 2024 inspection was carried out to confirm that the status of the assessed features had not changed in the intervening time.

The aim of the inspections was to search for indication of the presence of roosting bats, and to assess the habitat for its ability to support commuting and foraging bats. Buildings and trees on Site were visually assessed from the ground with the aid of a torch and binoculars. The roost inspection comprised a detailed inspection of structures and trees on Site. These were subject to exterior and interior inspections (where possible) to search for evidence of bat use. This includes live and dead specimens, droppings, feeding remains, oil staining and noise (Collins 2023). Buildings were assessed for cracks and crevices, or entry points to the roof that might support roosting bats, while trees were searched for Potential Roosting Features (PRFs) such as hollow trunks, knot holes, peeling bark, splits, cracks, and crevices (Collins 2023; Andrews 2018). Collins (2023) recommends that structures and trees are assessed for their ability to support roosting bats under separate categorisations using professional judgement and sub-categories as presented in Table 4.1 (Collins, 2023).

Structures are categorised using four qualitative definitions:

- Negligible – No suitable features observed, however, a small element of uncertainty remain;
- Low – A structure with one or more roost features as used by individual bats opportunistically at any time of year;



Moderate – A structure with one or more roost features that could be used by bats on a regular basis or by a larger number of bats; and

- High – A structure with one or more roost features that are obviously suitable for use by a larger number of bats on a regular basis, and potentially for longer periods of time. These features have the potential to support high conservation status roosts.

Trees are categorized separately accordingly to Table 4.2 of Collins (2023). These classifications are:

- NONE – Either no PRFs in the tree or highly unlikely to be any;
- FAR – Further assessment required to establish if PRFs are present in the tree; and
- PRF – A tree with at least one PRF present.

Where a tree contains at least one PRF, each PRF is further assessed according to Table 6.2 (Collins 2023). PRF's are scored as either:

- PRF-I – PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.
- PRF-M – PRF is suitable for multiple bats and may therefore be used by a maternity colony.

For trees with PRF-I's only, no further surveys may be required, but appropriate compensation for all PRF-I's must be designed and incorporated in advance of impacts along with a Precautionary Working Method Statement (PWMS). As the Site increases in suitability for roosting bats e.g., PRF-M's present, the survey effort increases accordingly. A PRF-M will require a detailed inspection, such as aerial inspection, conducted over three survey visits, a minimum of three weeks apart, which should be carried out between May and September with at least two in the period May to August. Where features are inaccessible by ladder, climbing, or MEWP, or too extensive for a PRF inspection, the aerial inspection should be replaced with emergence surveys carried out between May and September with Night Vision Aids (NVA) where possible or otherwise surveyed using Advanced Licence Bat Survey Techniques (ALBST), such as trapping, tagging, and radio-tracking to inform of the importance of a roost.

5.4.4.2.3 Preliminary Bat Habitat Suitability Assessment

A Bat Habitat Suitability Assessment was carried out in conjunction with the roost assessment on the 4th of July 2023, 13th of July 2023 and 4th of June 2024. This assessment evaluated the habitats present on Site and in the wider area for bat foraging and commuting suitability. Habitat suitability is assessed qualitatively from Negligible to High:

- Negligible – No suitable foraging or commuting habitats on Site
- Low – Suitable but isolated habitats that could be used by small numbers of commuting and/or foraging bats, such as poorly connected gappy hedgerows, lone trees, unvegetated streams, etc.
- Moderate – Suitable continuous habitat connected to the wider landscape that could be used by commuting and/or foraging bats, such as treelines, scrub, grassland, water, etc.
- High – Continuous high-quality habitat that is well-connected to the wider landscape, and is likely used regularly by commuting and/or foraging bats, such as river valleys, broadleaved woodland, woodland edge, grazed parkland, etc.

5.4.4.2.4 Bat Activity Surveys

Three dusk activity surveys between May and August 2023 were conducted at the Site. Weather was suitable for surveys according to the guidance outlined in Collins (2023) and is described in Table 5-2.

Date	Survey Type	Sunset/Sunrise	Survey Start	Weather at start
16th of May 2023	Dusk transect	21:28	21:10	Temperature: 13 C Wind: Beaufort 1 Cloud Cover: 40 % Rain: None
21st of June 2023	Dusk transect	22:05	21:47	Temperature: 21 C Wind: Beaufort 1 Cloud Cover: 20 % Rain: None
9th of August 2023	Dusk transect	21:15	21:00	Temperature: 22 C Wind: Beaufort 1 Cloud Cover: 100 % Rain: None

Table 5-2. Dusk transect Survey Effort.

The surveyor was equipped with a Elekon Batlogger M2 detector and powerful L.E.D. torch and head torches. Surveys started at sunset and continued for 2-3 hours, along a predesigned transect route with regular point counts, as presented in Figure 5-13.

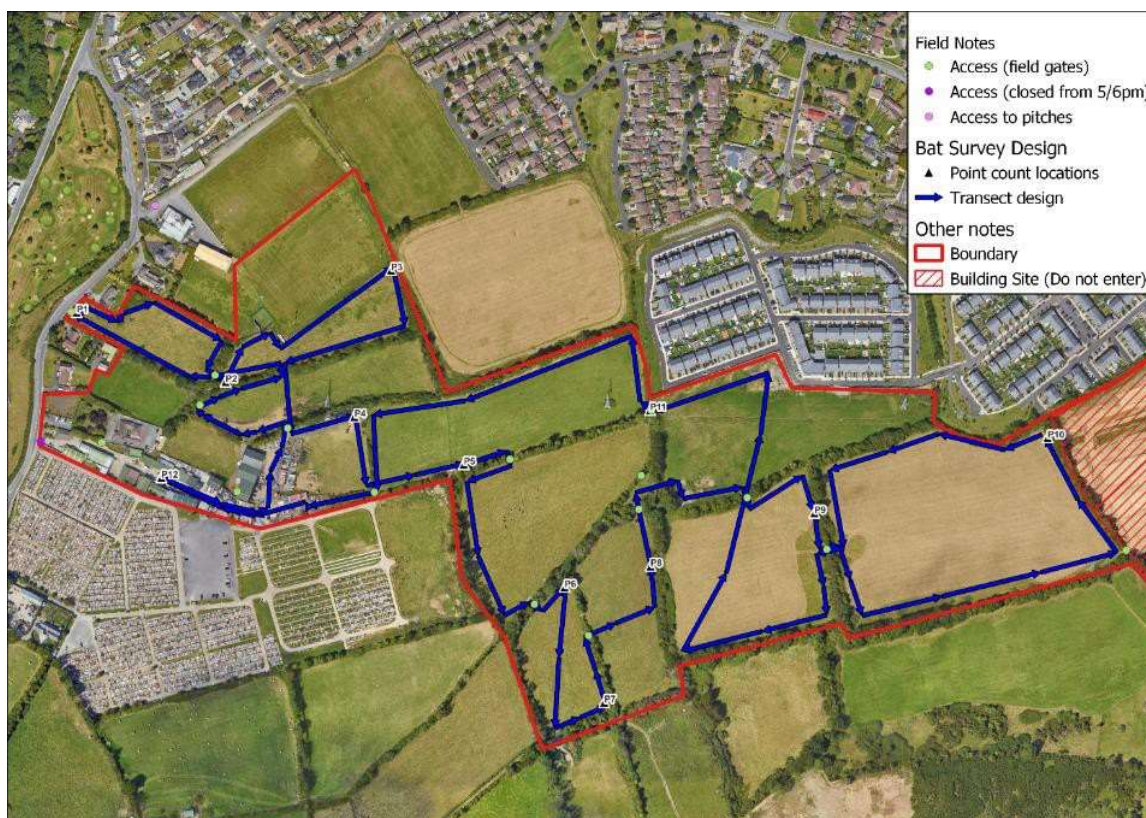


Figure 5-13. Pre-determined route for bat activity transects, with 12 point count locations identified.



5.4.4.2.4.1 Data Analysis

Species were identified from recordings using Elekon's BatExplorer software (Version 2.1/10.1). Bat data was analysed and species assigned to each record with reference to species identification guides such as Russ (2012).

Each record i.e., a sequence of bat calls/pulses, is noted as a bat pass; to indicate the level of bat activity for each species recorded. Each bat pass does not correlate to an individual bat but is representative of bat activity levels. Some bats such as Pipistrelle species may continuously fly around a habitat or feature, therefore, it is possible that a series of bat passes within a similar time frame is representative of an individual bat. On the other hand, Leisler's bats (*Nyctalus leisleri*) tend to travel through an area quickly, and as such, an individual sequence or bat pass is more likely to be indicative of individual bats.

Enviroguide ecologists generally classify activity levels from low to high, with low activity comprises less than 10 bat passes per hour, moderate equal to or greater than 10 bat passes per hour, and anything above 50 bat passes per hour is considered high.

5.4.4.3 Birds

5.4.4.3.1 Breeding Bird Surveys

To inform an evaluation of the on-site habitats for breeding bird species, three breeding bird survey visits were undertaken on a monthly basis between May 2023 and July 2023. All survey visits to the Site were completed in the early morning, commencing at or near dawn and lasting approximately 3 hours in duration. Survey dates and weather conditions are presented below in Table 5-3.

Date	Duration (Hrs)	Weather Conditions Start	End
10/05/2023	3	Light breeze, dry, excellent visibility, 10°C, 25-50% cloud cover	Fresh breeze, dry, excellent visibility, 14°C, 25-50% cloud cover
19/06/2023	3	Calm, dry, excellent visibility, 15°C, 25-50% cloud cover	Light breeze, dry, excellent visibility, 19°C, 0% cloud cover
05/07/2023	3	Light breeze, dry, excellent visibility, 10°C, 25-50% cloud cover	Moderate breeze, dry, excellent visibility, 15°C, 50-75% cloud cover

Table 5-3. Field surveys undertaken at the Proposed Development Site.



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5.4.4.4 Invasive Species Surveys

The Site was assessed for the presence of invasive plant species during the habitat surveys undertaken on 20th of September 2022, 7th of October 2022 and 4th June 2024, with a particular focus on those listed on the Third Schedule of SI No. 477/2011, and their location and extent recorded.

5.4.4.5 General Fauna Surveys

A general fauna survey of the Site was carried out in conjunction with the other field surveys on 20th of September 2022, 7th of October 2022 and 4th of June 2024. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. Furthermore, the Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001) and the National Road Authority (NRA, 2005). This survey considers protected or notable fauna that may occur within the Site or in the adjacent lands, but for which no historical records from the relevant grid square(s) exist or no targeted surveys were carried out.

5.4.5. Ecological Assessment

This EcIA has been undertaken following the methodology set out in Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018); and with reference to the National Roads Authority 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009) and the Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) and BS 42020:2013 Biodiversity: Code of practice for planning and development (BSI, 2013).

The evaluation of significant effects should be based on available scientific evidence. Based on the precautionary principle, if the available information is not sufficient, then a significant effect may be assumed likely to occur.

5.4.5.1 Evaluation of Ecological Features

The value of the ecological features – the habitats and species present or potentially present was determined using the ecological evaluation guidance provided in the National Roads Authority's Ecological Assessment Guidelines (NRA, 2009). This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal.

As per the NRA guidelines, impact assessment is only undertaken of Key Ecological Receptors (KERs). The ecological features identified within the Site of the Proposed Development and the wider area are evaluated based on their value. These values are detailed in Table 5-4 below. Based on best practice (CIEEM, 2018), any features considered to be less than of local value are not assessed within this EcIA.



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Importance	Criteria
International Importance	<ul style="list-style-type: none"> - 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. - Proposed Special Protection Area (pSPA). - Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). - Features essential to maintaining the coherence of the Natura 2000 Network - Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. - Resident or regularly occurring populations (assessed to be important at the national level) of the following: <ul style="list-style-type: none"> o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive - Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). - World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). - Biosphere Reserve (UNESCO Man & The Biosphere Programme) - Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). - Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). - Biogenetic Reserve under the Council of Europe. - European Diploma Site under the Council of Europe. - Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance	<ul style="list-style-type: none"> - Site designated or proposed as a Natural Heritage Area (NHA). - Statutory Nature Reserve. - Refuge for Fauna and Flora protected under the Wildlife Acts. - National Park. - Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Acts; and/or a National Park. - Resident or regularly occurring populations (assessed to be important at the national level) of the following: <ul style="list-style-type: none"> o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. o Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive
County Importance	<ul style="list-style-type: none"> - Area of Special Amenity. - Area subject to a Tree Preservation Order.

	<ul style="list-style-type: none"> - Area of High Amenity, or equivalent, designated under the County Development Plan. - Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul style="list-style-type: none"> o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. o Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. - County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared. - Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. - Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value)	<ul style="list-style-type: none"> - Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP if this has been prepared. - Resident or regularly occurring populations (assessed to be important at the Local level) of the following: <ul style="list-style-type: none"> o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. o Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; - Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	<ul style="list-style-type: none"> - Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; - Sites or features containing non-native species that is of some importance in maintaining habitat links.

Table 5-4. Description of values for ecological resources based on geographic hierarchy of importance (NRA, 2009).

5.4.5.2 Impact Assessment Criteria

As per the NRA guidelines, impact assessment is only undertaken of KERs. The assessment of the potential impact of the Proposed Development on the identified KERs was carried out with regard to the criteria outlined in the EPA Guideline (EPA, 2022). These guidelines set out a number of parameters that should be considered when determining which elements of the Proposed Development could constitute impact or sources of impacts. These include:



- Positive, neutral or negative effect;
- Significance;
- Extent;
- Probability;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

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The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature, e.g., the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to an adverse effect of a sensitive habitat. Identification of a risk does not constitute a prediction that it will occur, or that it will create or cause significant impact. However, identification of the risk does mean that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the risk and the characteristics of the ecological receptor.

5.4.5.2.1 Criteria used to Define Quality of Effects

In line with the EPA EIAR Guidelines (EPA, 2022), the following terms are defined when quantifying the quality of effects. See Table 5-5 below.

Quality	Definition
Positive Effects	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).
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Negative/adverse Effects	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).

Table 5-5. Definition of Quality of Effects

5.4.5.2.2 Criteria Used to Define Significance of Effects

EC Guidance on EIAR (EC, 2017) states that assessment of significance should be determined using appropriate, clear, and unambiguous criteria which take *'the characteristics of the impact and the values associated with the environmental issues affected into account'*. Consequently, in line with the EPA EIAR Guidelines (EPA, 2022), the following terms are defined when quantifying the significance of impacts. See Table 5-6 below.



Significance of Effects	Definition
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 Effects	An effect which obliterates sensitive characteristics. No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error

Table 5-6. Definition of Significance of Effects

5.4.5.2.2 Criteria Used to Define Duration of Effects

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying duration and frequency of effects. See Table 5-7 below.

Quality	Definition
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects lasting less than a day
Temporary Effects	Effects lasting less than a year
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term Effects	Effects lasting fifteen to sixty years
Permanent Effects	Effects lasting over sixty years
Reversible Effects	Effects that can be undone, for example through remediation or restoration

Table 5-7. Definition of Duration of Effects

5.4.5.3 Assessment of Cumulative Impacts and Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a Proposed Development results in individually insignificant impacts that, when considered in combination with impacts of other proposed or permitted plans and projects, can result in significant effects.

Relevant plans and policies (see Appendix 5.1) were reviewed to identify any potential for negative



cumulative impacts with the Proposed Development. Additionally, existing planning permissions from the past five years (from 2018 onwards) within the ZOI of the Proposed Development were reviewed, with particular focus on potential cumulative impacts on the identified KERs. Long-term developments were also considered where applicable.

5.4.5.4 Avoidance, Mitigation, Compensation and Enhancement Measures

Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied residual effects are then identified along with any necessary compensation measures, and incorporation of opportunities for enhancement. When seeking mitigation or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant. For example, mitigation and compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.

It is important for the EcIA to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:

- Avoidance is used where an impact has been avoided, e.g., through changes in scheme design. In practice, avoidance measures are typically implemented during the design stage via discussions and re-design (e.g., avoiding a sensitive habitat by relocating a building). Avoidance measures are therefore rarely reported within an EcIA, which focuses on assessing the final design.
- Mitigation is used to refer to measures to reduce or remedy a specific negative impact in-situ.
- Compensation describes measures taken to offset residual effects, i.e. where mitigation *in-situ* is not possible.
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

5.4.6 Limitations

An extensive search of available datasets for records of rare and protected species within proximity to the proposed development has been undertaken as part of this assessment. However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area. No significant limitations were encountered in the preparation of the EIAR Chapter.

5.5. Ecological Baseline Conditions

This section sets out the baseline conditions for the ecological features within the Site using the findings of the desk study and field surveys.

5.5.1 Geology, Hydrology and Hydrogeology

The Site is located in the Liffey and Dublin Bay (Catchment I.D 09) and in the Dodder_SC_010-Sub-catchment (Sub-catchment I.D.10_5) (EPA, 2024).

Two small streams cross the Site approximately in the middle in a south to north direction. The



Bohernabreena flows through the Site following parts of the hedgerow boundaries of the fields in a southwest to northeast direction. A second stream, Friarstown Upper, flows in a general south to north direction through the Site, also following the field boundaries, before converging with Bohernabreena. The converged stream, Friarstown Upper, then continues in a northerly direction until it meets the Ballycullen Stream, which ultimately flows into the Dodder main channel.

Bohernabreena, Friarstown Upper, and Ballycullen Stream, as well as the Dodder from where they converge until Rathfarnham (approx. 5km downstream), are all assessed as one river waterbody under the WFD, the DODDER_040. The DODDER_040 waterbody has been assigned *Moderate* water quality status (WFD 2016-2021) and is classified as *At Risk* of failing to achieve their Water Framework Directive status objectives by 2027 (EPA, 2024).

The EPA water quality monitoring data for the stations on the Ballycullen Stream and the Dodder River within 5km (hydrological) of the Site are summarised in Table 5-8. It should be noted that the reported Q-values downstream of the Site are all over 20 years old.

EPA Monitoring Station name	Station Code	Location from Site	Distance from Site	Assigned Q value
DODDER - Footbridge Firhouse (Balroth Weir)	RS09D010400	North, downstream	Approx. 3.1km	3-4, Moderate (1984)
New Br, Firhouse	RS09D010420	North, downstream	Approx 3.1km	4, Good (1998)
DODDER - New Br u/s Templeogue Br	RS09D010430	North, downstream	Approx. 4.1km	3, Poor (2002)
Old Bawn Br	RS09D010300	North, upstream	Approx. 2.7km	4, Good (2022)

Table 5-8. EPA monitoring stations on the Santry River and assigned Q values

The Site of the Proposed Development is situated on the Kilcullen groundwater body IE_EA_G_003, which is classified as having “Good” status (WFD Status 2013-2018). The aquifer type in the area is a “Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones”. The bedrock units underlying the Site are classified as “Aghfarrell Formation” (GSI, 2024) while the quaternary sediments classified as “Till derived from limestones” (GSI, 2024).

The level of vulnerability to groundwater contamination from human activities at the Site varies, with a small area at the northwest of the Site classed as Low, Moderate and High vulnerability dominating the majority of the Site, and a narrow section of Extreme vulnerability at the southern boundary of the Site (GSI, 2024) (Figure 5-14). The subsoil beneath the Site is Limestone till (Carboniferous) (EPA, 2024). The SIS National Soils database classified the soil beneath the Site as “Urban” (GSI, 2024).

The Waterbody Status for water bodies relevant to the Site as recorded by the EPA (2024) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003), Part IV of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 and Part IV of the European Communities Environmental Objectives (Groundwater) Regulations 2010, are provided in Table 5-9.

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3rd cycle Risk Status	Hydraulic Connection to the Site
Surface Water Bodies						
DODDER_040	IE_EA_09D 0 10620	Within the Site.	Within the Site.	Moderate	At risk	Within the Site.
Groundwater Bodies						
Kilcullen Groundwater Body	IE_EA_G_0 0 3	N/A	N/A	Good	At risk	Underlying groundwater-body

Table 5-9. WFD Risk and Water Body Status

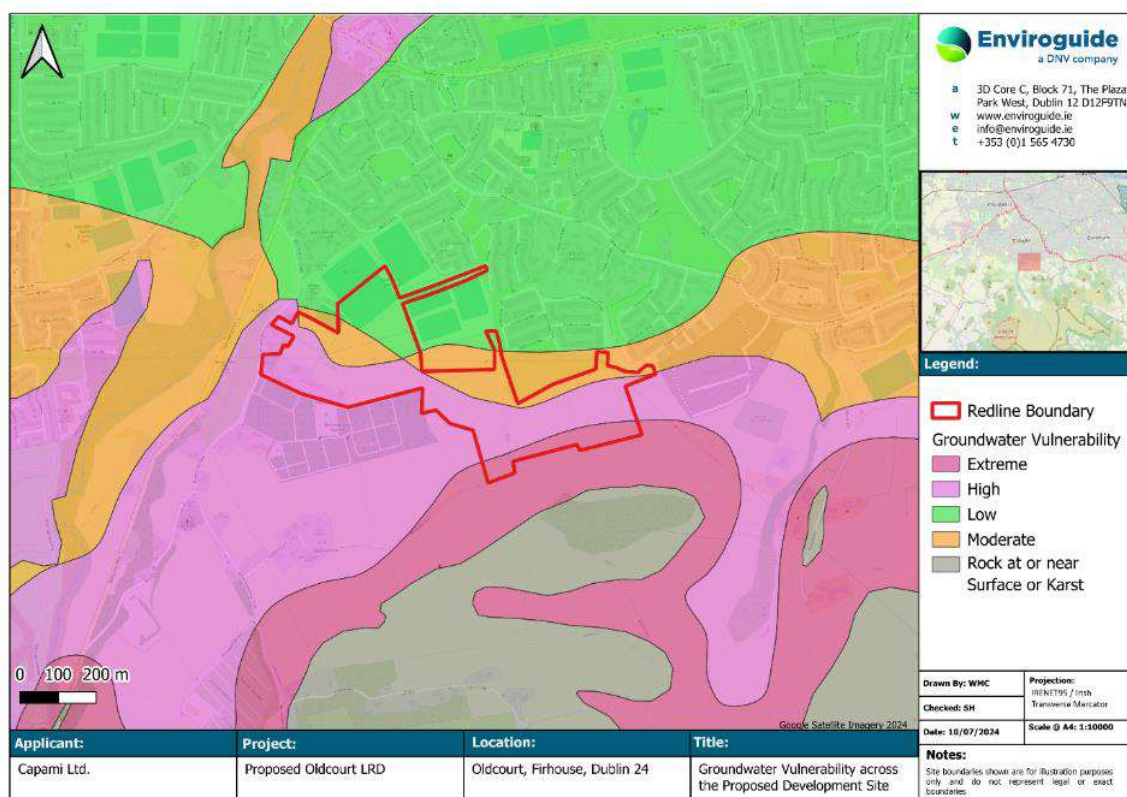


Figure 5-14. Groundwater Vulnerability Across the Proposed Development Site

5.5.2. Designated Sites

All European sites potentially linked to the Proposed Development have been identified and fully assessed in the AA Screening Report (Stage 1 AA) accompanying this submission under separate cover. A summary of the AA conclusions is given below.

Other nationally or internationally designated sites potentially linked to the Proposed Development are identified in section 5.5.2.2.



5.5.2.1 European Sites – Appropriate Assessment

The AA Screening concluded that no European sites are at risk of likely significant effects as a result of the Proposed Development. The following conclusion is extracted from the AA Screening accompanying this application under separate cover:

*“In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that, on the basis of objective information; the possibility **may be excluded** that the Proposed Development will have a significant effect on the European sites listed below:*

- Glenasmole Valley SAC (001209)
- North Dublin Bay SAC (000206)
- South Dublin Bay SAC (001266)
- North Bull Island SPA (004006)
- North-west Irish Sea SPA (004236)
- South Dublin Bay and River Tolka Estuary SPA (004024)

*The screening exercise above used the best available scientific knowledge and objective information to assess potential impacts to European sites arising from the project itself or in combination with other plans and projects. Based on this assessment, and in light of these sites’ conservation objectives, the possibility of any likely significant effects on the above listed European sites **may be excluded**. Thus, there is no requirement to proceed to Stage 2 of the Appropriate Assessment process and the preparation of an NIS is not required.”*

5.5.2.2 Other Designated Sites

Designated sites within the Proposed Development’s Zol (section 5.4.3) were assessed for potential S-P-R connections (section 5.4.4) to the Proposed Development. The following sections discuss the potential pathways to any designated sites (excl. European sites).

5.5.2.2.1 Hydrological Pathways

The Site is located in the Liffey and Dublin Bay (Catchment I.D 09) and in the Dodder_SC_010-Sub-catchment (Sub-catchment I.D.10_5) (EPA, 2024).

Two small streams traverse the centre of the Site in a south to north direction. The Bohernabreena flows through the Site following parts of the hedgerow boundaries of the fields in a southwest to northeast direction. A second stream, the Friarstown Upper, flows in a general south to north direction through the Site, also following the field boundaries, before converging with Bohernabreena.

The two streams traversing the Site provide a potential hydrological pathway to the Dodder main channel, and the Dodder Valley pNHA (000991) approx. 1.6 km along the streams downstream of the Site. Therefore, a hydrological pathway between the Site of the Proposed Development and the Dodder Valley pNHA exists.

The Dodder River ultimately discharges into Dublin Bay at Ringsend, approx. 15km downstream of the Site, with the potential to impact the following designated sites:

- South Dublin Bay pNHA (000210)
- North Dublin Bay pNHA (000206)
- Dolphins, Dublin Docks pNHA (000201)
- Sandymount Strand/Tolka Estuary Ramsar site (832)



- North Bull Island Ramsar Site (406)

These sites largely overlap the European sites within Dublin Bay. The accompanying AA Screening rules out any potential impacts via this pathway, and as such, the hydrological pathway between the Proposed Development and these designated sites is considered to be insignificant by proxy.

Additionally, Dublin Bay is designated as a UNESCO Biosphere with a terrestrial buffer zone. This buffer zone reaches the M50 motorway surrounding Dublin City. The Dodder River flows through this zone, however, it is considered that the Dodder River provides sufficient dilution potential between the Site of the Proposed Development and the Biosphere buffer zone, to render this pathway insignificant.

During the Operational Phase, foul water from the Proposed Development will be treated in the Ringsend Wastewater Treatment Plant (WwTP). Ringsend WwTP discharges treated effluent into the Dublin Bay, creating a hydrological connection between the Proposed Development and designated sites within Dublin Bay. However, the potential for impacts on any European sites via this pathway has been ruled out in the accompanying AA Screening. As such, the pathway for potential impacts from foul water between the Proposed Development and any designated sites within Dublin Bay is considered to be insignificant by proxy.

5.5.2.2.2 Hydrogeological Pathways

During groundworks and other construction activities, the ground will be exposed and any potential accidental discharges to ground could potentially migrate vertically downward to the underlying bedrock aquifer, and laterally within the aquifer to any downgradient drainage ditches and streams. However, there are no direct hydrogeological pathways to any designated sites from the Proposed Development Site. This is due to the low permeability of the underlying bedrock and poor groundwater connectivity. Additionally, hydrogeological flow paths of groundwater beneath and in vicinity of the Site are considered to be generally localised (AWN Consulting, 2024).

As the hydrological pathway has been deemed insignificant, any potential pollutants that may enter the freshwater systems via groundwater flows are considered to have an approximate ZOI of 5km along the hydrological pathway.

5.5.2.2.3 Air and Land Pathways

The Construction Phase of the Proposed Development could introduce dust and noise impacts transferable via air and land pathways, as well as increased lighting and human activity at the Site and in the vicinity of the Site during the Construction and Operational Phases. Large developments (i.e., >10,000m² earthworks area, >10,000m³ building volume) are estimated to have a high dust soiling potential up to 400m from the source (Holman et al. 2014), while noise levels of 120dB at source have been shown to have the capacity to impact on waterbirds up to approx. 200m from the source (Cutts et al. 2013). The ZOI of light spill from the Site is considered to be limited to the immediate surrounding habitats.

The nearest designated site to the Proposed Development is the Dodder Valley pNHA, located approx. 650m north of the Site ('as-the-bird-flies'). Thus, in line with the above, it can be concluded that no notable air and land pathways for the propagation of noise, lighting or dust effects exists between the Proposed Development and any designated sites.

During the Operational Phase, it is noted that the increase in human population in the locality may increase the recreational use of the Dodder River amenity, of which the Dodder Valley pNHA is a part of. Thus, a land pathway between the Proposed Development and the Dodder Valley pNHA during the Operational Phase is considered further in this chapter.



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5.5.2.2.4 Indirect Pathways

No indirect pathways to any designated sites were identified.

5.5.2.2.5 Relevant Designated Sites

Table 5-10 below presents details of the designated sites considered under potential S-P-R connections to the Proposed Development (Figure 5-15). Only one designated site was deemed to have a notable S-P-R link to the Proposed Development, namely the Dodder Valley pNHA.



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Site Name & Site Code	Qualifying Interests (*= priority habitats)	Distance to Site	Potential Pathways and Impacts
Nationally Designated Sites			
Dodder Valley pNHA (000991)	<p>This stretch of the River Dodder extends for about 2 km between Firhouse Bridge and Oldbawn Bridge in the south-west of Dublin City.</p> <p>The vegetation consists of woodland scrub mainly of willows (<i>Salix</i> spp.), but up to thirteen species of tree have been recorded. The understorey vegetation contains a good variety of plant species, including Early-purple Orchid (<i>Orchis mascula</i>) and Bugle (<i>Ajuga reptans</i>). Along the banks there are wild flower meadows with a good diversity of plant species. There is also a pond in the river bed at Firville which has flourished greatly since the floods of 1986.</p> <p>Forty-eight bird species have been recorded recently in the area, including Little Grebe, Kingfisher, Dipper and Grey Wagtail. Part of the river bank supports a Sand Martin colony of up to 100 pairs.</p> <p>The site represents the last remaining stretch of natural river bank vegetation on the River Dodder in the built-up Greater Dublin Area.</p>	650m N	<p>Construction Phase</p> <p>A hydrological pathway between the Site and the Dodder Valley pNHA cannot be ruled out due to the short distance of the hydrological link between the Site and the Dodder Valley pNHA via the Ballycullen stream and its tributaries.</p> <p>No other notable pathways were identified.</p> <p>Operational Phase</p> <p>A land pathway for the potential increase in recreational pressures on this pNHA was identified.</p>
Glenasmole Valley pNHA (001209)	Conservation objectives overlap with the EU site of the same name—Glenasmole Valley SAC	1.2km SW	<p>Construction Phase</p> <p>A potential hydrogeological connection between the Proposed Development and the Glenasmole Valley SAC has been ruled out in the accompanying AA Screening report due to distance. Therefore, a hydrogeological connection to the Glenasmole Valley pNHA may also be ruled out due to the fact that the sites overlap.</p> <p>No other notable pathways were identified.</p>



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Site Name & Site Code	Qualifying Interests (*= priority habitats)	Distance to Site	Potential Pathways and Impacts
			Operational Phase A potential hydrogeological connection between the Proposed Development and the Glenasmole Valley SAC (Glenasmole Valley pNHA) has been ruled out in the accompanying AA screening report due to the lack of significant sources as well as distance. No other notable pathways were identified.
South Dublin Bay pNHA (000210)	Conservation objectives overlap with the EU site of the same name—South Dublin Bay SAC (000206)	10.7km NE	Construction Phase No direct or indirect connections exist between the Proposed Development and this pNHA during the Construction Phase. Operational Phase An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP. However, this is not deemed to be an impact pathway capable of facilitating likely significant effects to this pNHA and no further direct or indirect effects are foreseen. No other notable pathways were identified.
North Dublin Bay pNHA (000206)	Conservation objectives overlap with the EU site of the same name—North Dublin Bay SAC (000206)	12.4km NE	Construction Phase No direct or indirect connections exist between the Proposed Development and this pNHA during the Construction Phase. Operational Phase An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP. However, these are not deemed to be impact pathways capable of facilitating likely significant effects to this pNHA and no further direct or indirect effects are foreseen. No other notable pathways were identified.
Dolphins, Dublin Docks pNHA (000201)	This site is a component of South Dublin Bay and River Tolka Estuary SPA (004024) and is protected for the Terns—Arctic (<i>Sterna paradisaea</i>) and Common (<i>Sterna hirundo</i>)—that nest on the Dolphin structures. Thus, the conservation objectives overlap with South Dublin Bay and River Tolka Estuary SPA (004024).	12.8km NE	Construction Phase No direct or indirect connections exist between the Proposed Development and this pNHA during the Construction Phase Operational Phase An indirect hydrological connection exists via treated foul water



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Site Name & Site Code	Qualifying Interests (*= priority habitats)	Distance to Site	Potential Pathways and Impacts
			discharge from the Ringsend WWTP. However, this is not deemed to be an impact pathway capable of facilitating likely significant effects to this pNHA and no further direct or indirect effects are foreseen. No other notable pathways were identified.
Internationally Designated Sites			
UNESCO Dublin Bay Biosphere	<p>UNESCO, 2024</p> <p>The biosphere reserve is significant from a conservation perspective since it supports well-developed salt marshes and dune systems displaying all stages of development from the earliest phase of colonization to stable and full maturity.</p> <p>It also qualifies for international importance as the numbers of three species exceed the international threshold – Light-bellied Brent Goose (<i>Branta bernicla hrota</i>), Black-tailed Godwit (<i>Limosa limosa</i>) and Bar-tailed Godwit (<i>Limosa lapponica</i>). Species such as Grey Heron (<i>Ardea cinerea</i>), Goldeneye (<i>Bucephala</i>), Red-breasted Merganser (<i>Mergus serrator</i>) and Greenshank (<i>Tringa nebularia</i>) are regular in winter in numbers of regional or local importance. The North Bull Island and parts of the buffer zone in north Dublin include populations of Irish Mountain Hare (<i>Lepus timidus hibernicus</i>), a uniquely Irish sub-species of a species of national and international importance, but under severe pressure from recreational disturbance and illegal poaching.</p>	4.9km E	<p>Construction Phase</p> <p>A weak direct hydrological connection exists via potential surface runoff, e.g., during a heavy rainfall event, to the River Dodder north of the Site. As a result of the distance between the Site and the closest point of the UNESCO site, it has been determined that potential significant effects on the UNESCO site as a result of Site works during Construction Phase may be ruled out due to the dilution factor of the River Dodder.</p> <p>No other notable pathways were identified.</p> <p>Operational Phase</p> <p>Significant direct hydrological effects on the UNESCO site during Operational are not foreseen due to the distance between the sites and the dilution factor of the River Dodder as well as the lack of sources.</p> <p>The UNESCO site is also connected to the Site indirectly via Ringsend's WwTP output though negative impacts on the UNESCO site are not foreseen as a result.</p> <p>No other notable pathways were identified.</p>
Sandymount Strand/Tolka Estuary Ramsar site (832)	<p>Ramsar Sites Information Service (2023).</p> <p>This Ramsar site is noted for the presence of:</p> <ul style="list-style-type: none"> Seagrass beds (<i>Zostera noltii</i>) <p>And a significant population of:</p>	10.7km NE	<p>Construction Phase</p> <p>No direct or indirect connections exist between the Proposed Development and this Ramsar site during the Construction Phase.</p> <p>Operational Phase</p>

Site Name & Site Code	Qualifying Interests (*= priority habitats)	Distance to Site	Potential Pathways and Impacts
	<ul style="list-style-type: none"> • Mediterranean gull (<i>Larus melanocephalus</i>) • Light-bellied brent goose (<i>Branta bernicla hrota</i>) • Black-tailed godwit (<i>Limosa limosa</i>) • Bar-tailed godwit (<i>Limosa lapponica</i>) 		An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP. However, this is not deemed to be an impact pathway capable of facilitating likely significant effects to this Ramsar site and no further direct or indirect effects are foreseen. No other notable pathways were identified.
North Bull Island Ramsar Site (406)	<p>Ramsar Sites Information Service (2023).</p> <p>This Ramsar site is noted for a significant population of:</p> <ul style="list-style-type: none"> • Black-tailed godwit (<i>Limosa limosa</i>) • Bar-tailed godwit (<i>Limosa lapponica</i>) 	15.2km NE	<p>Construction Phase</p> <p>No direct or indirect connections exist between the Proposed Development and this Ramsar site during the Construction Phase.</p> <p>Operational Phase</p> <p>An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP. However, this is not deemed to be an impact pathway capable of facilitating likely significant effects to this Ramsar site and no further direct or indirect effects are foreseen.</p> <p>No other notable pathways were identified.</p>

Table 5-10. Designated sites of Conservation Importance within the Precautionary Zone of Influence of the Proposed Development

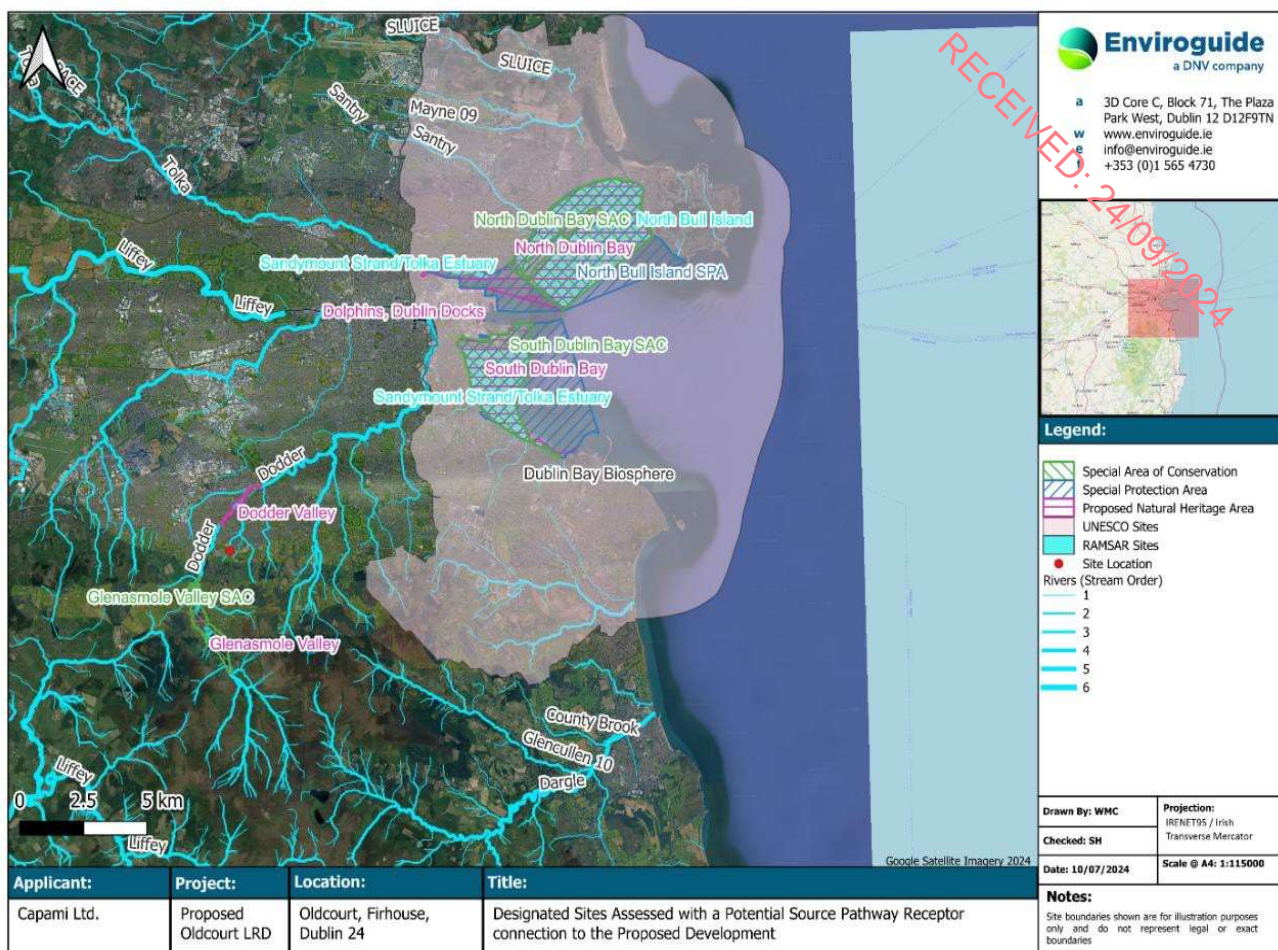


Figure 5-15. Designated Sites Assessed with a Potential Source Pathway Receptor connection to the Proposed Development.

5.5.2 Records of Habitats

Several distinct habitat types, as well as mosaics of different habitats (codes follow Fossitt, 2000) were recorded within the habitat survey area. These are described below and shown in Figure 5-17. Habitat classification was carried out on 20th of September 2022, 7th of October 2022 and 4th of June 2024. No change to the habitats and species assemblages present on Site was recorded in the most recent survey on 4th of June 2024 i.e., the Site remains as mainly improved agricultural grassland with livestock farming continuing to take place across the Site.

Due to the size of the Site, Figure 5-16 below shows identification numbers for the main fields within the Site. This was done to aid in locating the specific habitat types across the Site. Note that the red line boundary shown in this map is not indicative of the actual planning application boundary.

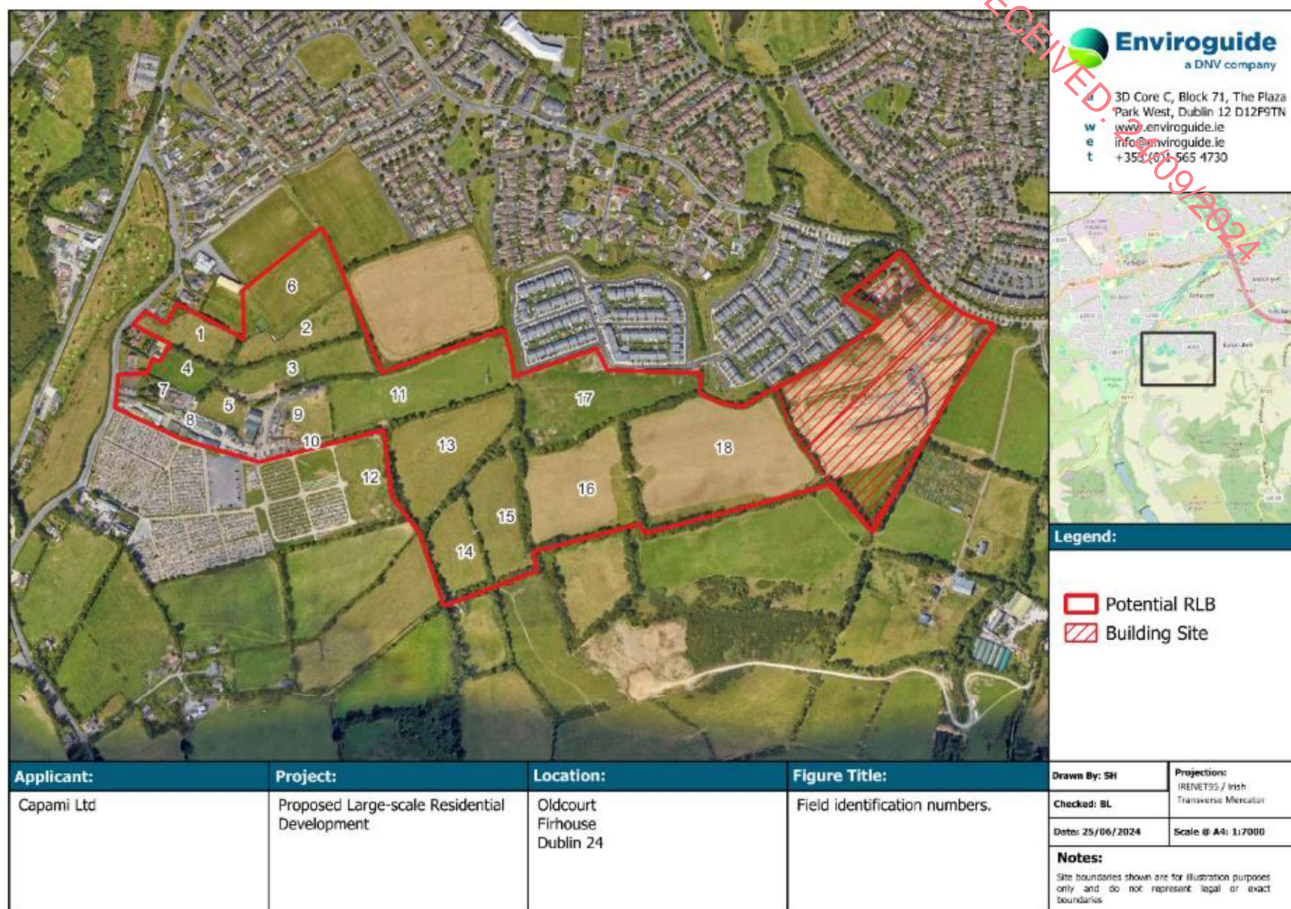


Figure 5-16. Field identification numbers used in descriptions of ecological conditions at the Site.

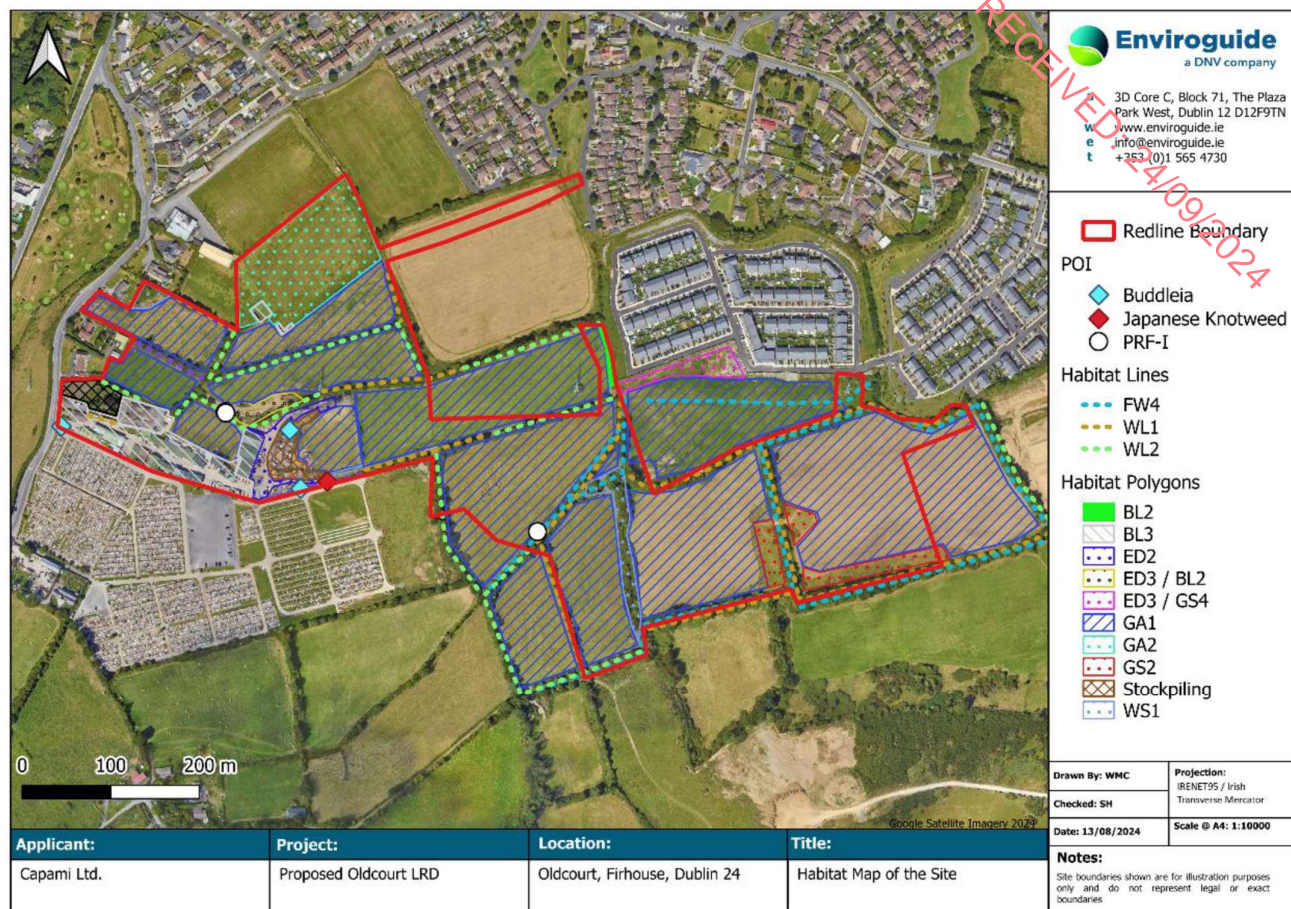


Figure 5-17. Map of habitats at the Site of the Proposed Development

5.5.2.1 GA1 – Improved agricultural grassland

Majority of the Site (fields 1-5, 9, 11, 13-18) consists of pasture fields for cattle and other livestock, classified as *Improved agricultural grassland* (GA1) (Figure 5-18). The fields were recorded to contain relatively low diversity of species. Species recorded within the fields included dandelion (*Taraxacum officinale*), creeping buttercup (*Ranunculus repens*), common mouse-ear (*Cerastium fontanum*), clovers (*Trifolium spp.*) and ribwort plantain (*Plantago lanceolata*). Two smaller fields at the north-west end of the Site (fields 1 and 2) contained more thistles (*Cirsium spp.*) and dock (*Rumex spp.*) species within the fields (Photograph 2), while the field margins contained nettles (*Urtica dioica*) and cow parsley (*Anthriscus sylvestris*).



Figure 5-18. GA1 – Improved agricultural grassland habitat at the Site.

5.5.3.2 GA2 – Amenity grassland

A GAA pitch with low diversity, highly managed amenity grassland is located at the north of the Site (field 6, Figure 5-19). The grass was recently mowed at the time of surveys, and it was not possible to identify individual species, however it is assumed diversity is low due to high use and frequent management.



Figure 5-19. GA2 – Amenity grassland habitat at the Site.

5.5.3.3 BL3 – Buildings and artificial surfaces

The southwest corner of the Site consists of an area with commercial and residential buildings (fields 7 and 8, bounding fields 5 and 9). The buildings were largely of open steel construction, with corrugated steel roofs and walls. The ground was mostly tarmacked or gravel (Figure 5-20). Stockpiles of various materials were stored outside at the eastern end of the industrial area. Just north of the commercial area lies a small residential area with an occupied dwelling.

A small fenced astroturf field was located at the southwest corner of field 6. No flora was observed within this artificial habitat.



Figure 5-20. BL3 – Buildings and artificial surfaces habitat at the Site.

5.5.3.4 ED2 – Spoil and bare ground

The access road at the eastern end of the commercial area, west of field 9, was of compacted gravel, and as such classified as bare ground. This area was devoid of flora.

An additional area of spoil and bare ground was observed at the south margin of field 3. In 2022, this area was noted as recolonising bare ground, however new soil had been deposited on top of the raised bare ground and in 2023 this was considered as bare ground due to lack of flora cover (Figure 5-21).



Figure 5-21. ED2 – Spoil and bare ground habitat at the Site.

5.5.3.5 WS1 – Scrub

Three distinct areas of scrub was observed during the site surveys: at the northwest corner of field 1, south margin of field 9, and as the boundary between fields 15 and 16 (Figure 5-22).

On field 1, the scrub was grown over wooden materials that had been dumped, and consisted of nettles and bramble (*Rubus fruticosus*). Species within the scrub habitat of field 9 included bramble. Species noted within the scrub parcel between fields 15 and 16 included gorse, bramble and occasional elder (*Sambucus nigra*). The linear areas of scrub between fields where no hedgerows or treelines exist provide continuity to the ecological corridors through the Site in a north-south direction.



Figure 5-22. WS1 – Scrub habitat at the Site.

5.5.3.6 BL2 – Earthbank

There is a small area of this habitat located along the redline boundary at the north of the Site (field 11, Figure 5-23). This habitat features a number of species including bramble (*Rubus sp.*), nettle, curly dock (*Rumex crispus*), dandelion, thistle, cinquefoil (*Potentilla reptans*) and common mallow (*Malva sylvestris*).



Figure 5-23. BL2 – Earthbank habitat at the Site

5.5.3.7 ED3/BL2 – Recolonising Bare Ground/Earthbanks

There is an area of this habitat located in the centre west of the Site (field 3) (Figure 5-24). Species noted in this habitat include thistle, nettle and ragwort (*Senecio jacobaea*).



Figure 5-24. ED3/BL2 – Recolonising Bare Ground/Earthbanks habitat at the Site.

5.5.3.8 GS2 – Dry Meadows and Grassy Verges

There are three areas of this habitat located in the southwest of the Site and although they are isolated from one another, they are situated relatively close to each other, separated by a maximum distance of approximately 27m. One of these habitat parcels is located in field 16 while the other two are located in field 18 (Figure 5-25). This habitat featured higher sward grass than the nearby GA1 – Improved agricultural grassland habitat. Species recorded in this habitat included cocksfoot (*Dactylis glomerata*), thistle, common mouse-ear, curly dock, nettle and silverweed (*Potentilla anserina*). This habitat may provide potential nesting habitat for ground nesting birds, however it is not considered to be a rare habitat type in the wider locality.



Figure 5-25. GS2 – Dry Meadows and Grassy Verges habitat at the Site.

5.5.3.9 FW4 – Drainage Ditch

All FW4 – Drainage Ditch habitats on the Site of the Proposed Development are located in the eastern half of the Site (Figure 5-26). The drainage ditches range from some holding flowing water and marginally being streams to some being dry, only holding water at times of rainfall events. All FW4 – Drainage ditches on Site flow within the margins of the fields and most are overgrown with WL1 – Hedgerow habitat as well as WL2 Treeline habitat.



Figure 5-26. FW4 - Drainage Ditch habitat at the Site.

5.5.3.10 WL1 – Hedgerow

The WL1 – Hedgerow habitat on the Site of the Proposed Development is distributed quite evenly with sections being located in most areas of the Site (Figure 5-27). Species noted within the WL1 – Hedgerow habitats on Site include bramble, cypress (*Cypressus sp.*), ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), dogrose (*Rosa canina*), blackthorn (*Prunus spinosa*), nettle, ivy (*Hedera helix*), common hogweed (*Heracleum sphondylium*), willow (*Salix sp.*), gorse (*Ulex europaeus*), bracken (*Dennstaedtiaceae sp.*), elder, cherry (*Prunus avium*) and privet (*Ligustrum sp.*).

The connectivity of this habitat on Site is good and combined with the WL2 – Treeline habitat (described below), they may provide species of fauna on Site with good commuting potential. The hedgerows of this Site were generally very thick and difficult to traverse providing excellent cover to fauna species.



Figure 5-27. WL1 – Hedgerow habitat at the Site.

5.5.3.11 WL2 – Treeline

The majority of this habitat is located in the western half of the Site (Figure 5-28). Species recorded within this habitat include bramble, hawthorn, elder, ash, cypress, willow, cherry, birch (*Betula sp.*) and sycamore (*Acer pseudoplatanus*). There are numerous examples of mature trees, ash and sycamore in particular, located throughout the Site.

As mentioned above in the WL1 – Hedgerow paragraph, the combination of the WL1 Hedgerow and WL2 Treeline habitats have the potential to provide fauna with good commuting opportunities, and is well linked to the outer landscape to the south.



Figure 5-28. WL2 – Treeline habitat at the Site.

5.5.3.12 Linked Habitats – the Dodder River

The Site is linked to the Dodder River via the drainage ditches and small tributaries within and adjacent to the Site. The Dodder River is considered to be a *Depositing/Lowland river – FW2* for the remainder of its length downstream from Oldbawn. The Dodder River supports a variety of terrestrial and semi-aquatic fauna and flora on its banks, as well as spawning trout (*Salmo trutta*) and lamprey (*Lampetra spp.*) (Matson et al. 2019).

5.5.4 Species and Species Groups

The Site of the Proposed Development is located within the Ordnance Survey Ireland National Grid 10km squares O02 and O12 and 2km squares O02X and O12C. Species records dated within the last 20 years were studied for the presence of invasive, rare or protected flora and fauna. These records are presented in full in Appendix 5.2. In addition, data from various sources (e.g., Inland Fisheries Ireland) were used to determine the presence of species in the vicinity of the Proposed Development. The following sections outline the results of this assessment.

5.5.4.1 Rare and Protected Flora

Species records available from the National Biodiversity Data Centre (NBDC) online database for the 2 km grid square (O02X and O12C) were studied for the presence of rare or protected flora species. A review of the above datasets yielded no records. Furthermore, according to the Flora Protection Order - Bryophytes Map Viewer provided by the DAHG, there are no records for bryophytes listed on the Flora Protection Order within the vicinity of the proposed development. No rare or protected flora were identified within the Site during surveys.



5.5.4.2 Invasive Flora Species

5.5.4.2.1 Desk Study Results

The NBDC have records for twenty-six species of flora considered to be invasive in the 10km grid squares O02 and O12, eleven of these are considered medium impact, whereas fourteen are considered high impact (Table 5-11). Sixteen species within the grid squares are listed under Schedule III of Regulation S.I. 477. Four species of flora considered to be invasive are listed for the 2km (O02X and O12C), grid squares within which the site of the proposed development is located. These include butterfly bush (*Buddleia davidii*), indian balsam (*Impatiens glandulifera*), himalayan honeysuckle (*Leucesteria ferrosa*) and sycamore (*Acer pseudoplatanus*). All of these species are listed as medium impact invasive species apart from indian balsam, which is listed under Schedule III of Regulation S.I. 477 and is a high impact invasive species.

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Species Group	Name	Grid square	Date of last record	Database	Legal Status
Invasive Flora	American Skunk-cabbage <i>Lysichiton americanus</i>	O02 O12	06/04/2021 23/04/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Medium Impact Invasive Species - EU Regulation No 1143/2014 - Regulation S.I. 477 (Ireland)
	Black Currant <i>Ribes nigrum</i>	O02 O12	19/04/2005 24/05/2015	Species Data from the National Vegetation Database	- Medium Impact Invasive Species
	Butterfly-bush <i>Buddleja davidii</i>	O02 O12 O02X	29/07/2019 25/03/2023 24/03/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Medium Impact Invasive Species
	Cherry Laurel <i>Prunus laurocerasus</i>	O02 O12	30/03/2024 01/06/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- High Impact Invasive Species
	Curly Waterweed <i>Lagarosiphon major</i>	O02	31/12/2001	National Invasive Species Database	- High Impact Invasive Species - EU Regulation No 1143/2014 - Regulation S.I. 477 (Ireland)
	<i>Fallopia japonica</i> x <i>sachalinensis</i> = <i>F. x bohemica</i>	O12	23/06/2012	National Invasive Species Database	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)
	Fringed Water-lily <i>Nymphoides peltate</i>	O02	15/06/2016	National Invasive Species Database	- High Impact Invasive Species
	Giant Hogweed <i>Heracleum mantegazzianum</i>	O02 O12	22/06/2021 04/06/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)
	Giant Knotweed <i>Fallopia sachalinensis</i>	O02	06/06/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)
	Giant-rhubarb <i>Gunnera tinctoria</i>	O12	30/05/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)
	Himalayan Honeysuckle <i>Leycesteria Formosa</i>	O12 O12C	15/12/2023 28/08/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Medium Impact Invasive Species



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Species Group	Name	Grid square	Date of last record	Database	Legal Status
	Himalayan Knotweed (<i>Persicaria wallichii</i>)	O12	23/06/2012	National Invasive Species Database	- Medium Impact Invasive Species - Regulation S.I. 477 (Ireland)
	Indian Balsam <i>Impatiens glandulifera</i>	O02 O12 O02X	31/12/2017 20/04/2023 31/12/2017	National Invasive Species Database	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)
	Japanese Knotweed <i>Fallopia japonica</i>	O02 O12	01/05/2023 29/08/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)
	Japanese Rose <i>Rosa rugosa</i>	O12	27/04/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Medium Impact Invasive Species
	New Zealand Pigmyweed <i>Crassula helmsii</i>	O02	31/12/2001	National Invasive Species Database	- High Impact Invasive - Regulation S.I. 477 (Ireland)
	Nuttall's Waterweed <i>Elodea nuttallii</i>	O12	31/12/1994	National Invasive Species Database	- High Impact Invasive - Regulation S.I. 477 (Ireland)
	Parrot's-feather <i>Myriophyllum aquaticum</i>	O12	26/06/2008	National Invasive Species Database	- High Impact Invasive Species - EU Regulation No 1143/2014 - Regulation S.I. 477 (Ireland)
	<i>Rhododendron ponticum</i>	O02 O12	17/04/2022 28/05/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- High Impact Invasive - Regulation S.I. 477 (Ireland)
	Spanish Bluebell <i>Hyacinthoides hispanica</i>	O12	16/04/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Regulation S.I. 477 (Ireland)
	Sycamore <i>Acer pseudoplatanus</i>	O02 O12 O02X	23/04/2023 24/04/2023 15/05/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Medium Impact Invasive Species
	Three-cornered Garlic <i>Allium triquetrum</i>	O02 O12	19/05/2023 05/01/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Medium Impact Invasive Species



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Species Group	Name	Grid square	Date of last record	Database	Legal Status
					- Regulation S.I. 477 (Ireland)
	Traveller's-joy <i>Clematis vitalba</i>	O12	28/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Medium Impact Invasive Species
	Turkey Oak <i>Quercus cerris</i>	O02	11/04/2005	Species Data from the National Vegetation Database	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)
	Wall Cotoneaster <i>Cotoneaster horizontalis</i>	O12	31/03/2014	Discrete vascular plant surveys	- Medium Impact Invasive Species
	Wild Parsnip <i>Pastinaca sativa</i>	O02	11/07/2015	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Medium Impact Invasive Species

Table 5-11. Records of invasive flora within the relevant grid squares

5.5.4.2.2 Field Survey Results

Japanese knotweed (*Fallopia japonica*) was recorded at the Site during the walk over surveys carried out on the 20th of September 2023, 7th of October 2023 or 4th of June 2024. This species is listed as a high impact invasive species and is also listed under regulation S.I 477. Butterfly bush (*Buddleia davidii*) was also recorded during the Site walkover and is listed as a medium impact invasive species.

5.5.4.3 Bats

5.5.4.3.1 Desk Study Results

Records for Bat species recorded in the 2km and 10km National Grid Squares were retrieved from the NBDC online database, along with records obtained from the NPWS. Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*), Leisler's bat (*Nyctalus leisleri*) and Soprano Pipistrelle (*Pipistrellus pygmaeus*) were recorded in all 2km and 10km squares (O02, O12, O02X and O12C). Daubenton's Bat (*Myotis daubentonii*) was recorded in O02, O12 and O02X. Nathusius's Pipistrelle (*Pipistrellus nathusii*) and Whiskered Bat (*Myotis mystacinus*) were recorded only in O12. Natterer's Bat (*Myotis nattereri*) was recorded in O02 and O12. Pipistrelle (*Pipistrellus pipistrellus sensu lato*) was recorded in grid squares O02, O12 and O12C.

The NBDC's bat suitability index (Lundy et al. 2011) score for the area is 24.67. The index provides a visual map of the broad scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species, and shows that the area surrounding the Site of the Proposed Development carries an overall bat suitability score of 24.67 out of 100. The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for bats. The species with the highest individual suitability scores for the area encompassing the site are Common Pipistrelle and Leisler's bat, each with a score of 40.

5.5.4.3.2 Field Survey Results

5.5.4.3.2.1 Potential Bat Roost Assessment and Habitat Suitability

An assessment of the Site's bat potential was conducted on the 4th of July 2023, 13th of July 2023 and 4th of June 2024 by Enviroguide Ecologists. This assessment included a potential bat roost assessment (PBRA) of the structures on Site as well as an assessment of the habitat suitability therein.

Concluding the PBRA surveys, the results of the assessments confirmed that the buildings within the Site hold negligible bat roost potential (Figure 5-29), therefore no further surveys on these structures were required as per the BCT Guidelines (Collins, 2023).



Figure 5-29. The Buildings on Site determined to have negligible roosting suitability.

The Site featured three trees with PRF-Is (for locations refer to habitat map, Figure 5-17). The PRFs of each tree can be seen below. As only PRF-Is were recorded, no further survey effort is required as per the BCT Guidelines (Collins, 2023). The first of the trees with PRF-I features is an ivy-covered tree which has fallen over (Figure 5-30), and is located south of the centre of the Site. Bats can potentially enter behind ivy where a gap is presented.



Figure 5-30. Ivy covered tree with PRF-I.

The other two trees with PRF-I features both had small gaps into the trunk of the tree which have potential for individual bats to utilise as a roosting space (see Figure 5-31). Both of these trees were located adjacent to one another in the west of the Site. See figure 5.19 for exact locations.



Figure 5-31. PRF-I trees with hollowing in the trunk

Habitats on Site were assessed for their ability to support foraging and commuting bats, as well as the Site's connectivity to the wider landscape. A range of factors are considered in making this assessment, such as the connectivity of the Site to the wider landscape by means of treelines, hedgerows, and river corridors, the size, quality and species composition of treelines and hedgerows on Site, and the presence of any barriers to commuting for bat species.

Based on the above factors, it is determined that the Site provides "Moderate" suitability for foraging and commuting bats as per Collins (2023).

5.5.4.3.2.2 Bat Activity Surveys

Three transect surveys were conducted at the Site during May, June and August of 2023. Bats were observed utilizing the Site for foraging and commuting throughout the Site. Foraging activity was concentrated along linear features such as hedgerows and treelines. The three transect routes varied slightly due to presence of cattle in the fields during surveys.

The survey results from 2022 bat surveys are not included in this section for simplicity, as survey techniques and effort were updated for the 2023 season. However, it is noted that the results were similar, and that no notable changes in the species composition or activity levels were observed between 2022 and 2023. Data from the 2022 surveys can be made available upon request.

5.5.4.3.2.2.1 Walked Transect Survey 1 – 16th of May 2023

Activity of bats was relatively evenly dispersed throughout the Site but was concentrated along linear features such as hedgerows. Bat passes and species composition for this survey are shown in Table 5-12 and Figure 5-32 respectively. A map of recorded bat activity is displayed in Figure 5-33 and the transect route is depicted in Figure 5-34. Leisler's bat activity was considered high during this transect, while

common pipistrelle was considered moderate.
Soprano and brown long eared bat activity was low.

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Common name	Latin name	Bat Passes
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	37
Leisler's bat	<i>Nyctalus leisleri</i>	78
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	5
Brown Long Eared bat	<i>Plecotus auritus</i>	1

Table 5-12. Summary of bat activity recorded on Site – 16th of May 2023.

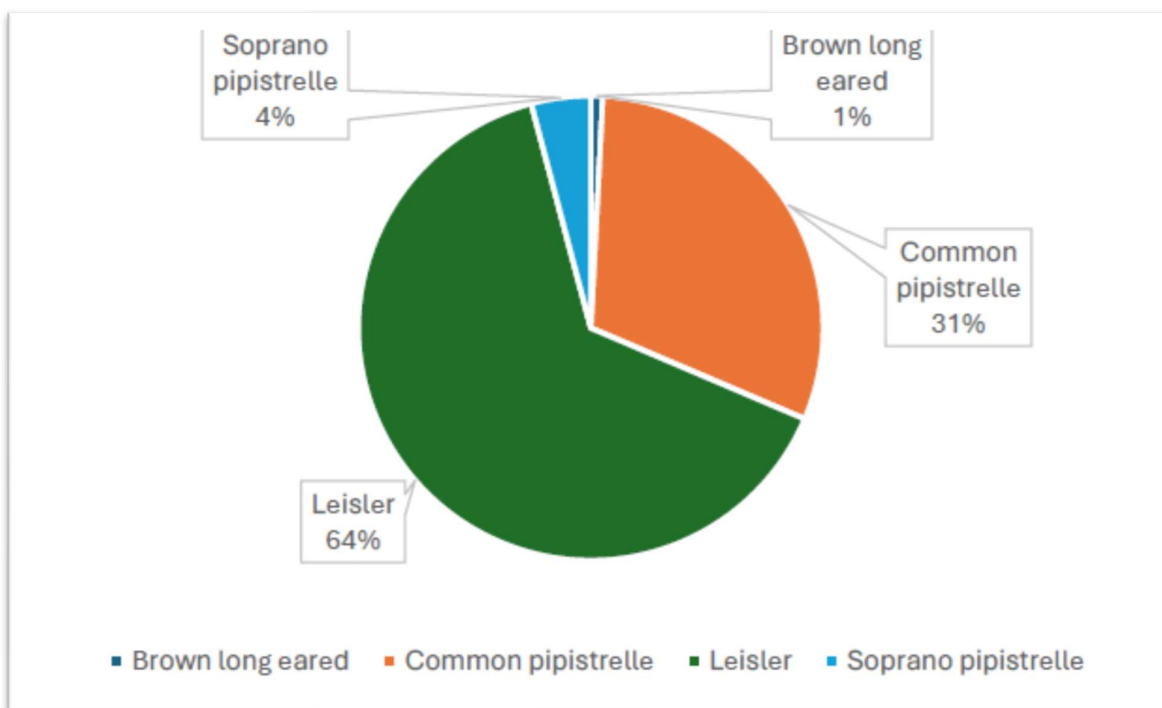


Figure 5-32. Species composition of 16th May 2023

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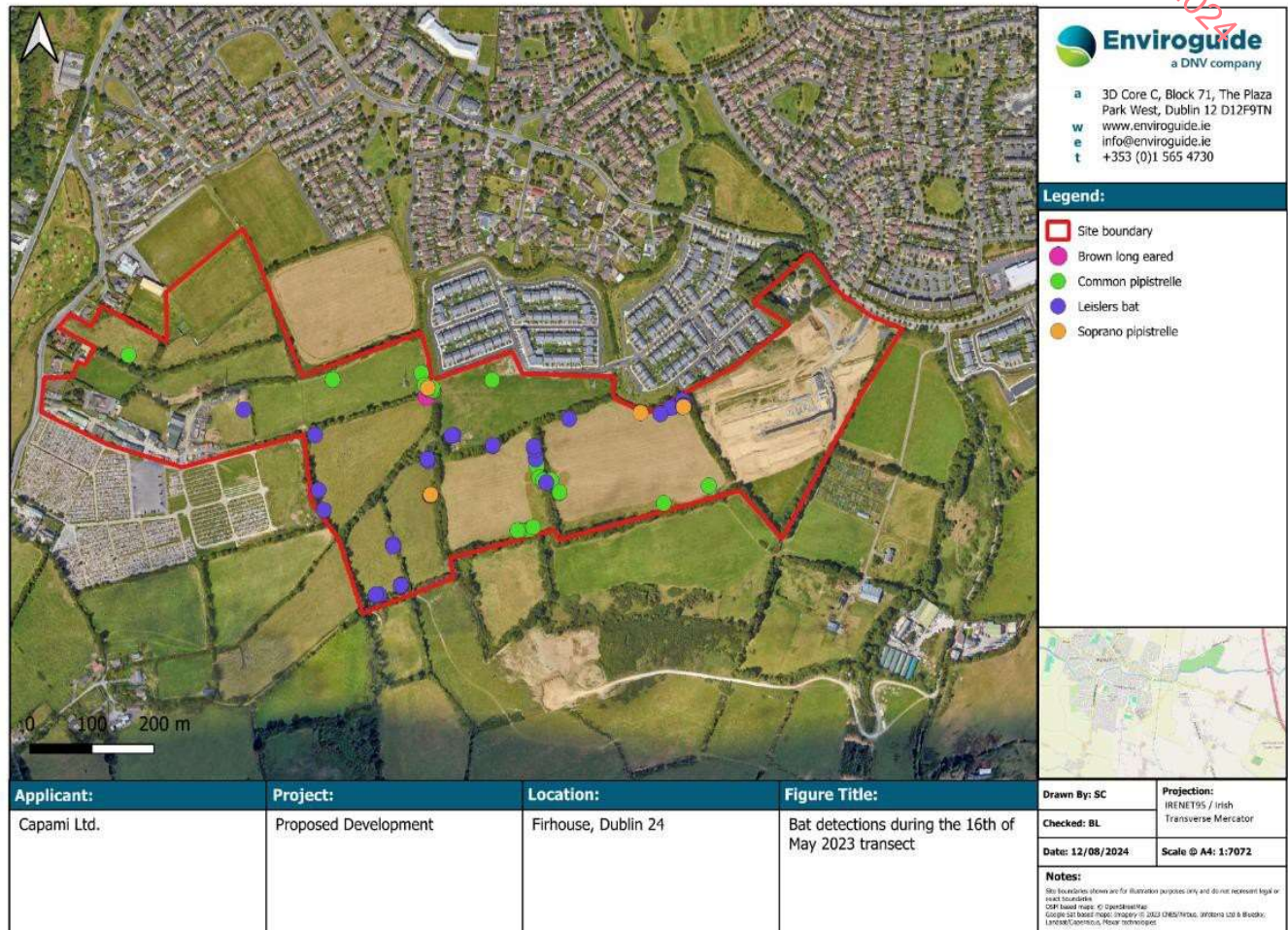


Figure 5-33. Bat activity on the 16th of May 2023

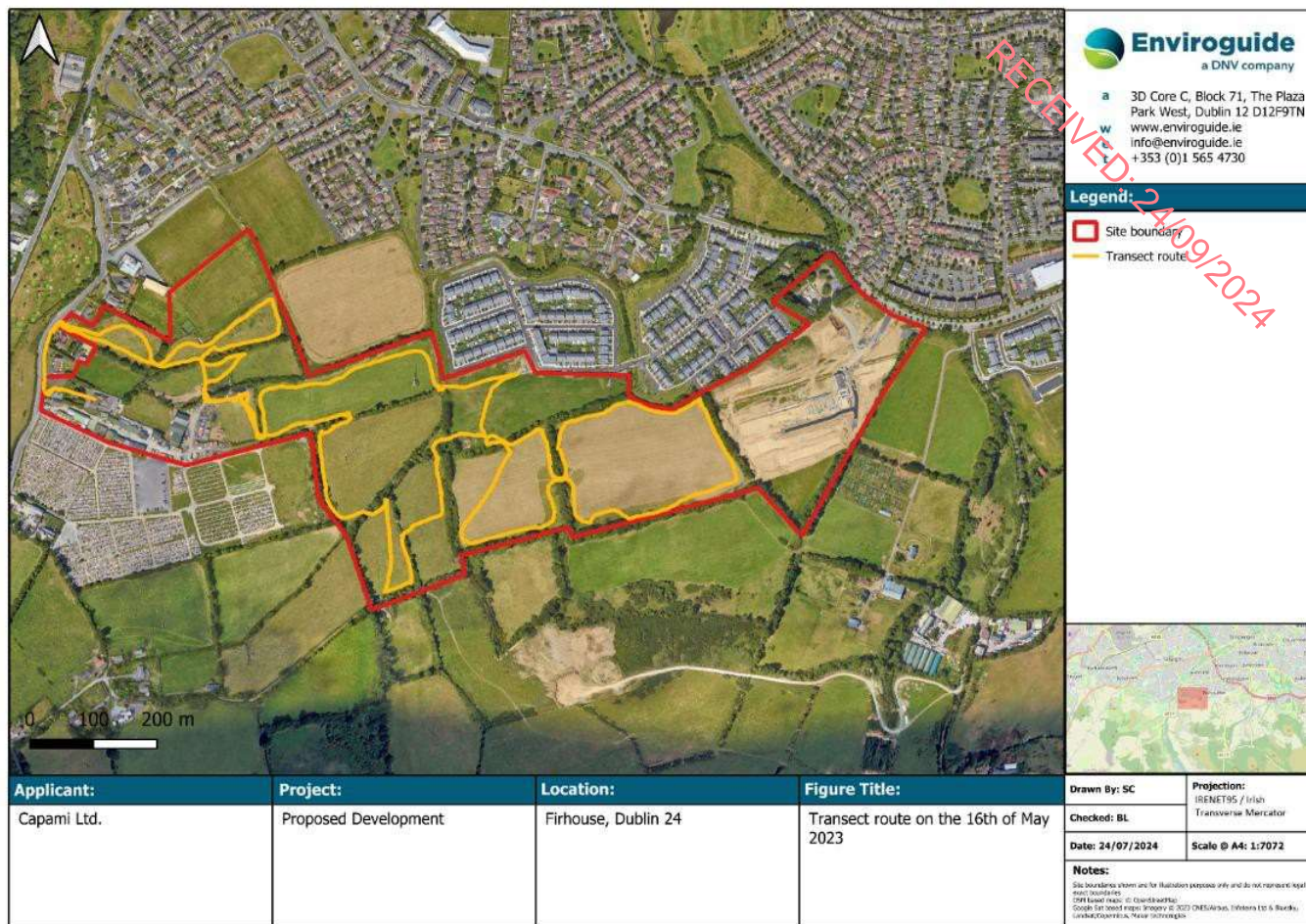


Figure 5-34. Transect route on the 16th of May 2023

5.5.4.3.2.2 Walked Transect Survey 2 – 21st of June 2023

Activity was recorded throughout the Site with concentrations of bats generally appearing highest around the central hedgerows. Bat passes and species composition for this survey are shown in Table 5-13 and Figure 5-35 respectively. A map of recorded bat activity is displayed in Figure 5-36 and the transect route is depicted in Figure 5-37. Activity for all three species was considered moderate.

Common name	Latin name	Bat Passes
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	45
Leisler's bat	<i>Nyctalus leisleri</i>	25
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	22

Table 5-13. Summary of bat activity recorded on Site – 21st of June 2023

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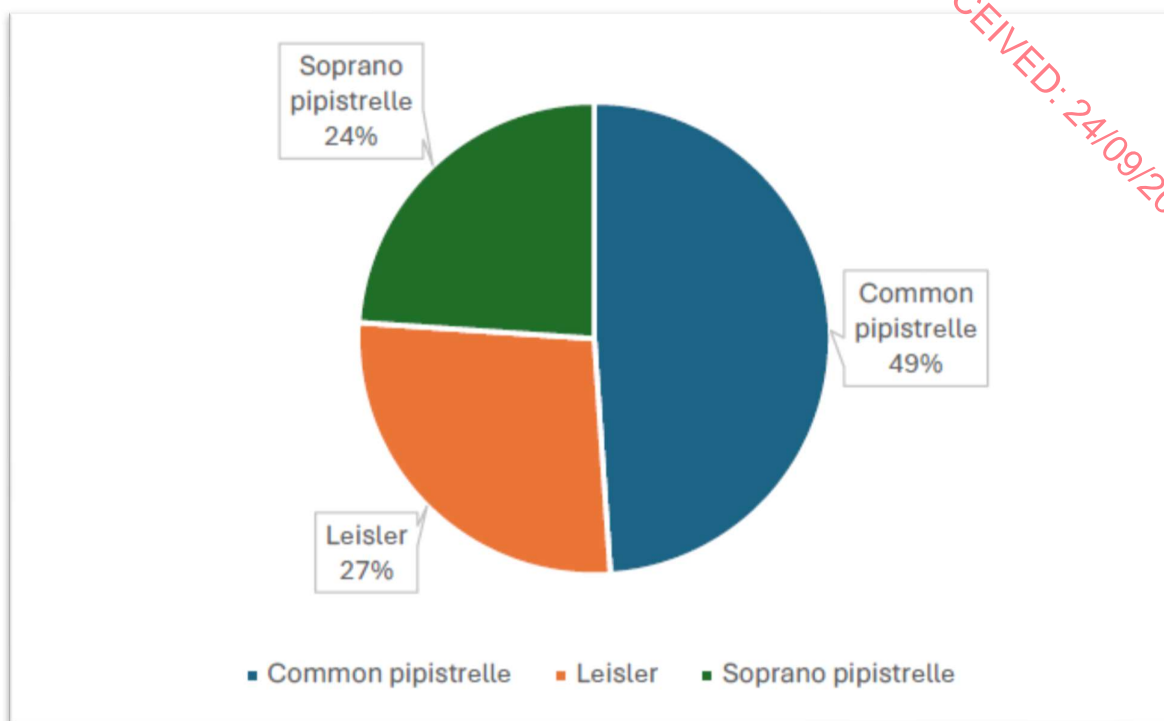
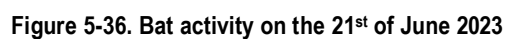


Figure 5-35. Species composition of 21st June 2023



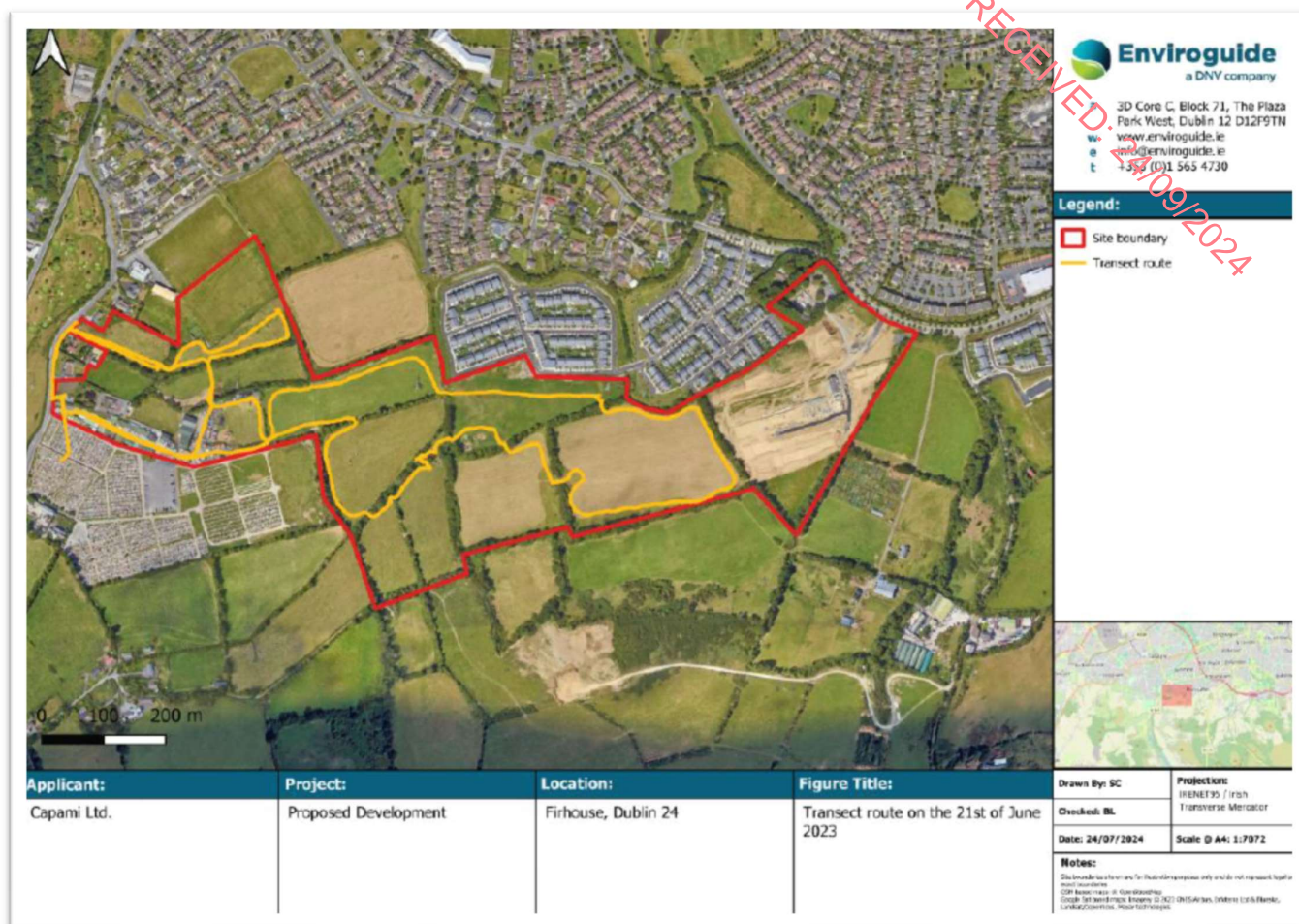


Figure 5-37. Transect route on 21st June 2023

5.5.4.3.2.2.3 Walked Transect Survey 3 – 9th of August 2023

Activity during this transect was generally confined to the west of the Site. Bat passes and species composition for this survey are shown in Table 5-14 and Figure 5-38, respectively. A map of recorded bat activity is displayed in Figure 5-39 and the transect route is depicted in Figure 5-40. Activity for all three species was considered moderate.

Common name	Latin name	Bat Passes
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	26
Leisler's bat	<i>Nyctalus leisleri</i>	11
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	11

Table 5-14. Summary of bat activity recorded on Site – 9th of August 2023

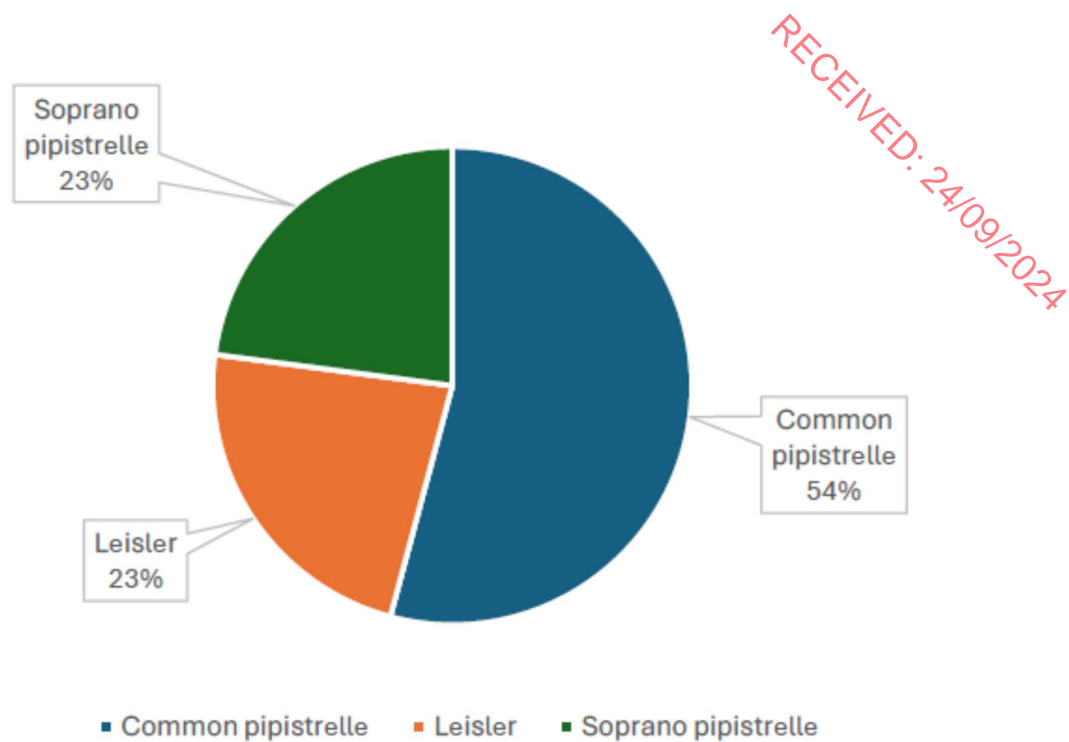


Figure 5-38. Species composition on the 9th of August 2023

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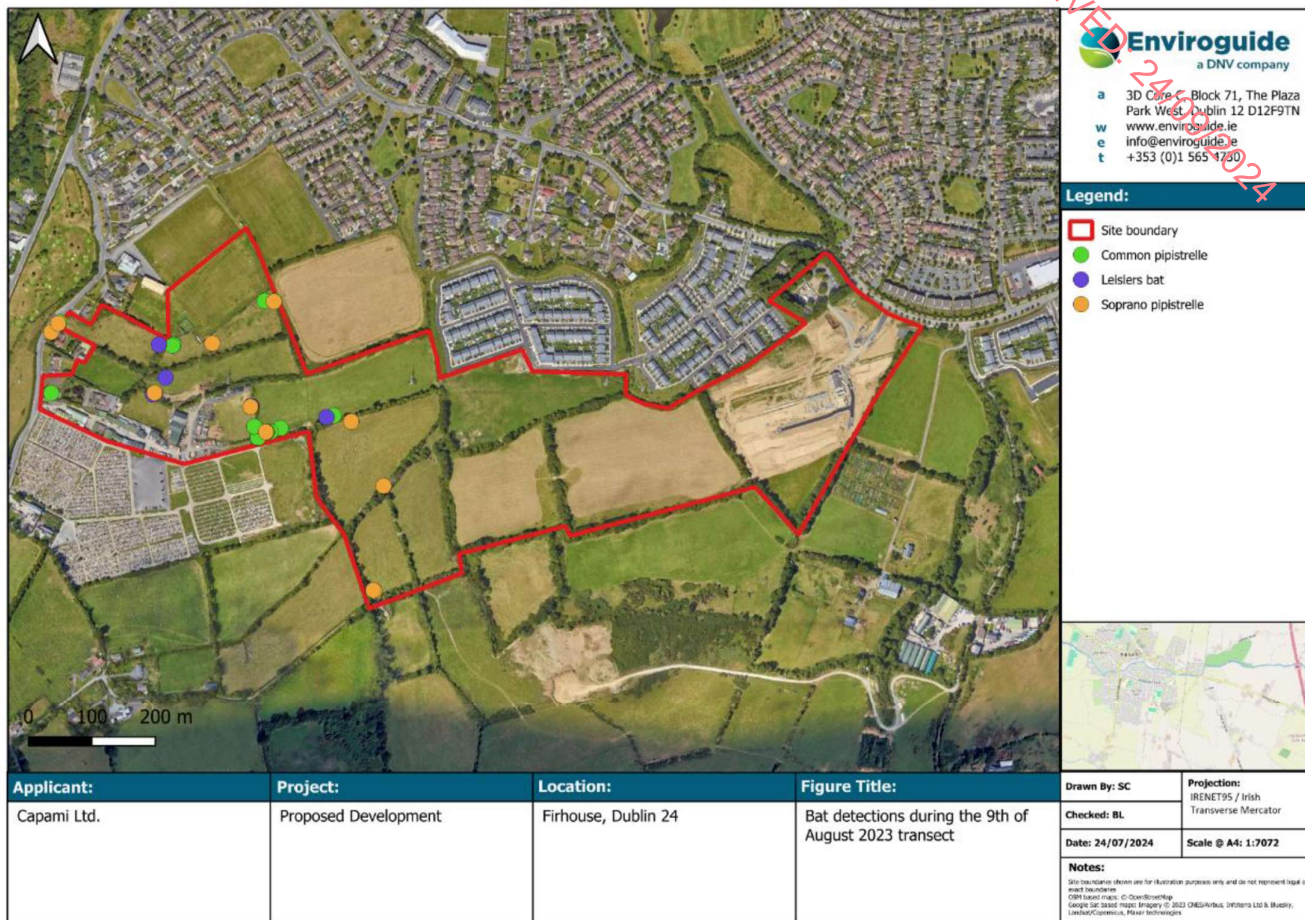


Figure 5-39. Bat activity on the 9th of August 2023.

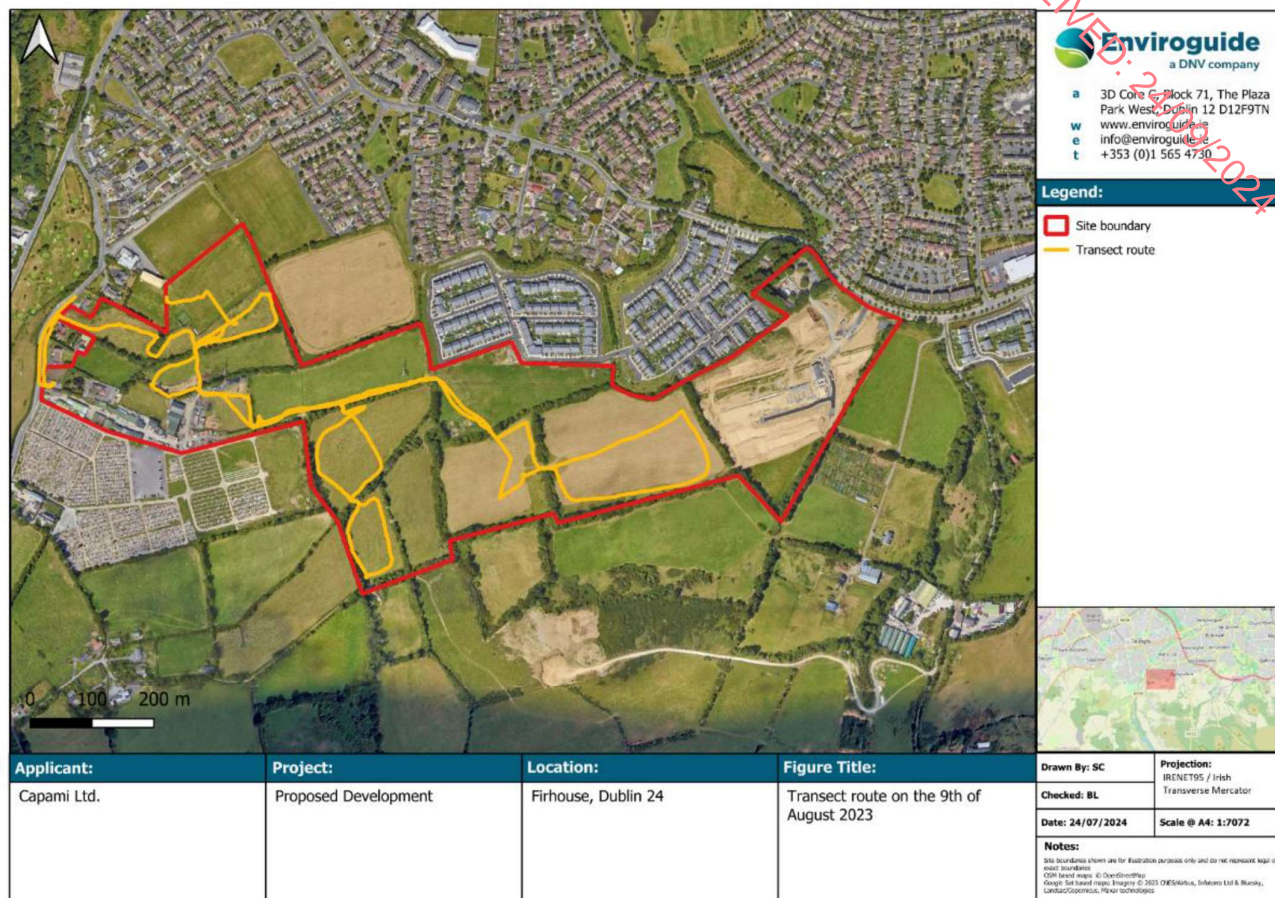


Figure 5-40. Transect route on the 9th of August 2023

5.5.4.3.2.3 Summary of Field Survey Results

The average bat activity was considered moderate for three of the species recorded, namely

- Common pipistrelle
- Soprano pipistrelle
- Leisler's bat

Brown long-eared bat was only recorded as one pass on the 16th of May 2023, and therefore the activity is considered low.

Considering the level of activity at the Site, particularly along the linear features (hedgerows and treelines), the preliminary assessment of habitat suitability to foraging and commuting bats as *moderate* is considered appropriate.

5.5.4.4 Birds

5.5.4.4.1 Desk Study Results

A total of 137 bird species have been recorded within the relevant grid squares. 35 of these are listed as Amber and 21 as Red on the 'Birds of Conservation Concern Ireland 4' (BoCCI) (Gilbert et al. 2021); these species are listed in below. All remaining species are green listed in BoCCI, and are shown in Appendix 5.2.

Name	Grid square	Date of last record	Database	Conservation status ¹
Barn Owl <i>Tyto alba</i>	O02 O12 O12C	19/04/2023 21/07/2021 20/07/2021	Birds of Ireland	Red
Barn Swallow <i>Hirundo rustica</i>	O02 O12 O02X O12C	20/04/2023 24/04/2023 07/05/2020 31/12/2011	Birds of Ireland Bird Atlas 2007 - 2011	Amber
Black-headed Gull <i>Larus ridibundus</i>	O02 O12	06/11/2022 07/03/2023	Birds of Ireland	Amber
Brambling <i>Fringilla montifringilla</i>	O02 O12	23/11/2020 31/12/2011	Birds of Ireland Bird Atlas 2007 - 2011	Amber
<i>Branta bernicla</i> subsp. <i>hrota</i>	O12	31/12/2011	Bird Atlas 2007 - 2011	Amber
Common Coot <i>Fulica atra</i>	O02 O12	17/04/2023 08/04/2023	Birds of Ireland	Amber
Common Eider <i>Somateria mollissima</i>	O12	18/05/2015	Birds of Ireland	Red
Common Goldeneye <i>Bucephala clangula</i>	O02 O12	31/12/2011 18/05/2015	Bird Atlas 2007 – 2011 Birds of Ireland	Red
Common Kestrel <i>Falco tinnunculus</i>	O02 O12	11/12/2020 09/08/2021	Birds of Ireland	Red
Common Kingfisher <i>Alcedo atthis</i>	O02 O12	10/02/2023 12/04/2023	Birds of Ireland	Amber
Common Linnet <i>Carduelis cannabina</i>	O02 O12 O02X	16/01/2021 10/03/2023 16/01/2021	Birds of Ireland	Amber
Common Pochard <i>Aythya ferina</i>	O12	22/12/2018	Birds of Ireland	Red
Common Redshank <i>Tringa totanus</i>	O12	29/12/2022		Red
Common Sandpiper <i>Actitis hypoleucos</i>	O0 2 O1 2	31/12/2011 31/12/2011	Bird Atlas 2007 - 2011	Amber
Common Snipe <i>Gallinago gallinago</i>	O0 2 O1 2	31/12/2011 27/01/2021	Bird Atlas 2007 - 2011	Red
Common Starling <i>Sturnus vulgaris</i>	O02 O12 O02 X	29/05/2021 18/05/2023 07/05/2020	Birds of Ireland	Amber



Common Swift <i>Apus apus</i>	O02 O12 O02 X O12 C	04/05/2020 27/08/2023 31/12/2011 05/07/2023	Birds of Ireland Swifts of Ireland Bird Atlas 2007 - 2011	Red
Eurasian Curlew <i>Numenius arquata</i>	O0 2 O1 2	26/12/2016 08/12/2018	Birds of Ireland	Red
Eurasian Oystercatcher <i>Haematopus ostralegus</i>	O12	29/12/2022	Birds of Ireland	Red
Eurasian Teal <i>Anas crecca</i>	O0 2 O1 2	31/12/2011 11/03/2023	Bird Atlas 2007 – 2011 Birds of Ireland	Amber
Eurasian Tree Sparrow <i>Passer montanus</i>	O0 2 O1 2	31/12/2011 31/12/2011	Bird Atlas 2007 - 2011	Amber
Eurasian Woodcock <i>Scolopax rusticola</i>	O0 2 O1 2	31/12/2011 31/12/2011	Bird Atlas 2007 - 2011	Red
European Golden Plover <i>Pluvialis apricaria</i>	O12	31/12/2011	Bird Atlas 2007 - 2011	Red
European Greenfinch <i>Carduelis chloris</i>	O02 O12 O12 C	10/04/2023 21/04/2023 31/12/2011	Birds of Ireland Bird Atlas 2007 - 2011	Amber
Gadwall <i>Anas strepera</i>	O12	20/04/2023	Birds of Ireland	Amber
Goldcrest <i>Regulus regulus</i>	O0 2 O1 2	05/03/2023 02/05/2023	Birds of Ireland	Amber
Great Cormorant <i>Phalacrocorax carbo</i>	O0 2 O1 2	25/03/2023 27/03/2023	Birds of Ireland	Amber
Great Crested Grebe <i>Podiceps cristatus</i>	O02	31/12/2011	Bird Atlas 2007 - 2011	Amber
Grey Wagtail <i>Motacilla cinerea</i>	O0 2 O1 2	11/01/2023 03/05/2023	Birds of Ireland	Red
Greylag Goose <i>Anser anser</i>	O0 2 O1 2	31/12/2011 18/04/2023	Bird Atlas 2007 – 2011 Birds of Ireland	Amber
Hen Harrier <i>Circus cyaneus</i>	O02 O02	22/03/2019 22/03/2019	Birds of Ireland	Amber



	X			
Herring Gull <i>Larus argentatus</i>	O0 2 O1 2	26/12/2020 20/04/2023	Birds of Ireland	Amber
House Martin <i>Delichon urbicum</i>	O02 O12 O02 X	09/05/2020 25/04/2023 07/05/2020	Birds of Ireland	Amber
House Sparrow <i>Passer domesticus</i>	O02 O12 O02 X	25/04/2023 26/05/2023 31/12/2011	Birds of Ireland Bird Atlas 2007 – 2011	Amber
Lesser Black-backed Gull <i>Larus fuscus</i>	O0 2 O1 2	18/04/2023 08/04/2023	Birds of Ireland	Amber
Mallard <i>Anas platyrhynchos</i>	O02 O12 O02 X	06/05/2023 20/04/2023 31/12/2011	Birds of Ireland Bird Atlas 2007 - 2011	Amber

Table 5-15. BOCCI Amber and Red listed birds within intersecting NBDC grid squares of the Proposed Site

5.5.4.4.2 Field Survey Results

The breeding bird surveys commenced on the mornings of the 10th of May, 19th of June and 5th of July 2023 at the Site. Transects were done through the site to record all the species that were present. A final zig-zag walk through the site was done at the end of the survey to ensure no additional species were missed. **35** species were recorded between the three Breeding Bird Surveys. **27** species were recorded on 10th of May 2023, **31** species were recorded on the 19th of June 2023, and **28** species were recorded on the 5th of July 2023. These species are listed in the table below.

Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
Blackbird	<i>Turdus merula</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Blackcap	<i>Sylvia atricapilla</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Blue Tit	<i>Cyanistes caeruleus</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Confirmed. Recently fledged young.
Bullfinch	<i>Pyrrhula pyrrhula</i>	Green	19 th June 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season



Buzzard	<i>Buteo buteo</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Possible breeding. Species observed in breeding season in suitable nesting habitat
Chaffinch	<i>Fringilla coelebs</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Possible. Species observed in breeding season in suitable nesting Habitat
Chiffchaff	<i>Phylloscopus collybita</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Coal Tit	<i>Parus ater</i>	Green	19 th June 2023 5 th July 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Collared Dove	<i>Streptopelia decaocto</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Dunnock	<i>Prunella modularis</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Feral Pigeon	<i>Columba livia domestica</i>	Unclassified	19 th June 2023 5 th July 2023	Non-breeder. Flyovers.
Goldcrest	<i>Regulus regulus</i>	Amber	10 th May 2023 19 th June 2023 5 th July 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Goldfinch	<i>Carduelis carduelis</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Confirmed. Recently fledged young.
Great Tit	<i>Parus major</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Greenfinch	<i>Chloris chloris</i>	Amber	19 th June 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat



Hooded Crow	<i>Corvus cornix</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
House Martin	<i>Delichon urbicum</i>	Amber	5 th July 2023	Non-breeding. Flyovers and feeding over the Site.
House Sparrow	<i>Passer domesticus</i>	Amber	10 th May 2023 19 th June 2023 5 th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Jackdaw	<i>Corvus monedula</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Confirmed. Recently fledged young.
Linnet	<i>Linaria cannabina</i>	Amber	10 th May 2023 19 th June 2023 5 th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Long-tailed Tit	<i>Aegithalos caudatus</i>	Green	19 th June 2023	Possible breeder. Species observed in breeding season in suitable nesting Habitat
Magpie	<i>Pica pica</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Confirmed. Recently fledged young.
Mistle Thrush	<i>Turdus viscivorus</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Peregrine	<i>Falco peregrinus</i>	Green	10 th May 2023	Non-breeding. Flyover only on one date.
Raven	<i>Corvus corax</i>	Green	10 th May 2023	Non-breeding. Flyover only on one date.
Reed Bunting	<i>Emberiza schoeniclus</i>	Green	19 th June 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Robin	<i>Erithacus rubecula</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Confirmed. Recently fledged young.
Rook	<i>Corvus frugilegus</i>	Green	10 th May 2023 19 th June 2023 5 th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season



Song Thrush	<i>Turdus philomelos</i>	Green	10th May 2023 19th June 2023 5th July 2023	Confirmed. Recently fledged young.
Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
Starling	<i>Sturnus vulgaris</i>	Amber	10th May 2023 19th June 2023 5th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Swallow	<i>Hirundo rustica</i>	Amber	10th May 2023 19th June 2023 5th July 2023	Non-breeder. Foraging over the Site.
Swift	<i>Apus apus</i>	Red	5th July 2023	Non-breeder. Foraging over the Site.
Woodpigeon	<i>Columba palumbus</i>	Green	10th May 2023 19th June 2023 5th July 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Wren	<i>Troglodytes troglodytes</i>	Green	10th May 2023 19th June 2023 5th July 2023	Confirmed. Recently fledged young.
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber	10th May 2023 19th June 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat

Table 5-16. Bird species recorded during breeding bird surveys in 2023.

5.5.4.5 Mammals (excl. bats)

5.5.4.5.1 Desk Study Results

Eleven native terrestrial mammals were recorded within the 10km grid squares, nine of which are afforded legal protection under the Wildlife (Amendment) Act, 2000, namely Eurasian Badger (*Meles meles*), Eurasian Pygmy Shrew (*Sorex minutus*), Eurasian Red Squirrel (*Sciurus vulgaris*), European otter, Irish Hare (*Lepus timidus subsp. hibernicus*), Irish stoat (*Mustela erminea subsp. hibernica*), pine marten (*Martes martes*), red deer (*Cervus elaphus*) and West European hedgehog (*Erinaceus europaeus*). A number of these species are also protected under the Habitats Directive and were recorded within one or more of the relevant grid squares. The desk study results showed the nearest records of badger setts from the 1km grid O1023 (record dating from 2008), located approx. 1.5km south of the Site.



5.5.4.5.2 Field Survey Results

Mammals have the potential to utilize the WS1 – Scrub, WL1 - Hedgerow and WL2 – Treeline habitats on Site for commuting, foraging and resting. With the combination of these habitats, they provide good connectivity for mammals to the wider landscape beyond the southern boundary of the Site in particular.

Small mammals such as pygmy shrew, hedgehog, Irish stoat and pine marten have the potential to use the WS1 – Scrub, WL1 - Hedgerow and WL2 – Treeline habitats on Site for commuting, foraging and resting. In addition, these small mammals may also utilise the GS2 – Dry meadows and grassy verges habitats for commuting, foraging and resting.

Red squirrel is unlikely to be present at the Site due to lack of suitable woodland habitats. No evidence of Irish hare was observed during the field surveys, and the presence of invasive rabbit (*Oryctolagus cuniculus*) may exclude them from using the Site due to resource competition.

No evidence of red deer was observed during any of the Site surveys, and it is considered that this species is not likely to be present at the Site due to lack of woodland habitats and the year-round presence of cattle.

A potential badger sett was recorded during the walkover on the 4th of June 2024. A trail camera was set up on the 4th of July 2024 to determine any mammal activity at the potential sett entrance. The camera was left in place for a two-week period. The trail survey recorded a total of 603 video clips and 603 corresponding photos. One of these photos showed a badger passing the potential sett entrance, but as there was no video of the badger, it is assumed the badger was just passing. This is because the trail camera first records a photo, then takes a video, and if the badger was passing in haste the video recording would not have caught it. Other species recorded on the trail camera included red fox (*Vulpes vulpes*), a rat or mouse species, domesticated house cats, rabbits (*Oryctolagus cuniculus*) and cattle.

A red fox was also recorded during the walkover on the 4th of June 2024. Evidence of red fox in the form of scats was recorded during the other walkovers on the 20th of September 2022 and 7th of October 2022. The Site does not contain suitable habitats for otter (*Lutra lutra*), however otter have been recorded in the nearby Dodder River (Macklin et al. 2019).

Invasive fauna species recorded on the Site during the walkover surveys included the rabbit and sika deer (*Cervus nippon*).

5.5.4.6 Amphibians

Both common frog (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*) have been recorded in the relevant grid squares encompassing the Site of the Proposed Development.

During the walkover surveys, no signs of amphibians were recorded. However, the drainage ditches and streams traversing the Site may provide suitable pooling water areas for breeding amphibians.

5.5.4.7 Common Lizard

No records of Common Lizard (*Zootoca vivipara*) exist for the relevant grid squares. However, there is some suitable habitat for this species within the Site of the Proposed Development, particularly along the hedgerows where ground is more exposed. As no targeted surveys for Common Lizard were carried out, it is assumed under the precautionary principle that a locally important population of this species may be present at the Site.

5.5.4.8 Fish

No records for fish exist from the past 20 years in the relevant grid squares, however, the Dodder River supports a known fishery of brown trout. Other fish species such as lamprey (*Lampetra spp.*) and European eel (*Anguilla anguilla*) are also known to be present in the Dodder River (Matson et al. 2019).

5.5.4.9 Protected and/or Notable Species Unlikely to Occur at the Site

Other notable and/or rare species and species listed on Annex IV of the Habitats Directive that were considered but that are unlikely to occur at the Site include:

Flora

- Marsh Saxifrage (*Saxifraga hirculus*) – Known populations only in Co. Mayo.
- Killarney Fern (*Vandenboschia speciosa*) – Nearest known populations in Co. Wicklow, not recorded at the Site, no suitably sheltered and moist habitats available.
- Slender Naiad (*Najas flexilis*) – A clear water, lowland lake species. No suitable habitat available at the Site.

Fauna

- White-clawed Crayfish (*Austropotamobius pallipes*) – No known populations in the Dodder, ditches and streams not considered suitable for this species due to low quality. Records from 10km grid are from a different sub-catchment than the Site.
- Freshwater Pearl Mussel (*Margaritifera margaritifera*) – Nearest known records from the Barrow catchment to the west of the Site, no hydrological connection to this catchment. Dodder is not listed as a *M. margaritifera* sensitive area.
- Natterjack Toad (*Epidalea calamita*) – Distribution restricted to few coastal sites.
- Kerry Slug (*Geomalacus maculosus*) – Distribution restricted to south and west of Ireland.

5.5.5 Evaluation of Ecological Features

Designated sites, habitats, and fauna have been evaluated for their conservation importance in Table 5-17 below. This evaluation follows the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009). The rationale behind these evaluations is also provided. Those selected as Key Ecological Receptors (KER) are those which are evaluated to be of at least local importance (higher value), and upon which impacts are considered likely.



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Designated Sites/Species	Evaluation	Key Ecological Receptor (KER)	Rationale
Designated Sites			
European sites (SACs & SPAs)	International Importance	No	Potential impacts on European sites are addressed and screened out in the AA Screening accompanying this application.
Nationally designated sites (NHAs & pNHAs)	National Importance	Yes	Potential for impacts on Dodder Valley pNHA via a hydrological pathway. All other nationally designated sites (pNHAs & NHAs) are addressed and screened out by proxy in the AA Screening accompanying this application.
Internationally designated sites (RAMSAR, UNESCO)	International Importance	No	Potential impacts ruled out as no significant pathways for propagation of impacts identified.
Habitats			
GA1 – Improved agricultural grassland	Local importance (lower value)	No	This habitat has a relatively low species diversity and is regularly grazed by livestock. It provides little suitability to fauna owing to the lack of cover present.
GA2 – Amenity grassland	Local importance (lower value)	No	Similarly to the GA1 – Amenity grassland, this habitat in the form of a GAA pitch is highly managed and has a low diversity of species. There is little to no cover for fauna.
BL3 – Buildings and artificial surfaces	Negligible	No	This habitat holds little to no biodiversity. The sheds on Site offer negligible nesting opportunities to bird species due to their boxy and smooth shape which lack ledges where birds may set up a nest. The lack of cavities in the buildings indicate that there is negligible bat roosting potential.
ED2 – Spoil and bare ground	Negligible	No	This habitat has a low biodiversity of species and offers negligible suitability for species of fauna due to the lack of cover present.
WS1 – Scrub	Local importance (lower value)	Yes	This habitat is relatively limited on Site. It has a relatively low biodiversity of flora species. In one location this habitat provides continuity to the ecological corridors formed by hedgerows and treelines at the Site.



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Designated Sites/Species	Evaluation	Key Ecological Receptor (KER)	Rationale
BL2 – Earthbank	Negligible	No	This habitat has a low species diversity and provides little to no suitability for species of fauna.
ED3/BL2 – Recolonising Bare Ground/Earthbanks	Negligible	No	Similarly to the BL2 – Earthbank habitat, this habitat supports a low biodiversity of flora species and provides little to no suitability for species of fauna.
GS2 – Dry Meadows and Grassy Verges	Local importance (lower value)	Yes	This habitat held a good biodiversity of species of flora and although this habitat type is very limited on Site, it has the potential to provide ground nesting birds with suitable habitat. This habitat also has the potential to support small mammal species in commuting and foraging. This habitat is not considered to be rare in the local area.
FW4 – Drainage Ditch	Negligible	No	<p>The biodiversity of the FW4 – Drainage ditch habitat on Site was poor. This habitat is unlikely to support white-clawed crayfish (<i>Austropotamobius pallipes</i>) and trout (<i>Salmo trutta</i>). Although these species are listed within 10km grid square O02, the vast majority of FW4 – Drainage ditches on Site are located within grid square O12.</p> <p>Only a very small section of the Bohernabreena Stream is located within 10km grid square O02 though this section of stream has its source in the field neighbouring the Site's RLB to the South. This indicates that the stream is quite small and likely dries during periods of low rainfall. Due to the intensive farming being carried out in the fields surrounding the Bohernabreena Stream, it is likely that the water quality of this stream is quite low.</p>
WL1 – Hedgerow	Local importance (higher value)	Yes	The WL1 – Hedgerow habitat on Site holds a good biodiversity of flora species. The WL1 – Hedgerow habitats on Site provide good quality habitat for the nesting and roosting of birds, the commuting, foraging and resting of mammals and small mammals and the commuting and foraging of bats.



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WL2 – Treeline	Local importance (higher value)	Yes	The WL2 – Treeline habitat on Site holds a good biodiversity of species of flora. This habitat offers good suitability for the nesting and roosting of birds, the commuting of mammals and small mammals and the commuting and foraging of bats. Due to the presence of three trees with PRF-Is, it has been determined that the WL2 – Treeline habitats may also support roosting bats.
Linked Habitats - Dodder River	County Importance	Yes	Hydrologically linked to the Proposed Development Site. Supports a variety of flora and fauna along the river, including otter and trout.

Designated Sites/Species	Evaluation	Key Ecological Receptor (KER)	Rationale
Fauna			
Bat Assemblage	Local importance (higher value)	Yes	The bat surveys and assessments conducted on Site concluded that the Site itself is considered to be of moderate importance for foraging and commuting bats. No potential roost features were recorded on the structures on Site, and only three trees with PRF-I were noted.
Breeding Bird assemblage	Local importance (higher value)	Yes	Red, Amber and Green listed species recorded on Site, with Amber and Green listed species likely breeding at the Site.
Native Mammals (excl. bats)			
Eurasian Badger (<i>Meles meles</i>)	Local importance (higher value)	Yes	The badger is an adaptable species of lowland grassland and woodland habitats (Marnell et al., 2009). One badger was recorded commuting through the Site using the hedgerow habitats. No breeding or nesting of badger was observed at the Site (no active setts or latrines recorded).
Red Deer (<i>Cervus elaphus</i>)	Local importance (lower value)	No	No evidence of red deer was observed during Site visits, and habitats are considered sub-optimal for this species. Any red deer potentially occurring at the Site would be considered to be opportunistically present, and therefore deemed to be of local



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			importance (lower value).
West European Hedgehog (<i>Erinaceus europaeus</i>);	Local importance (higher value)	Yes	These species are likely to be present at the Site due to presence of suitable habitats and ubiquitous distribution of these species. Hedgehogs are known to be well
Eurasian Pygmy Shrew (<i>Sorex minutus</i>)			adapted to urban areas, and the Site provides good connectivity to more natural landscapes via the hedgerows and treelines. These species will be assessed for potential impacts together under the entity 'Small Mammals'.
Pine Marten (<i>Martes martes</i>)			
Irish Stoat (<i>Mustela erminea subsp. Hibernica</i>)			
Irish Hare (<i>Lepus timidus subsp. Hibernicus</i>)	Local importance (lower value)	No	No evidence of this species observed during field surveys, and presence of invasive rabbit may exclude hare from the Site via resource competition.

Designated Sites/Species	Evaluation	Key Ecological Receptor (KER)	Rationale
Eurasian Red Squirrel (<i>Sciurus vulgaris</i>)	Negligible	No	The habitats at the Site are not suitable for this species and there is no likelihood of this species using the Site.
Red Fox (<i>Vulpes vulpes</i>)	Local importance (lower value)	No	Although this species is likely to occur in the vicinity of the Site, it is not considered to be of conservation concern and therefore is not assessed further.
European Otter (<i>Lutra lutra</i>)	Local importance (higher value)	Yes	No watercourse or habitat of value for otter are found within the Site, however a potential hydrological link exists between the Site and the Dodder River via surface water discharges to tributaries and drainage ditches within the Site.
Other Fauna			
Common Frog (<i>Rana temporaria</i>)			The ditches and streams within the Site may contain areas of pooling water



Smooth Newt (<i>Lissotriton vulgaris</i>)	Local importance (higher value)	Yes	suitable for breeding amphibians. In the absence of dedicated amphibian surveys along the watercourses of the Site, a precautionary approach is applied.
Fish assemblage of the Dodder <ul style="list-style-type: none">Brown trout (<i>Salmo trutta</i>)Lamprey species (<i>Lampetra spp.</i>)European eel (<i>Anguilla anguilla</i>)	Local importance (higher value)	Yes	These species may occur in the Dodder River which has a potential hydrological connection with the Site in the form of surface water run-off.

Table 5-17 Evaluation of designated sites, habitats and fauna recorded within the surrounding area.

5.6. Ecological Impact Assessment

5.6.1 Summary of KERs

The previous section identified the KERs on which the potential for impacts as a result of the Proposed Development will be assessed. These KERs are:

- Nationally designated sites
 - Dodder Valley pNHA
- Habitats
 - Scrub
 - Hedgerows
 - Treelines
 - Linked Habitats – Dodder River
- Fauna
 - Bat assemblage
 - Breeding bird assemblage
 - Badger
 - Small mammals (hedgehog, pygmy shrew, Irish stoat, pine marten)
 - Otter
 - Amphibians
 - Common lizard
 - Dodder fish assemblage

5.6.2 Potential Impact Sources

Taking the baseline ecological data, the extent, the scale and the characteristics of the Proposed Development into account, the following potential impact sources have been identified:

Construction Phase (*duration: c. 7 years*):

- Hedgerow and treeline removal;
- Impacts on surface water;
- Earthworks – causing the mobilisation of particles to air (dust);
- Noise and vibration;
- Increased lighting;
- Increased human presence.

Operational Phase (*duration: Indefinite*):

- Impacts on surface water;
- Lighting;
- Increased human presence and associated hazards to wildlife (e.g., traffic, litter, etc.).

Note that the potential for impacts from discharges of treated foul water effluent into Dublin Bay (and any designated sites within) from the Ringsend WwTP has been effectively ruled out in the accompanying AA Screening.

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5.6.3 Avoidance and Mitigation Embedded in Project Design

The Proposed Development includes several embedded design features that may act to avoid or mitigate negative impacts that would likely occur in the absence of these features. However, as opposed to typical mitigation measures, the implementation of these features is integral to the design and completion of the Proposed Development, and as such the impact assessments are performed with consideration of these features as integrated parts of the Proposed Development. All considered embedded design features that may act to mitigate negative impacts on local ecology and environment are listed in Table 5-18.

Embedded Design Feature	Avoidance / Mitigation Potential
SUDS: <ul style="list-style-type: none">• permeable parking;• swales;• green roofs;• filter drains;• Bio-retention rain gardens and tree pits;• attenuation facilities (surface-level) and flow controls; and• hydrocarbon interceptors.	The SUDS features included in the Project Design will ensure the surface water discharge from the Proposed Development is reduced to greenfield runoff rates. These features will be implemented as part of the surface water drainage design. These features also incorporate the planting of suitable species, taking into consideration the local flora and fauna.
Landscape Design: <ul style="list-style-type: none">• Retention of majority of hedgerows.• Hedgerow and treeline protection measures during Construction.• Inclusion of wetland in conjunction with attenuation facilities.• Additional wooded areas.• Focus on retaining ecological corridors through Site.	Inclusion of dedicated wetland areas with native planting, as well as addition of woodland areas will act to offset the loss of parts of hedgerow/treeline habitats. In conjunction with wildlife friendly culverts where the road crosses over existing streams or dry drainage ditches, and the retention of majority of linear features within the Site to provide continued connectivity, the landscape design will act to mitigate some of the impacts from change of use of the lands from farmland to residential.
Lighting Design <ul style="list-style-type: none">• Dark Corridors• Bat Friendly Lighting<ul style="list-style-type: none">– Luminaire A - Philips BGP291 DRXN1	<p>There are proposed dark corridors running throughout the Site. Lux levels will be limited to 0-3 lux within these areas in order to provide suitable levels of darkness for bats.</p> <p>There are 72 no. Luminaire A - Philips BGP291 DRXN1 light fittings to be installed at the Site (Signify, 2024). These will emit 1.4 flux which will have a reduced impact to bat species using the Site.</p>

Table 5-18. Embedded design features and their potential to act to avoid or mitigate negative impacts on the local ecology and environment.



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5.6.4 Construction Phase

5.6.4.1 Impacts to Designated sites

The Dodder Valley pNHA is hydrologically connected to the Proposed Development via the tributaries to Dodder River that cross the Site. In the absence of appropriate mitigation and protection measures, there exists a risk of impacts on water quality via accidental releases of pollutants such as silt, sediments and/or hydrocarbons into the surface water network.

Water quality deterioration can lead to knock-on effects on fauna and flora along and within the river itself. For instance, pollutants may interfere with the aquatic life-stages of insects, which can reduce prey availability for bird species feeding on them such as sand martins (*Riparia riparia*), which are known to nest along the banks of the Dodder within this pNHA.

However, it is considered that any potential impacts on the water quality of this pNHA would be short-lived due to the temporary nature of construction works. Due to Site topography, it is also considered that unless materials are inappropriately stored near existing watercourses, any accidental spills would likely run over and infiltrate into the ground prior to reaching the open watercourses. This infiltration into ground would provide a mitigative effect of filtering out majority of pollutants prior to flowing via groundwater into the open watercourses that lead to the Dodder River.

Thus, the potential impact on the Dodder Valley pNHA during Construction Phase of the Proposed Development is considered to be **negative, slight and short-term**.

5.6.4.2 Impacts to Habitats and Flora

The habitats listed as KERs are assessed for potential impacts in the below sections.

5.6.4.2.1 Habitat loss

The scrub, hedgerows and treelines currently provide continuous ecological corridors through the Site allowing for wildlife movement within the cover of dense vegetation. Approximately 850m of these linear habitats will be removed to facilitate the Proposed Development and associated road, while the landscaping plan identifies a total of 1333m of hedgerow to be retained. The loss of these linear habitats could impact on their function as ecological corridors through the Site. However, the road construction plan provides for mammal ledges at each crossing where a natural ditch or stream already exists, retaining the movement potential for terrestrial, non-volant wildlife through the Site following the linear features.

Additionally, the landscape plan design provides an increase in overall habitat diversity across the Site, as it incorporates a variety of different habitat types across the Proposed Development. The main park alone will include a wetland area with native species planting, an increase in overall tree cover in the form of street and park trees, and a variety of meadow and ornamental planting areas.

Considering the above, the impact from loss of linear habitats is notably alleviated by the diversity of planned planting and careful consideration of continuity of green spaces through the Proposed Development. Therefore, the potential impact from habitat loss is considered to be **negative, slight, permanent**.

5.6.4.2.2 Damage to Retained Habitats

The majority of linear features being retained consist of mature trees and hedges which may be subject to damage from construction activities in the absence of protection measures. The potential damage could include compression damage to the root zones of trees and hedges and physical damage to the overground growth. Additionally, construction and landscaping works may inadvertently introduce invasive species to the Site that were not previously present, or facilitate the spread of those already present. Thus, the overall



potential impact to retained habitats is considered to be **negative, moderate, long-term**.

5.6.4.2.3 Linked Habitats –Dodder River

The Proposed Development is hydrologically linked to the Dodder River, and in the absence of proper surface water management and mitigation measures during the Construction Phase, accidental discharges of pollutants into the surface water network (drainage ditches and Dodder tributaries on and adjacent to the Site) could lead to **negative, slight, short-term** impact on the Dodder River.

5.6.4.3 Impacts on Fauna

The potential for impacts during the Construction Phase of the Development for each of the species or species groups considered as KERs is discussed in the below sections.

5.6.4.3.1 Bats

The loss of small sections of linear habitats at the Site has the potential to have a negative impact on bat foraging and commuting through the Site while the new hedgerows and woodland areas are not yet planted and established. Additionally, if lighting is required at the Site during the Construction Phase e.g., in the case of security lighting, improper placement or direction of luminaires could cause light spill onto the hedgerows and woodland areas that run within the Site and along the Site's boundaries. These vegetated habitats are used by bats for commuting and foraging, and therefore Construction Phase lighting could impact bats through a loss of suitable foraging/commuting habitat. This is considered to represent a potential **negative, moderate, short-term** impact on the local bat assemblage, in the absence of mitigation.

No PRFs were identified within the treelines or hedgerows planned to be removed on the Site. However, adverse weather conditions may alter the status of trees at the Site that are due for removal. In this event, there exists potential risk of injury and/or death to bats potentially present in a tree being felled. This represents a **negative, significant, short-term** impact at a local scale in the absence of mitigation and precaution.

5.6.4.3.2 Breeding Birds

The Construction Phase of the Proposed Development will likely result in elevated noise levels associated with the construction works. As a result, there is a potential risk of noise disturbance to birds in the vicinity of the Site, representing a **negative, slight, short-term** impact in the absence of suitable mitigation.

The bird species recorded on Site were mostly associated with the treelines and hedgerow along the boundary of the Site. Should hedgerow vegetation be cleared from the Site during the breeding bird season (March 1st to August 31st) there is the potential for nesting birds to be harmed and nests to be destroyed. This would be in contravention of the Wildlife Acts and Amendments (2000) which provides protection to breeding bird species and their nests and young. Therefore, in the absence of any mitigation or precaution, this risk represents a potential **negative, significant, short-term** impact to breeding birds at the Site scale.

5.6.4.3.3 Badger

Badger was recorded utilising the linear habitats at the Site for commuting, and they may utilise the open fields for foraging. Badger could take up residence at the Site between the time of the surveys that informed this Chapter and the commencement of works on Site. Should an active sett be present when works commence badgers could be subject to disturbance impacts as a result of construction activity. The above could result in **negative, short-term, significant** impacts to badgers at the local scale, in the absence of mitigation.



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5.6.4.3.4 Small Mammals

Small mammals such as hedgehog, pygmy shrew, Irish stoat and pine marten may utilise the open fields and linear features of the Site for foraging, commuting and resting. Abrupt vegetation clearance may place these mammals at risk of injury and/or death in the absence of precaution. Additionally, should any hedgehogs use the vegetation, particularly dense hedgerows or scrub, for hibernation during the winter, vegetation clearance carried out during the hibernation season may result in the injury/mortality of this species. Thus, the potential impact on these small mammals from injury/mortality during the Construction Phase is considered to be **negative, short-term, significant** at a local scale.

Additionally, construction sites can pose a source of harm for mammals should they find themselves trapped in an excavation or uncapped pipe, or within construction materials e.g., plastic sheeting or netting. There is therefore a potential for **negative, short-term, significant** impacts at the local scale, via harm/entrapment, in the absence of construction mitigation.

5.6.4.3.5 Otter

There is potential for negative impacts on otter in the Dodder River during the Construction Phase of the Proposed Development due to potential surface water containing silt, sediments or pollutants entering local surface water drains and small streams and the downstream Dodder River. Although deemed unlikely to occur, this could potentially impact the prey population for otter utilising the waterbody. This constitutes a **negative, slight, short-term** impact in the absence of suitable mitigation.

5.6.4.3.6 Amphibians

Water quality impacts on the wet ditches and any pooling areas within the small streams at the Site may cause adverse effects on any potentially present amphibians and their spawn/young in these water features should they be present. Additionally, adult amphibians may also be present within the field margin habitats, and any vegetation removal/alteration is likely to place any potentially present amphibians at risk of injury or death. Therefore, in the absence of precaution and mitigation measures, the risk of harm, injury and/or death resulting from construction activities (incl. water quality impacts, construction traffic, and vegetation removal) represents a potential **negative, slight, short-term** impact on any locally occurring amphibians.

5.6.4.3.7 Common Lizard

During the Construction Phase, vegetation clearance may place lizards potentially present at risk of injury and mortality. Additionally, lizards can also get caught in inappropriately stored materials (e.g., plastic sheeting) which can cause injury or death. In the absence of any mitigation or precaution, this risk represents a potential **negative, slight, short-term** impact on the common lizard at a *local* scale.

5.6.4.3.8 Dodder Fish Assemblage

Watercourses are highly sensitive to contamination with excess sediment, fuel and cementitious materials during the Construction Phase of developments. There is a potential hydrological connection between the Site and the Dodder River via the drainage ditches and small streams traversing the Site and discharging into the Dodder. There is potential for negative impacts on fish in the Dodder river during the Construction Phase of the Proposed Development due to potential surface water containing silt, sediments or pollutants entering local surface water drains. This constitutes a **negative, slight, short-term** impact in the absence of suitable mitigation.



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5.6.5 Operational Phase

5.6.5.1 Impacts to Designated Sites

The Dodder Valley pNHA is located within the 'Strategic Corridor 1: The Dodder River' identified within the Green Infrastructure chapter of the SDCDP 2022-2028. The objectives of the Dodder River corridor include the development of a greenway from Dublin City to Glenasmole, providing a cycling and walking route from city to the mountains. The pNHA is currently accessible to the public, and it is assumed that under the development of the greenway, increased accessibility and recreational pressures will be accounted for within the planning process for the greenway, in line with expected increases in human population along the route as per the zonation provided in the SDCDP 2022-2028. In addition, the Proposed Development includes ample green open space with pathways for pedestrians and cyclists.

The pNHA is also linked to the Proposed Development via the drainage ditches and tributaries of the Dodder traversing the Site. The inclusion of a full suite of SUDS measures reduces the flow of surface water to greenfield rates, and provides an effective filtration and pollution intervention.

Therefore, it is considered that potential impacts from

- increases in human population and associated potential increase in recreational pressures on the pNHA; and
- surface water discharges from the Proposed Development

due to the Proposed Development are **neutral, long-term, imperceptible**.

5.6.5.2 Impacts to Habitats and Flora

It is not envisaged that there will be any significant impacts to habitats at the Site of the Proposed Development associated with the Operational Phase.

5.6.5.3 Impacts to Fauna

5.6.5.3.1 Bats

Operational Phase lighting could potentially have a negative impact on local bat populations, as most bat species avoid strongly lit areas when foraging and/or commuting. However, the lighting plan for the Proposed Development shows low levels (0 to 3 lux) of light spill at the various green spaces of the Site. The main park's wetland area will be relatively dark, with low light levels maintained along the hedgerow that connects the habitat to the southeast corner of the Site. The streetlights on the main road have been positioned to maintain a relatively dark corridor to allow bats to cross over the road from the main park to the southeast corner, in keeping with the hedgerows on either side. Furthermore, the southern boundary is largely backed by private gardens and buffered by a strip of native meadow and tree planting along the existing hedgerow and treeline, which will help in maintaining low light levels along this boundary habitat.

The treelines, hedgerows and wooded areas themselves, after a period of establishment, are likely to provide screening from light, thus contributing to the provision of dark corridors for commuting and foraging bats and other wildlife. Therefore, considering there is likely to be a slight increase in baseline lighting levels along existing and newly established ecological corridors within the Site, the potential impact from Operational Phase lighting is considered to be **negative, permanent, slight** on locally occurring bats.

5.6.5.3.2 Breeding Birds

The Proposed Development will see the planting of a variety of native tree and hedgerow species within the Proposed Development Site as part of the landscaping plan. In the absence of careful consideration of



the species mix used, and the management approach, any new native hedgerows may prove less suitable for the current bird assemblage at the Site. However, as a large portion of the existing hedgerows is retained, it is considered that there is an overall increase in potential breeding bird habitats on the Site. This is considered to have a potential **positive, long-term, slight** impact on the local bird assemblage.

Lighting from the Proposed Development may impact on breeding bird success. The current baseline level of light is very low to completely dark along the existing hedgerows, and it is anticipated that some increase in lighting along the retained and newly planted hedgerows is unavoidable as a result of the Proposed Development. However, the lighting plan for the Proposed Development shows low levels (1.0 - 3.0 lux) of light spill at the proposed hedgerows and wooded areas within the Site. The hedgerows themselves, after a period of establishment, are likely to provide screening from light to the far side of the hedgerows, thus providing a relatively dark habitat on at least one side of the new hedgerows. As such, the overall impacts on breeding birds as a result of the Operational Phase lighting is considered to be **negative, long-term, slight** at a local scale.

The Proposed Development is residential in nature and entails low-rise housing and apartment blocks with max building heights of 3-storeys in height. No significant risk of bird-building collisions is therefore envisaged.

5.6.5.3.3 Badger

The Site of the Proposed Development currently contains suitable habitat for badgers commuting through along the linear habitats, and the planted landscaped areas will likely also do so into the future. The landscaping plan maintains ecological connectivity through the Site by enhancing and retaining majority of the existing linear habitats (e.g., hedgerows and treelines), however increased lighting together with increased human activity and associated risks from traffic is likely to somewhat disrupt typical commuting through the Site. This represents a **negative, moderate, long-term** impact at the local scale, in the absence of mitigation.

5.6.5.3.4 Small Mammals

The Site of the Proposed Development currently contains suitable habitat for small mammals commuting through along the linear habitats, and the planted landscaped areas will likely also do so into the future. The landscaping plan maintains ecological connectivity through the Site by enhancing and retaining majority of the existing linear habitats (e.g., hedgerows and treelines), however increased lighting together with increased human activity and associated risks from traffic is likely to somewhat disrupt typical commuting through the Site. This represents a **negative, moderate, long-term** impact at the local scale, in the absence of mitigation.

5.6.5.3.5 Otter

No potential significant impacts on otter along the Dodder River are envisaged as a result of the Operational Phase of the Proposed Development. As described above for designated sites (section 5.6.5.1), any potential increases of recreational pressures along the Dodder River should be addressed as part of the increased accessibility provided by future greenway plans. Therefore, the potential impacts from the Proposed Development on otter during its Operational Phase are considered to be **neutral, imperceptible, long-term**.

5.6.5.3.6 Amphibians

The associated wetland areas within the main park are likely to attract amphibians to breed at the Site once matured. This is considered to be a **positive, significant, long-term** impact at a local scale.



5.6.5.3.7 Common Lizard

No potential impacts on common lizard are envisioned as a result of the Operational Phase of the Proposed Development.

5.6.5.3.8 Dodder Fish Assemblage

No potential significant impacts on otter along the Dodder River are envisaged as a result of the Operational Phase of the Proposed Development. As described above for designated sites (section 5.6.5.1), any potential increases of recreational pressures along the Dodder River should be addressed as part of the increased accessibility provided by future greenway plans. Therefore, the potential impacts from the Proposed Development on otter during its Operational Phase are considered to be **neutral, long-term, imperceptible**.

5.6.6 Do Nothing Impact

Should the Proposed Development not go ahead, the fields would likely continue to be used as agricultural pastureland. The small stands of invasive species recorded at the Site may continue to spread within the Site, eventually requiring intervention from the tenants at the industrial area and/or residential dwelling. No significant changes to the local ecology and biodiversity are envisaged if the land continues to be used as it is.

5.7. Avoidance, Mitigation, Compensation and Enhancement Measures

5.7.1 Embedded Mitigation

5.7.1.1 Construction and Environmental Management Plan (CEMP)

Table 5-19 gives a summary of the best practice development standards and mitigation measures to be implemented during the Construction Phase of the Proposed Development. The measures listed are outlined in more detail in the Construction and Environmental Management Plan (CEMP) (Enviroguide 2024) accompanying this application under separate cover.

Theme	Best Practice Standards and Mitigation	Ecology Specific Mitigation
Soils and Geology	Appropriate measures to store and handle stripped topsoil and subsoil; consideration of weather conditions to minimise silt/sediment entering surface water network and dust control; and appropriate fill material import, storage and handling away from surface water features. Surface water discharge points for rain and groundwater pumped from excavations and directed to settlement ponds during Construction to be agreed with KCC prior to works. Appropriate storage of fuels, oils and other chemicals, designated refueling and maintenance area, and preparation	No



	of emergency response procedure.	RECEIVED: 24/09/2024
Water - Hydrogeology	Measures for erosion and sediment control (i.e., settlement ponds), prevention and control of accidental spills and leaks, concrete handling.	Yes – See section 5.7.2.1.1
Water - Water Supply, Drainage & Utilities	Appropriate use of settlement ponds, foul water to be tankered off site for treatment until connection to foul network made, and all connections (waste water, water supply, electrical, gas and telecommunications) to be made by authorized and qualified people.	No.
Pest Control	Vermin control layout plan with bait traps in strategic locations.	No
Site Compound Facilities and Parking	Location to be agreed with SDCC prior to works. Appropriate measures to handle foul water generated, protect potable water supply, health and safety, separate areas for (i) machinery and plant; (ii) concrete batching; and (iii) staff parking.	No.
Construction Waste Management	Managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication – <i>'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects'</i> .	Yes – See section 5.7.2.2.3.



Landscape and Visual Impact	Appointment of an Arborist to oversee works relating to trees, establishment on Tree Protection Zones in accordance with BS 5837:2012 ' <i>Trees in Relation to Design, Demolition and Construction – Recommendations</i> '; and post-construction tree assessment.	Yes – See section 5.7.2.1.3.
Noise and Vibration	To comply with the requirements of BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014 (Code of Practice for Noise and Vibration Control on Construction and Open Sites) as well as Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration.	No.
Air Quality	Dust Management Plan to include suppression via watering of areas identified as potential dust source; road sweeping to remove aggregate materials; appropriate cover of transported materials; wheel washing; maintenance of public roads in relation to dust; and appropriate monitoring.	No.
Lighting	Lighting on Site has been designed to maintain levels of light under 3 lux within dark corridors and the wetland area. Streetlights are proposed to be positioned in such a way that light spill will be minimal.	Yes – See section 5.6.5.3.1

Table 5-19. Summary of best practice standards and mitigation outlined in the Construction And Environmental Management Plan. Where specific details relating to protection of key ecological receptors is required under these measures, reference is made to the appropriate section in this report.

5.7.1.2 Wildlife Protections Embedded in Road Design

In addition to the above Construction Phase measures as per the CEMP (Enviroguide 2024), the road design incorporates culverts at the crossing of any drainage ditches or streams. These culverts will be fitted with a mammal ledge – a minimum 50cm wide ledge above any permanent water level – to allow for the passing of smaller mammals without having to cross over the new road. Incorporating mammals ledges to culverts and ensuring that the vegetation leading to said crossings promotes wildlife movement to the culvert rather than the roads, the risk of death or injury from vehicular collisions on non-volant mammals is reduced.



5.7.2 Construction Phase Mitigation

5.7.2.1 Protection of Habitats and Flora

5.7.2.1.1 Mitigation 1: Site-specific Surface Water Mitigation Measures

While best practice development standards have been included in a Construction and Environmental Management Plan (CEMP) (Enviroguide, 2024b), further details are outlined in this section to ensure the ecology of internal ditches and streams, as well as any downstream watercourses such as the Dodder River are not adversely impacted.

With regards to protecting the existing water features and the water quality of the Dodder, the following measures are recommended following the latest guidance on Construction works in or adjacent to watercourses (Inland Fisheries Ireland, 2016):

- Silt traps/ponds will not be positioned directly adjacent to the ditches or streams within and adjacent to the Site.
- A buffer zone should remain between any silt trap and any water features (ditches and streams), with natural vegetation left intact. Where natural vegetation within the buffer zone is not an option, imported materials such as terram, straw bales, or coarse to fine gravel should be used either separately or in combination as appropriate.
- Silt fencing will be positioned where required to prevent overland surface water flows over sloped lands to the existing streams and ditches.
- Pre-cast concrete should be preferred over poured concrete to minimise risks for the construction of any headwall features and culverts.
- Any instream works should take place between July-September to avoid any potential risks to downstream fisheries habitats.
- Where temporary storage of imported materials or excavated soils is required on Site, these temporary storage areas will be surrounded with silt fencing to filter out any suspended solids from surface water arising from these materials.
- Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released into nearby drains.

In addition, the following will be considered when designing fuel, oil and other chemical storage at the Site for the Construction Phase:

- The storage area for fuels, oils and other chemicals will be located as far away from the existing drainage ditches and stream as feasible. This is likely to be located at the northwest area of the Site to minimize potential for any overland flows to existing ditches and streams at the Site or immediately adjacent.

Once the above details are implemented in full together with the best practice measures detailed in the accompanying CEMP (Enviroguide, 2024b), it is considered that no significant adverse impacts on the water quality of the Dodder are likely to occur.

5.7.2.1.2 Mitigation 2: Biosecurity Measures

The following best practice site hygiene and biosecurity measures will be in place to avoid spread of the invasive flora identified at the Site into the surrounding areas during Construction Phase and to limit the potential for spread of invasive species at the Site:

- Fencing and signage will be erected to identify and cordon off the areas containing invasive species, until such a time that they are effectively removed.



- All soils/materials being introduced to the Site will be sourced from a certified invasive flora-free source site, to ensure no introduction of invasive plant materials to the Site occurs.
- Personnel working on or between sites will ensure their clothing and footwear are cleaned, ensuring they are visually free from soil and organic debris, in order to prevent inadvertent spread of invasive plant material.
- Where possible tracked vehicles should not be used within an area of infestation, such as within the current industrial area of the Site, until cleared from all invasive floral material as per the prepared ISMP.
- All vehicles containing invasive plant materials for transportation and disposal offsite will be suitably secured with tarpaulins etc., to ensure no inadvertent dissemination of invasive materials en-route.
- Works should be planned to avoid double handling of infected plants materials/soils as far as possible to reduce the risk of spread.
- All vehicles entering or leaving the Site will have been suitably checked and pressure-washed to ensure no introduction of invasive flora to and from the Site. Measures such as a drive through hygiene bath or footbaths will be considered where appropriate, such as for any works within the current industrial area prior to removal of all invasive floral material from the Site.
- Designated wash-down area to ideally be located in the northwestern area of the Site, away from sensitive receptors such as watercourses, ditches, drains etc.
- Material/water left after vehicles have been pressure-washed must be contained, collected and disposed of appropriately (These waters must not under any circumstances be discharged to drains, ditches or watercourses within the Site).
- All chemicals used for the control of non-native species should be stored and used in a responsible manner.

A comprehensive Invasive Species Management Plan shall be prepared prior to beginning of construction to limit the potential for spread of Japanese knotweed and butterfly bush within and outside of the Site. This will involve an updated botanical survey of the Site to ensure accurate mapping of the current extent of any invasive species at the Site.

5.7.2.1.3 Mitigation 3: Tree Protection Measures

Protective tree fencing in compliance with BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' will be erected prior to any Construction works being undertaken to prevent damage to the canopy and root protection areas of existing trees and hedgerows to be retained at the Site.

The fencing will be signed off by a qualified arborist prior to Construction to ensure it has been properly erected. No ground clearance, earthworks, stock-piling or machinery movement will be undertaken within these areas.

The project Arborist will be instructed **prior to commencement on Site**; to ensure that appropriate tree protection measures are in place. These measures will entail robust fencing around the root protection zones of all trees and hedgerows being retained on Site. An adequate level of signage will also be provided to highlight 'no work zones' and ensure that Site creep and damage to retained habitats does not occur.

5.7.2.1.4 Mitigation 4: Construction Phase Lighting

Any night-time lighting required during the Construction Phase for security etc., will be directed away from the boundary vegetation at the Site (i.e., away from hedgerows), and will not be directed skyward.

Lighting will be focused into the centre of the Site and only on equipment and machinery that needs to be illuminated.

The Project Ecologist acting as ECoW for the project will review the Construction Phase lighting with the Contractor regularly during their site visits and make recommendations as required to ensure the lighting is maintained as bat friendly for the duration of the works.



5.7.2.1.5 Mitigation 5: Preparation of an Invasive Species Management Plan

A comprehensive Invasive Species Management Plan (ISMP) shall be prepared prior to beginning of construction to limit the potential for spread of Japanese knotweed and butterfly bush within and outside of the Site. Due to the dynamic nature and relatively fast spread of the invasive floral species found at the Site, this measure is included as a mitigation measure in this NIS in anticipation of any time delays between a grant of permission and commencement of works.

Should the commencement of works be delayed beyond 2025, the preparation of the ISMP will require an updated botanical survey of the Site during the botanical growing season, to ensure the current extent of any invasive species at the Site is accurately mapped to inform the ISMP. Should works commence prior to this, it is assumed that the extent of the invasive species would be accurate based on the existing survey data. The ISMP shall be prepared by suitably qualified ecologist/botanist, and signed off by SDCC prior to commencement of works.

The ISMP should at minimum contain the following features:

- Current extent of invasive species on Site;
- Suitable removal methods for each invasive species encountered on Site; and
- Appropriate management of each invasive species encountered on Site.

5.7.2.2 Protection of Fauna

5.7.2.2.1 Mitigation 6: Bat Precautions when Felling Trees

Although all trees on Site set for felling have been assessed and confirmed to be of low-negligible bat roost suitability, harm to individual bats is possible should bats be present during the felling process. It is also possible that trees can become damaged in the time between the original PBRA survey and the tree felling taking place, and this can sometimes increase the bat roost suitability of a tree, providing new roost features e.g., cracks, holes etc.

As such, a pre-felling check will be conducted by a suitably qualified Ecologist of all trees to be felled at the Site prior to felling taking place; to ensure that no changes have occurred and that no individual bats will be harmed. In the unlikely event that a roosting bat is found, no felling of the tree in question will take place and a derogation licence will be obtained from the NPWS to proceed. The Area around the tree will be protected with an appropriate buffer to prevent disturbance of the bat.

It is important to note that permission for the Proposed Development can be granted without any reliance on the potential grant of a derogation licence, and that any references to the potential need to obtain a licence are purely precautionary, as detailed above, and therefore not integral to the decision on whether to grant permission.

5.7.2.2.2 Mitigation 7: Vegetation Clearance

As a precaution, a pre-construction badger survey of the Site will be conducted by a suitably qualified Ecologist prior to any clearance of scrub, cutting back of hedgerows taking place; to confirm whether badger have occupied the Site between the time of the mammal survey that informed this Chapter and the commencement of works on Site.

Any demolition works or clearance of vegetation will be carried **out outside the main breeding season, i.e., outside of period: 1st March to 31st August**, in compliance with the Wildlife Act 2000. Should any demolition/vegetation removal be required during this period, this areas to be affected will be checked for birds and nests by a suitable qualified Ecologist, and if any are noted during this evaluation prior to removal, the nest will be protected until the young have fledged as confirmed by the Ecologist, after which time the inactive nest can be



destroyed.

To ensure compliance with the Wildlife Act 1976 as amended, the removal of areas of vegetation will not take place within the nesting bird season (March 1st to August 31st inclusive) to ensure that no significant impacts (i.e., nest/egg destruction, harm to juvenile birds) occur as a result of the Proposed Development. Should nesting birds be found, then the area of habitat in question will be noted and suitably protected until the ecologist confirms the young have fledged.

Table 5-20 provides guidance for when vegetation clearance is permissible. Information sources include British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*.

The preferred period for vegetation clearance is **within the months of September and October**. Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., hedgehog). Where this seasonal restriction cannot be observed, a check will be carried out immediately prior to any Site clearance by an appropriately qualified ecologist and repeated as required to ensure compliance with legislative requirements.

	Month											
Ecological Feature	January	February	March	April	May	June	July	August	September	October	November	December
Breeding Birds	Vegetation clearance permissible (Sept - Feb)		Nesting bird season. No clearance of vegetation unless confirmed to be devoid of nesting birds by an ecologist. (Mar - Aug)						Vegetation clearance permissible (Sept - Feb)			
Bats	Tree felling to be avoided unless confirmed to be devoid of bats by an ecologist (Jan – Aug)								Preferred period for tree-felling (late Sept to Nov)		Tree felling to be avoided unless confirmed to be devoid of bats by an ecologist (Nov- Dec)	
Common Lizard	Lizard Hibernation Season No habitat clearance permissible (Jan – Mar)			Active period Habitat (scrub, tall sward grass) clearance permissible (Apr – Oct)						Lizard Hibernation Season No habitat clearance permissible (Nov – Dec)		