Construction of a New Artificial Pitch at Knocklyon Park

Ecological Impact Assessment

28 April 2023

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South Dublin County Council.

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Revision History

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Contract

This report describes work commissioned by Jed McDermott of South Dublin County Council, by an email dated 16th of May 2022. Michael Coyle of JBA Consulting carried out this work.

Prepared by ..... Michael Coyle BA (Hons), MSc
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Purpose

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Abbreviations

AA	Appropriate Assessment
BAP	Biodiversity Action Plan
BoCCI	Birds of Conservation Concern in Ireland
DoEHLG	Department of Environment, Heritage and Local Government
CIEEM	Chartered Institute of Ecology and Environmental Management
EC	European Communities
EcIA	Ecological Impact Assessment
EPA	Environmental Protection Agency
EU	European Union
GIS	Geographical Information Systems
GSI	Geological Survey Ireland
NBDC	National Biodiversity Data Centre
NPWS	National Parks and Wildlife Service
pNHA	Proposed Natural Heritage Area
PRF	Potential Roost Feature
QI	Qualifying Interest
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SDCC	South Dublin County Council
SPA	Special Protection Area
SuDS	Sustainable Drainage System
WFD	Water Framework Directive
ZoI	Zone of Influence

1 Introduction

JBA Consulting Ireland Ltd. has been commissioned by Jed McDermott on behalf of South Dublin County Council to undertake an Ecological Impact Assessment (EcIA) in relation to the proposed establishment of an artificial pitch in Knocklyon GAA Pitches, Co. Dublin.

1.1 Aims

The aims of this EcIA are to:

- Establish baseline ecological conditions to enable identification of potentially important ecological features within the zone of influence of the project
- Determine the ecological value of identified ecological features
- Assess the significance of impacts of the proposed project on ecological features of value
- Identify avoidance, mitigation or compensatory measures
- Identify residual impacts after mitigation and the significance of their effects
- Identify opportunities for ecological enhancement

1.2 Site location

The proposed project is located in Knocklyon Park, approximately 90m south-west of the M50 in Knocklyon, Co. Dublin. The Woodstown Stream is located approximately 65m south-east of the site, along the boundary of the parkland. This stream is culverted, and flows east to west, under the north of the site, before connecting to a culverted section of Orlagh Stream (Dodder_040) which flows north before reaching the main body of the River Dodder. The site is shown in (Figure 1-1).

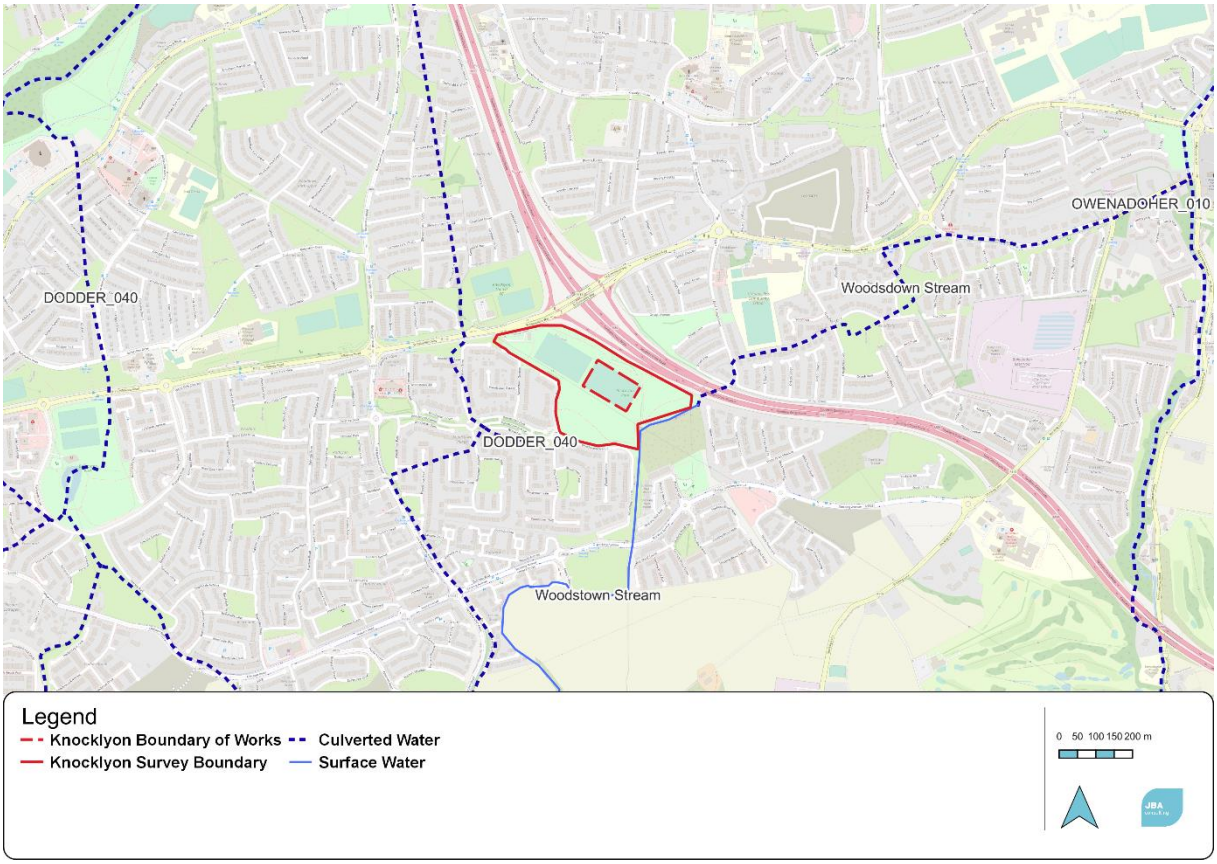


Figure 1-1: Site location (© OpenStreetMap contributors, 2023)

2 Project Description

2.1 Proposed project

South Dublin County Council (SDCC). intend to apply for permission for the proposed construction of an artificial pitch in Knocklyon GAA Pitches, Co. Dublin.

The development will consist of the construction of an 11,433m^2 artificial pitch with 3G Artificial Turf. The artificial pitch will be surrounded by a kickboard of approximately 2.5cm height, a fence height of 640cm that will each be embedded into 300mm^3 of concrete, and six floodlighting columns.

The Site Layout Plan can be view in Appendix A.

2.1.1 Duration of the Works

The construction of the proposed site will last approximately six months.

2.1.2 Site Drainage Plan

Surface water that accumulates on the pitches will be fed through a lateral drainage system that will feed into a carrier drainage section before entering a silt trap chamber and a soakaway. The lateral drain and carrier drain sections will both consist of a 6-10mm gravel backfill and a 10-20mm Type B gravel bedding, while the drains will be made of a 150mm Ø and 80mm Ø perforated twinwall uPVC pipe respectively, while the carrier drain will also contain a geotextile membrane.

The Site Drainage Plan can be view in Appendix B.

3 Methodology

3.1 The EcIA Team

This EcIA was completed by JBA Ecologists Michael Coyle, BA (Hons), MSc and the report has been reviewed by JBA Senior Ecologist Patricia Byrne BSc (Honse)Phd, MCIEEM._

These staff members thus fulfil the Environmental Impact Assessment (EIA) Directive personnel requirements of 'competent persons'.

3.2 Policy and Legislation

Policy and legalisation for nature conservation; and protected and priority species relevant to the proposed project is provided in Appendix D.

3.3 Methods

This EcIA assesses the ecological features present within the site and its surrounding area (the Zone of Influence (ZoI)) in relation to the proposed works. This allows for identification of the potential impacts of the proposed works upon the ecological features of the site at an early stage, whilst identifying the potential ecological constraints upon the proposed works. The assessment is based on a desk-based assessment, which determines the baseline conditions at the site of the proposed works, and site surveys, which provided information on habitats and species present on the site and its surroundings.

This EcIA will outline the findings of the desk-based assessment and the surveys and identify any potential impacts of the proposed works on ecological features within the ZoI of the site; and propose mitigation measures to avoid or reduce impacts where necessary.

3.4 Guidance

This assessment was conducted in accordance with the following guidance documents:

- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, (CIEEM, 2018).
- Guidelines on the information to be contained in Environmental Impact Assessment Reports Environmental Protection Agency (EPA, 2022).

3.5 Baseline

To determine the baseline conditions at the site a review of all available information was made. When determining the pre-work conditions on-site, including the presence or absence of protected habitats and/or species, the precautionary principle was used where limited information was available.

A desk-based assessment was carried out to collate information regarding protected/notable species and statutorily designated nature conservation sites in, or within close proximity to, the study area. This included a data search for protected and notable species using the National Biodiversity Data Centre (NBDC) Mapping System (NBDC, 2023). A customised 2km polygon was created to extract all the species data from the project site and its surrounding area, while an extended customised 5km polygon was created to extract all species data in the set Zone of Influence for this project.

Information for statutory designated sites including Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar Sites, Natural Heritage Areas (NHAs) and proposed NHAs (pNHA) was collected from the online resources provided by the National Parks and Wildlife Service (NPWS).

Other information on the local area was obtained, including:

- EPA, 2023a. EPA Catchments.ie [online]. Available online at: https://www.catchments.ie/maps/
- EPA, 2023b. EPA Maps [online], Next Generation EPA Maps. Available online at: https://gis.epa.ie/EPAMaps/

- GSI, 2023. Geological Survey Ireland Spatial Resources website, available at https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228
- IFI, 2023. Water Framework Directive Fish Ecological Status 2008-2021 Available online at: https://opendata-ifigis.hub.arcgis.com/datasets/IFIgis::water-framework-directive-fish-ecological-status-2008-2021/explore?location=53.365760%2C-6.414157%2C14.45
- NPWS, 2019a. The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- NPWS, 2019b. The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitats Assessment. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neil. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- NPWS, 2019c. The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessment. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neil. . National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland. Environmental Protection Agency online databases on water quality (Available online at https://gis.epa.ie/EPAMaps/).
- Aerial photography available from www.osi.ie and Google Maps http://maps.google.com/ ;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie
- National Biodiversity Data Centre, 2022 – Species Distribution Maps; Available online at www.biodiversityireland.ie Accessed on various dates;
- All Ireland Red Data lists for vascular flora, mammals, butterflies, non-marine molluscs, dragonflies & damselflies, amphibians and fish;
- Water Framework Directive water maps (available online at http://www.wfdireland.ie/maps.html and https://www.catchments.ie/); and
- International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species (available online at http://www.iucnredlist.org).

3.5.1 Zone of Influence

The zone of influence (ZoI) for the project is based on a judgement of the likely extent of the ecological impacts. This will vary for different ecological features, depending on their sensitivities to environmental change. For the majority of the project, impacts will be limited to within the site boundary. **The Zone of Influence for this project is noise disturbance (1km), air pollution (2km), surface water (5km) and groundwater (5km), with an additional hydrological buffer from connecting transitional waters to coastal areas; and any supporting habitat for SAC/SPA species (5km).**

This means the final 'Zone of Influence' can be a complex shape not easily defined by a simple distance figure, but in this way the assessment includes all relevant sites whilst avoiding unnecessary inclusion of other sites.

3.5.2 Field Surveys

A general ecological site walkover, including a habitat mapping survey, was conducted on the 9th of June 2022 by Patricia Byrne, Mark Desmond and Michael Coyle of JBA Consulting to inform the ecological baseline of the site. Cuckoo flower *Cardamine pratensis*, was surveyed for separately on 9th June 2022. Bat Transect surveys were conducted on the 4th of July, 28th of July and 31st of August by JBA Ecologists, a Pollinator survey was conducted on the 4th of August 2022 and wintering bird surveys were conducted from November 2022 to March 2023.

Aerial photographs and site maps assisted the habitat survey. Habitats have been named and described following A Guide to Habitats in Ireland by Fossitt (2000). Nomenclature for higher plants follows that given in The New Flora of the British Isles 4th Edition (Clive Stace 2019). Identification of Irish plants

generally follows Webb's An Irish Flora (Parnell and Curtis, 2012) Webb's An Irish Flora (Parnell and Curtis, 2012).

The Survey methods were in general accordance with those outlined in the following documents:

- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009).
- Best Practice Guidance for habitat Survey and Mapping. The Heritage Council. (Smith et al., 2011).
- Collins, J. (Ed.), 2016. Bat Surveys for Professional Ecologists: Good Practise Guidelines (3rd Edition)

3.5.3 Water Framework Directive

In response to the increasing threat of pollution and the increasing demand from the public for cleaner rivers, lakes and beaches, the EU developed the Water Framework Directive (WFD). This Directive is unique in that, for the first time, it establishes a framework for the protection of all waters including rivers, lakes, estuaries, coastal waters and groundwater, and their dependent wildlife/habitats under one piece of environmental legislation for all European member states.

The WFD (Directive 2000/60/EC) is a substantial piece of EU water legislation that came into force in 2000. The overarching objective of the WFD is for the water bodies in Europe to attain Good or High Ecological Status. The Environment Protection Agency (EPA) is the competent authority in Ireland responsible for delivering the WFD. River Basin Management Plans (RBMP) have been created which set out measures to ensure that water bodies in the country achieve 'Good Ecological Status'.

Good Ecological Quality will depend on the quality of the individual quality elements on which the Ecological status is scored; namely the biological, chemical and morphological condition in a particular water body. Any reduction in any of these elements will result in a reduction of the overall ecological status.

3.5.4 Water Framework Status and Objectives

It is understood that Draft River Basin Management Plan for Ireland (2022-2027) has been adopted by all local authorities in order to achieve the aims of the WFD. The Plan sets out the new approach that Ireland will take to enhance protection, prevention, and monitoring of Irish waterbodies. The main actions include:

- Improve waste water treatment;
- Conservation and leakage reduction;
- Scientific assessment of water bodies and implementation of local measures;
- A new collaborative Sustainability and Advisory Support Programme;
- Dairy Sustainability Initiative;
- Development of water and planning guidance for local authorities;
- Extension of Domestic Waste Water Treatment Systems grant Schemes; and
- A new Community Water Development Fund

Regardless of their current quality, surface waters should be treated the same in terms of the level of protection and mitigation measures employed, i.e., there should be no negative change in status.

The third and current cycle aims to build particularly on the initiatives of the second cycle, particularly the governance and implementation structures, and to improve the establishment of Irish Water, An Fóram Uisce (The Water Forum), the Local Authority Waters Programme and the Agricultural Sustainability Support and Advisory Programme

3.6 Screening of Ecological Features

The ecological features identified during the walkover surveys and from desk-based assessments were reviewed.

An informal screening process is presented at the start of the results section to ensure that the assessment focuses only on features where the impact could have important consequences for

biodiversity (valued ecological features). Any features which are important beyond the site level were identified for further evaluation. Ecological features with little or no value beyond the site level were screened out and a short statement explaining this is given in the screening section.

An Appropriate Assessment (AA) Screening Report has been produced separate to this EcIA (JBA, 2023), to assess the potential for effects on Designated Natura 2000 sites. The AA Screening Report concluded there **was no potential for adverse significant effects on European sites** arising from the proposed development, either alone or in-combination with other plans or projects.

3.7 Assessment of the Effects on Features

Ecological features include nature conservation sites, habitats, species assemblages/ communities, populations or groups of species. The assessment of the significance of predicted impacts on ecological features is based on both the 'value' of a feature, and the nature and magnitude of the impact that the project will have on it. The impact is based on the project which includes a certain amount of designed-in mitigation, including construction best practice measures that will be implemented with a high degree of certainty.

3.8 Valuation of Receptors

The value of designated sites, habitats and species populations is assessed with reference to:

- Their importance in terms of 'biodiversity conservation' value (which relates to the need to conserve representative areas of different habitats and the genetic diversity of species populations).
- Any social benefits that habitats and species deliver (e.g., relating to enjoyment of flora and fauna by the public).
- Any economic benefits that they provide.

The valuation of designated sites considers different levels of statutory and non-statutory protection. Assessment of habitat depends on several factors, including the size of the habitat, its conservation status and quality. The assessment also takes account of connected off-site habitat that may increase the value of the on-site habitat through association. Valuation of species depends on a number of factors including distribution, status, rarity, vulnerability, and the population size present.

Designated sites, habitats and species populations have been valued using the scale in Table 3-1

Table 3-1: Examples of criteria used to define the value of ecological features (derived NRA, 2008, rev. 2009)

Level of Value	Examples of Criteria
International	An internationally important site e.g. Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar (or a site considered worthy of such designation). A regularly occurring substantial population of an internationally important species (listed on Annex IV of the Habitats Directive). Designated shellfish waters. Major fisheries area.
National	A nationally designated site e.g. Natural Heritage Area (NHA), a proposed Natural Heritage Area (pNHA), statutory Nature Reserve, or a site considered worthy of such designation. A viable area of a habitat type listed in Annex I of the Habitats Directive or of smaller areas of such habitat which are essential to maintain the viability of a larger whole. A regularly occurring substantial population of a nationally important species, e.g. listed on The Wildlife Act 1976 or The Wildlife (Amendment) Act 2000. A species included in the Irish Red Data Lists/Books. Significant populations of breeding birds.

Level of Value	Examples of Criteria
Regional/County (County Dublin)	Species and habitats of special conservation significance within County Dublin. An area subject to a project/initiative under the County's Biodiversity Action Plan. A regularly occurring substantial population of a nationally scarce species.
Local (works site and its vicinity)	Areas of internationally or nationally important habitats which are degraded and have little or no potential for restoration. A good example of a common or widespread habitat in the local area. Species of national or local importance, but which are only present very infrequently or in very low numbers within site area.
Less than local	Areas of heavily modified or managed vegetation of low species diversity or low value as habitat to species of nature conservation interest. Common and widespread species.

Guidance published by CIEEM (2018) recommends breaking down the importance of ecological features in a geographic context similar to the NRA guidance shown in

Table 3-1 with the following frame of reference to be adapted to local circumstances.

- International and European
- National
- Regional
- Metropolitan, County, vice-county or other local authority-wide area
- River Basin District
- Estuarine system/Coastal cell
- Local

The NRA (2009) guidance is congruent with this CIEEM (2018) guidance and includes a 'Less than local' level. The NRA (2009) guidance on geographic criteria for ecological valuation, as described in

Table 3-1 is followed in this report. Ecological Valuation may also be considered of Local Importance (higher value) or Local Importance (lower value) (Table 3-2).

Table 3-2: Examples of criteria used to define the value of ecological features of local importance (NRA, 2009)

Level of Value	Examples of Criteria
Local Importance (higher value)	Locally important populations of priority species or habitats or natural heritage features identified in the Local Biodiversity Action Plan (BAP), if this has been prepared. Resident or regularly occurring populations (assessed to be important at the Local level) of the following: *Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; *Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; *Species protected under the Wildlife Acts; and/or *Species listed on the relevant Red Data List. 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

Level of Value	Examples of Criteria
	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)	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; Sites or features containing non-native species that are of some importance in maintaining habitat links

3.8.1 Magnitude of Impacts

Ecological effects or impacts can be described and categorised in a number of ways. Examples of relevant terms are listed in the table below.

Table 3-3: Categories of Effects (derived EPA, 2022).

Description	Categories of Effects
Quality of Effects	**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).
Describing the Significance of Effects	**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.
Describing the Extent and Context	**Extent** Describe the size of the area, the number of sites and the proportion of a

Description	Categories of Effects
of Effects	population affected by an effect.
	Context Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?).
Describing the Probability of Effects	**Likely Effects** The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely Effects The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Describing the Duration and Frequency of Effects	**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.
	Frequency of effects Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Describing the Types of Effects	**Indirect Effects (a.k.a. Secondary or Off-site Effects)** Effects on the environment. Which are not a direct result of the project, often produced away from the project site of because of a complex pathway
	Cumulative Effects The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
	Do-nothing Effects The environment as it would be in the future should the subject project not be carried out.
	Worst Case Effects The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable Effects The effects arising from a project in the case where mitigation measures substantially fail.
	Irreversible Effects When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.

Description	Categories of Effects
	Residual Effects The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic Effects Where the resultant effect is of greater significance than the sum of its constituents (e.g. combination of SOx and NOx to produce smog).

3.8.2 Significance of impacts

The overall significance of an impact can be derived from the total description of the effect compared against the sensitivity and significance (value) of the receptor as shown overleaf in Figure 3-1 which is taken from the EPAs EIAR Guidelines (EPA, 2022). The context and character of the receptor must also be assessed, such as its position in relation to the effect and its connectivity to the effect, however this should be determined before assessing the significance of the impact.

The total description of the effect includes the character, magnitude, probability and consequences of the effect as described in Table 3-4 which are combined to give a general description of the effect on an ordinal scale from Negligible to High. The sensitivity and significance of the receptor is also described on an ordinal scale from Negligible to High.

The placement of the general description of the effect, and the sensitivity/significance of the receptor on this scale is determined by a Competent Person (a qualified ecologist in this case) as they interpret the qualities of the effect from the categories listed in Figure 3-1 and the receptors sensitivity and significance. Level of significance, also described as value of the receptor is previously set out in sub-section 3.8 above. Sensitivity of the receptor is assessed by the Competent Person based on the receptor's characteristics and how susceptible to impact they are from the type of effect.

The overall significance of an effect is then categorised into one of the following seven classifications:

- Imperceptible
- Not Significant
- Slight
- Moderate
- Significant
- Very Significant
- Profound

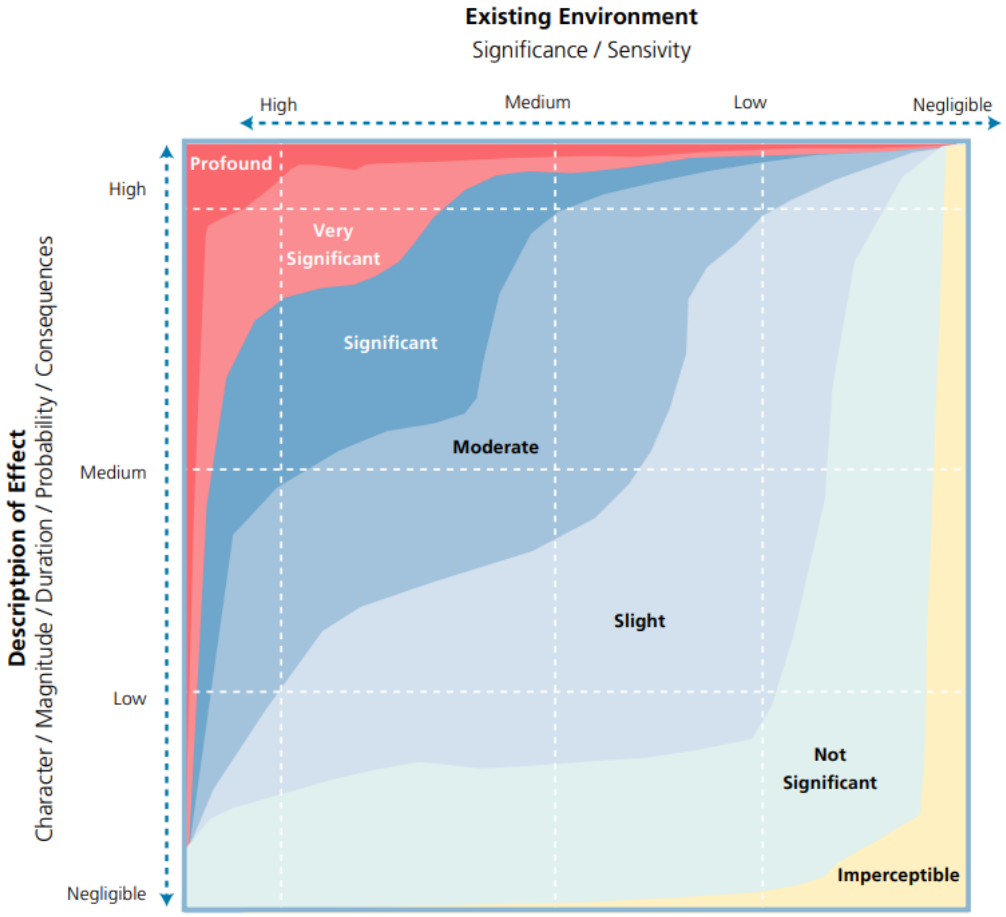


Figure 3-1: Chart showing the typical classifications of the significance of effects (EPA, 2022)

This chart has been interpreted in Table 3-4 as a significance of impacts matrix below, the scale has been ordered into an upper and lower bound for each qualitative category, so that degrees of significance within subcategories can be interpreted by the Competent Person.

Table 3-4: Significance of impacts matrix (derived from Figure 3-1, re EPA, 2022)

Magnitude of impact	Sensitivity/ Value of Receptor							
	High +	**High -**	**Medium +**	**Medium -**	**Low +**	**Low -**	**Negligible +**	**Negligible -**
High +	Profound	Very significant	Very significant	Significant	Moderate	Moderate	Not Significant	Imperceptible
High -	Very Significant	Very significant	Significant	Moderate	Moderate	Slight	Not Significant	Imperceptible
Medium +	Very Significant	Significant	Moderate	Moderate	Slight	Slight	Not Significant	Imperceptible
Medium -	Significant	Moderate	Moderate	Moderate	Slight	Slight	Not Significant	Imperceptible
Low +	Moderate	Slight	Slight	Slight	Slight	Slight	Not Significant	Imperceptible
Low -	Slight	Slight	Slight	Slight	Slight	Not Significant	Not Significant	Imperceptible
Negligible +	Not Significant	Not Significant	Not significant	Not Significant	Not Significant	Not Significant	Not Significant	Imperceptible
Negligible -	Not Significant	Not Significant	Not significant	Not Significant	Not Significant	Imperceptible	Imperceptible	Imperceptible

3.8.3 Residual Impacts

The project is assessed including some designed-in mitigation (e.g., appropriate drainage design). This is done where mitigation is proven to be effective and will be implemented effectively with a high certainty. Where significant residual impacts are still identified, further mitigation measures will be proposed as part of the Ecological Impact Assessment process to avoid, reduce or minimise them. Each impact assessment section assigns a final significance level to the impact described, which considers and includes the implementation of any stated mitigation measures; these are the residual impacts.

3.9 Cumulative Impacts

Potential sources of cumulative impacts were identified based on the ecology of valued ecological features. Potential sources of cumulative impacts were sought within an area where there is the potential for a significant impact on a site or species. The plans and projects identified as potential sources of cumulative impacts are described in Section 5.

3.10 Limitations and Constraints

This EcIA is based on ecological site surveys and existing data from the above-mentioned sources. The report necessarily relies on some assumptions and is inevitably subject to some limitations. These do not affect the conclusion, but the following points are recorded in order to ensure the basis of the assessment is clear:

- Information on the works and conditions on site are based on current knowledge at the time of writing. Changes to the site since surveys were undertaken cannot be accounted for. However, the site surveys have followed CIEEM (2019) Advice note on the lifespan of ecological reports and surveys. Any changes to the proposed works will require an assessment by a suitably qualified ecologist to determine if re-assessment is required.
- Windy weather on the day of the pollinator survey may have reduced the numbers of insects recorded. However this is not expected to influence the outcome of the assessment.
- Adverse weather can cause delays to the schedule and alter the timing of works. This has been accounted for using a worst-case scenario where possible.
- The precautionary principle is used at all times when determining potential ecological sensitivity of the site.

4 Baseline Conditions

These baseline conditions present information gathered from existing reports and desk-based sources as detailed in Section 3.6. To inform this EcIA the initial baseline ecological site survey was performed by JBA Ecologists Patricia Byrne, Mark Desmond and Michael Coyle on the 9th of June 2022. Bat Transect surveys were conducted on the 4th of July, 28th of July and 31st of August by JBA Ecologists, and wintering bird surveys were conducted from November 2022 to March 2023

4.1 Desk-based Assessment

4.1.1 Designated Sites

This section lists the designated sites of international and national importance. The ZoI for this project is a 5km general radius and any downstream hydrological connection (including transitional waters buffer) for statutory sites; and a general 5km radius for non-statutory sites. Table 4-1 below lists these designated sites with their respective importance and distance from the proposed site development**.** Figure 4-1 overleaf displays the locations of the statutory designated sites, with Figure 4-2 displaying the non-statutory (proposed and existing Natural Heritage Area) designated sites within the ZoI of the site. Table 4-2 and Table 4-3 displays site descriptions and their respective ecological features**.**

Table 4-1: Proximity and importance of designated sites within their respective ZoI buffers.

Name	Designation	Importance	Distance from site	Hydrological distance from site
Glenasmole Valley	SAC	International	3.5km	n/a
Wicklow Mountains	SAC	International	4.7km	n/a
Wicklow Mountains	SPA	International	4.4km	n/a
South Dublin Bay	SAC	International	9km	16.8km
South Dublin Bay and River Tolka	SPA	International	9km	15.8km
North Dublin Bay	SAC	International	13.8km	18.5km
North Bull Island	SPA	International	13.8km	18.5km
Glenasmole Valley	pNHA	National	3.5km	n/a
South Dublin Bay	pNHA	National	9km	16.5km
North Dublin Bay	pNHA	National	13.8km	16.7km
Dolphins, Dublin Docks	pNHA	National	9km	15.8km
Dodder Valley	pNHA	National	1.4km	n/a

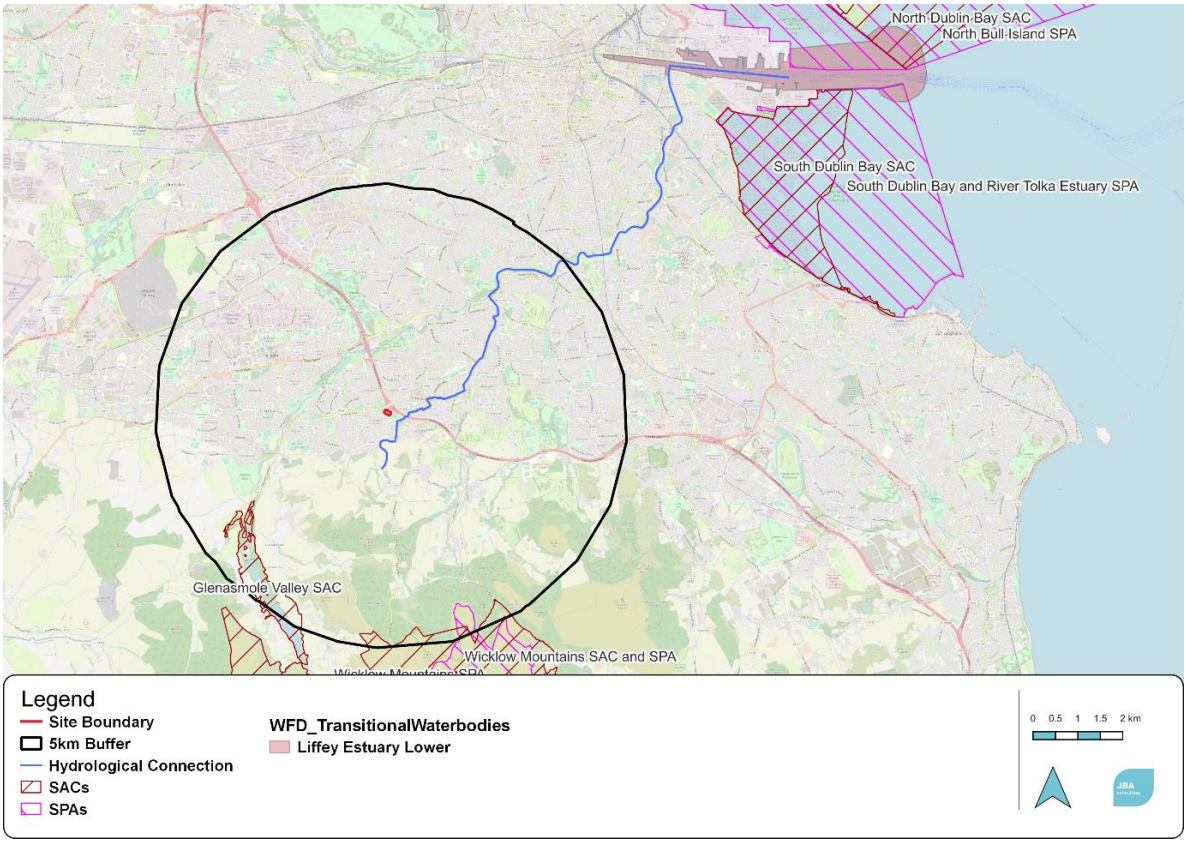


Figure 4-1: Statutory (SAC and Designated sites within the ZoI of the development (© OpenStreetMap contributors, 2023)

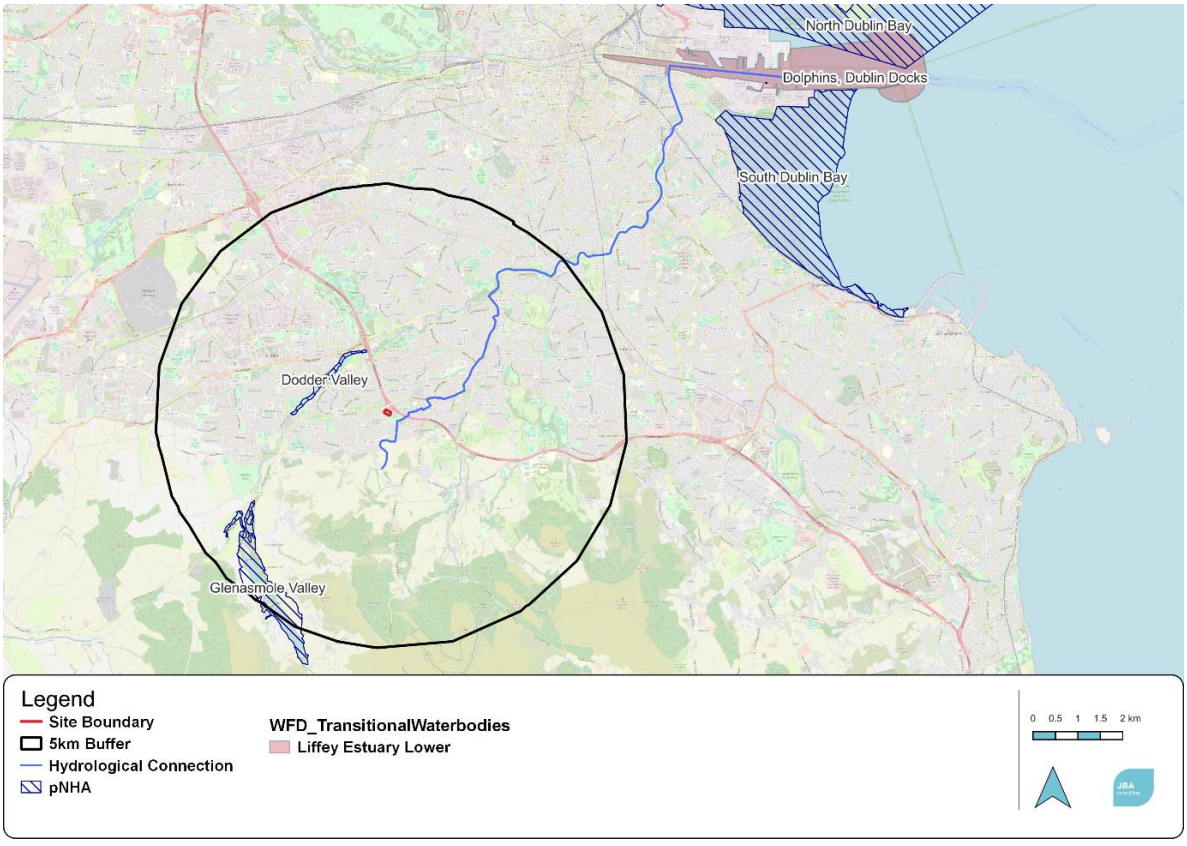


Figure 4-2: Non-statutory(pNHA) designated sites within their respective ZoI of the site works (© OpenStreetMap contributors, 2023)

Table 4-2: Site briefs; Qualifying Interests; and project threats and their impacts and sources to the Natura 2000 sites within the ZoI.

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
Glenasmole Valley SAC [001209]	Glenasmole valley is in south Co. Dublin approximately 5km from Tallaght. The River Dodder has been impounded within the valley to form two reservoirs for water provision to Dublin. The bedrock is non-calcarerous with an overlay of deep drift deposits that line the valley's sides. These areas are covered by scrub and woodland, with herb-rich grassland on the less precipitous parts. Seepage through the deposits brings to the surface water rich in bases and induces patches of calcareous fens and petrifying springs. Locations between the two reservoirs include examples of calcareous fens and flush. Woodland occurs in patches around the site. The east side of the valley forms a woodland on the unstable calcareous slopes. Wet, semi-natural woodland is around the reservoirs. The lake shore vegetation is not well developed (NPWS, 2013a).	- Semi-natural dry grasslands and scrubland facies on calcareous substrates Festuco-Brometalia) (* important orchid sites) [6210] - *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] - Petrifying springs with tufa formation (Cratoneurion) [7220] (NPWS 2021)	- Roads, paths and railroads - Discontinuous urbanisation - Invasive non-native species (EEA, 2018a)
Wicklow Mountains SAC [002122]	The Wicklow Mountains SAC is a complex upland region that extends through regions of Co. Wicklow and Dublin. Most of the site is over 300m, with the highest peak reaching 925m high. The mountain shows typical erosion patterns of multiple cycles, with the granite weathered characteristically into broad domes. Much of the west of the site consists of elevated moorland and peat. Surrounding schists have more diverse outlines forming peaks and rocky foothills with deep glens. The majority of the vegetation is a mosaic of wet and dry heaths, blanket bogs, upland grass, dense Bracken and small woodlands along the rivers. The rivers are predominantly acidic due to the underlying rock strata (NPWS 2017a).	- Oligotrophic waters containing very few minerals of sandy plains *Littorelletalia uniflorae* [3110] - Natural dystrophic lakes and ponds [3160] - Northern Atlantic wet heaths with *Erica tetralix* [4010] - European dry heaths [4030] - Alpine and Boreal heaths [4060] - Calaminarian grasslands of the *Violetalia calaminariae* [6130] - Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] - Blanket bogs (* if active bog) [7130] - Siliceous scree of the montane to snow levels *Androsacetalia alpinae* and *Galeopsietalia ladani* [8110] - Calcareous rocky slopes withchasmophytic vegetation [8210] - Siliceous rocky slopes with chasmophytic	- Paths, tracks, cycling tracks - Urbanised areas, human habitation - Outdoor sports and leisure activities, recreational activities (EEA, 2018b)

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
		vegetation [8220] - Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] - Otter *Lutra lutra* [1355] (NPWS, 2017b)	
Wicklow Mountains SPA [004040]	The site is upland, comprising of a substantial part of the Wicklow Mountains, mainly confined to Co. Wicklow with a small area lying within Co. Dublin. Most of the site is higher than 300m, with the peak at Lugnaquillia being 925m high. The predominant substrate over the site is peat, with blanket bogs, heaths and upland grasses. Surveys of the Wicklow Mountains SPA have found that up to 9 pairs of Merlin breed within the site at any one year, using the open peatlands as excellent foraging habitats. The cliffs and crags are notable breeding locations for the Peregrine (NPWS, 2014a).	- Merlin *Falco columbarius* [A098] - Peregrine *Falco peregrinus* [A103] (NPWS, 2022)	- Paths, tracks, cycling tracks (EEA, 2020a)
South Dublin Bay SAC [000210]	The intertidal flats at their widest points are 3km with channels existing at largest with Cockle Lake. A small sandy beach occurs near to Dun Laoighre, with an almost entire artificial embankment. The sediments from the Tolka Estuary vary from thixotrophic mud with a high organic content in the inner estuary to a well aerated and exposed sand system off of the Bull Wall. Insights show that many birds who winter in South Dublin Bay do not continue towards North Dublin Bay. (NPWS, 2015a)	- Mudflats and sandflats not covered by seawater at low tide [1140] - Annual vegetation of drift lines [1210] - *Salicornia* and other annuals colonising mud and sand [1310] - Embryonic shifting dunes [2110] (NPWS, 2013b)	- Roads, motorways - Urbanised areas, human habitation (EEA, 2020b)
South Dublin Bay and River Tolka SPA [004024]	This site covers a large part of the Dublin Bay, including the intertidal area of the River Liffey and Dun Laoghaire, along with the estuary of the River Tolka to the north of the River Liffey and Booterstown Marsh. The south of the bay has intertidal flats that at their widest extend for almost 3km. The site is important for wintering fowl, integral for the importance of the Dublin Bay complex (NPWS, 2015b).	- Light-bellied Brent Goose *Branta bernicla hrota* [A046] - Oystercatcher *Haematopus ostralegus* [A130] - Ringed Plover *Charadrius hiaticula* [A137] - Grey Plover *Pluvialis squatarola* [A141] - Knot *Calidris canutus* [A143] - Sanderling *Calidris alba* [A144] - Dunlin *Calidris alpina* [A149] - Bar-tailed Godwit *Limosa lapponica* [A157] - Redshank *Tringa totanus* [A162]	- Roads, motorways - Urbanised areas, human habitation (EEA, 2020c)

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
		- Black-headed Gull *Chroicocephalus ridibundus* [A179] - Roseate Tern *Sterna dougallii* [A192] - Common Tern *Sterna hirundo* [A193] - Arctic Tern *Sterna paradisaea* [A194] - Wetland and Waterbirds [A999] (NPWS, 2015c)	
North Dublin Bay SAC [000206]	This SAC extends from the inner part of North Dublin Bay, and primarily focuses on North Bull Island. Dynamic dune systems and saltmarshes are found along this region. A variety of important and rare flora habituate this SAC, including Lesser Centaury, Red Hemp-nettle, and Meadow Saxifrage. North Dublin Bay is also of international importance for waterfowl as it hosts Brent Goose, Knot, Bar-tailed Godwit, Oystercatcher, Ringed Plover, Sanderling, and Dunlin (NPWS, 2013c).	- Mudflats and sandflats not covered by seawater at low tide [1140] - Annual vegetation of drift lines [1210] - *Salicornia* and other annuals colonising mud and sand [1310] - Atlantic salt meadows *Glauco-Puccinellietalia maritimae* [1330] - Mediterranean salt meadows *Juncetalia maritimi* [1410] - Embryonic shifting dunes [2110] - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] - Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] - Humid dune slacks [2190] - Petalwort *Petalophyllum ralfsii* [1395] (NPWS, 2013d)	- Urbanised areas, human habitation (EEA, 2020d).
North Bull Island SPA [004006]	This site covers all the inner part of north Dublin Bay, with the seaward boundary extending from Bull Wall lighthouse, to Howth Head. The spit in the north is relatively recent, almost 5km long, 1km wide and running parallel to the coast between Clontarf and Sutton. The saltmarsh extends the length of the landward side of the island, providing the main site for wintering bird roosting in Dublin Bay. The wintering waterfowl use two lagoons as their primary feeding grounds, these lagoons are divided by a causeway. (NPWS, 2014b)	- Light-bellied Brent Goose *Branta bernicla hrota* [A046] - Shelduck *Tadorna tadorna* [A048] - Teal *Anas crecca* [A052] - Pintail *Anas acuta* [A054] - Shoveler *Anas clypeata* [A056] - Oystercatcher *Haematopus ostralegus* [A130] - Golden Plover *Pluvialis apricaria* [A140]	- Continuous urbanisation - Other patterns of habitation (EEA, 2020e)

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
		- Grey Plover *Pluvialis squatarola* [A141] - Knot *Calidris canutus* [A143] - Sanderling *Calidris alba* [A144] - Dunlin *Calidris alpina* [A149] - Black-tailed Godwit *Limosa limosa* [A156] - Bar-tailed Godwit *Limosa lapponica* [A157] - Curlew *Numenius arquata* [A160] - Redshank *Tringa totanus* [A162] - Turnstone *Arenaria interpres* [A169] - Black-headed Gull *Chroicocephalus ridibundus* [A179] - Wetland and Waterbirds [A999] (NPWS, 2015d)	

 # = indirect impact via increased human populace within the ZoI

Table 4-3: Site briefs and ecological features of conservation concern of proposed Natural Heritage Areas within the ZoI.

Site Name	Brief	Ecological Features of Conservation Concern
Glenasmole Valley pNHA	As per the Natura 2000 SAC description.	As per those outlined in Natura 2000 SAC description.
Dodder Valley pNHA	This stretch of the River Dodder extends for about 2 km between Firhouse Bridge and Oldbawn Bridge in the south-west of Dublin City. The vegetation consists of woodland scrub mainly comprising Willows 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 *Orchis mascula* and Bugle. Along the banks there are wildflower meadows with a good diversity of plant species. Forty-eight bird species have been recorded recently in the area, including Little Grebe *Tachybaptus ruficollis*, Kingfisher *Alcedo atthis*, White-throated Dipper *Cinclus cinclus* and Grey Wagtail *Motacilla cinerea*. Part of the riverbank supports a Sand Martin *Riparia riparia* colony of up to 100 pairs. The site also supports a population of Otter. The site represents the last remaining stretch of natural riverbank vegetation on the River Dodder in the built-up Greater Dublin Area (NPWS, 2009).	- Little Grebe *Tachybaptus ruficollis* - Kingfisher *Alcedo atthis* - Grey Wagtail *Motacilla cinerea* - Sand Martin *Riparia riparia* - Otter *Lutra lutra*
North Dublin Bay pNHA	As per North Dublin Bay SAC description in Table 4-2.	As per those outlined in SAC description
South Dublin Bay pNHA	As per South Dublin Bay SAC description in Table 4-2.	As per those outlined in SAC description
Dolphins, Dublin Bay pNHA	As per Red Bog, Kildare SAC descriptions in Table 4-2.	As per those outlined in SAC description

4.1.2 Screening of designated sites

An AA Screening has been carried out for this project by JBA (2023). Following initial screening, and based upon best scientific judgement it is concluded that **adverse significant effects are not anticipated** from the project on the following Natura 2000 sites within the Zone of Influence:

- Glenasmole Valley SAC
- Wicklow Mountains SAC
- Wicklow Mountains SPA
- South Dublin Bay SAC
- South Dublin Bay and River Tolka SPA
- North Dublin Bay SAC
- North Bull Island SPA

The pNHA sites below, are being **screened out** due one or more of the following: lack of hydrological connectivity (surface water and groundwater) and/or distance from the proposed site; and the development's scale (capacity for dust generation):

- Glenasmole Valley pNHA
- Dodder Valley pNHA
- North Dublin Bay pNHA
- South Dublin Bay pNHA
- Dolphins, Dublin Bay pNHA

4.1.3 Protected Species

National Biodiversity Data Centre (NBDC)

Records of protected fauna including amphibians, bats, birds, invertebrates and mammals collated from the NBDC (2023) database, present within the surrounding 5km within the past 10 years are used to assess the potential species present in the vicinity of the site, while a list of protected species present within the surrounding 5km within the past 10 years is listed in Appendix E. This list includes their level of protection, if they are red or amber listed on the International Union for the Conservation of Nature and Natural Resources (IUCN) Red List and the date of the last record of this species at this location.

4.1.4 Invasive Non-native Species

The records from the NBDC (2023) database, show that there are five species listed on the Third Schedule of Non-native species (subject to restrictions under Regulations 49 and 50) present within the 5km buffer zone of the proposed site within the past 10 years (Table 4-4).

Table 4-4: High and Medium impact invasive non-native species within 2km of the proposed site

Invasive Non-native Species	Designation
Giant Knotweed *Fallopia sachalinensis*	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Japanese Knotweed *Fallopia japonica*	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Three-cornered Garlic *Allium triquetrum*	Medium Impact Invasive Species Regulation S.I. 477 (Ireland)
Eastern Grey Squirrel *Sciurus carolinensis*	High Impact Invasive Species EU Regulation No. 1143/2014 Regulation S.I. 477 (Ireland)

4.2 Water Framework Directive

4.2.1 Surface Water Status

The site lies within the Water Framework Directive (WFD) Liffey and Dublin Bay catchment and the Dodder_SC_010 sub-catchments. There are surface waterbodies in the area of the project, however the Woodstown Stream is located approximately 65m south-east of the site. This stream is culverted, and flows east, under the M50 before joining with the River Owenadoher, (Owenadoher_010) before flowing north before reaching the main body of the River Dodder. The current WFD status (2013-2018) of the Dodder_040 watercourse is 'Moderate'; and is also considered to be ' At Risk'.

The proposed development will need to ensure that the goal of 'Good Status' is achievable, and that the proposed works will not hinder this goal during the construction and operational phases.

4.2.2 Groundwater Status

The entirety of the site is located within the Kilcullen groundwater body. The Kilcullen groundwater body currently holds a 'Good' WFD status (2016-2021); and is considered to be 'At Risk'.

The underlying bedrock of the site is dominated by GranDark slate-schist, quartzite and coticule of the Butter Mountain formation, and the soil is derived of till derived chiefly from limestone. The permeability of the site's area is classified as Low with a very low recharge capacity of 7.5%. The groundwater in the area of the site has an overall Low vulnerability.

The proposed development will need to ensure that the proposed construction works will have no negative effect on these water bodies and will support their maintaining 'Good' status into the future.

4.3 Site Visits

A baseline ecological site walkover, including habitat mapping, was conducted by JBA Ecologist, Patricia Byrne, Mark Desmond and Michael Coyle. Habitats and species recorded are presented in detail in the following sections.

4.4 Habitats

The value of each habitat is based on the site visit. Habitats recorded in and around the site boundary were recorded and are displayed in Figure 4-3 and listed in Table 4-5.

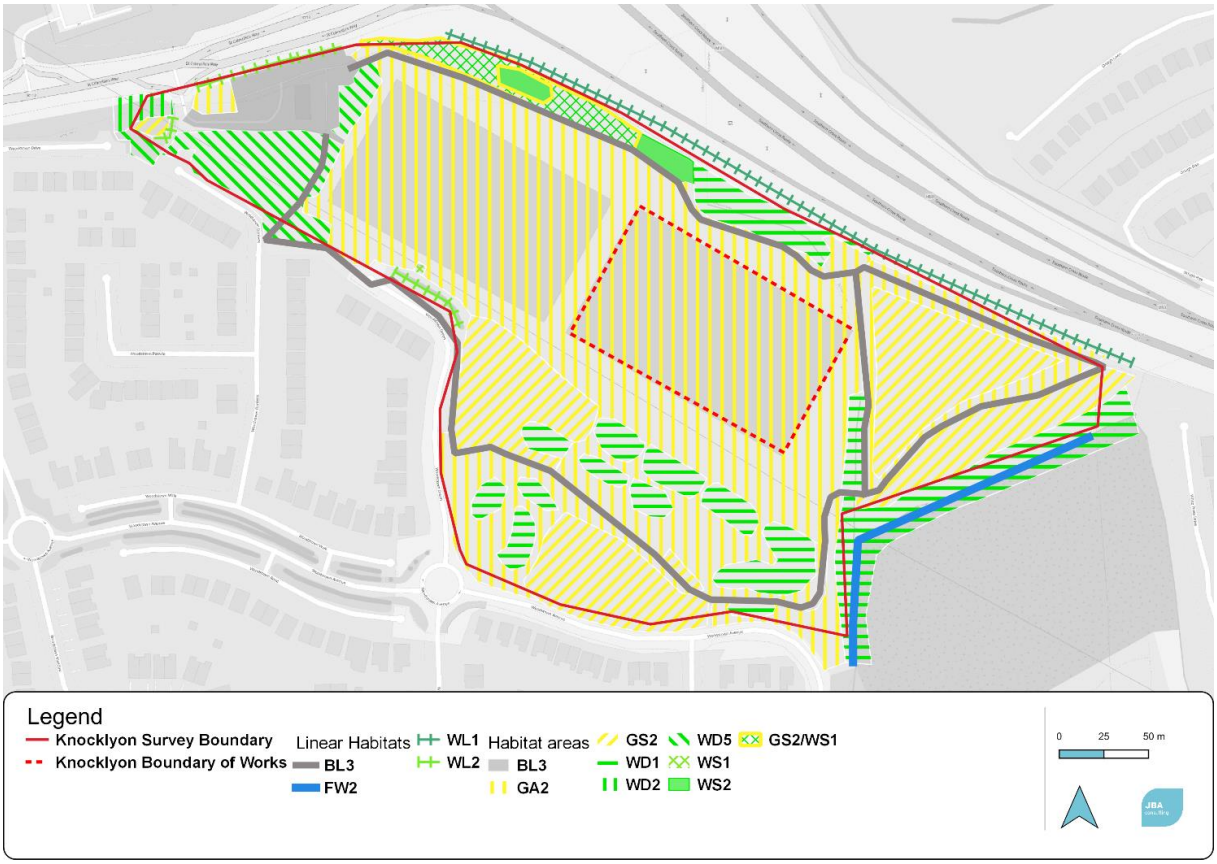


Figure 4-3: Habitat Map (© OpenStreetMap contributors, 2023)

Table 4-5: Habitats recorded during site visit.

Fossitt Habitat	Fossitt Code
Buildings and artificial surfaces	BL3
Amenity grassland (improved)	GA2
Dry meadows and grassy verges	GS2
Dry meadows and grassy verges/Scrub	GS2/WS1
Depositing/lowland rivers	FW2
(Mixed) broadleaf woodland	WD1
Mixed broadleaf/conifer woodland	WD2
Scattered trees and parkland	WD5
Hedgerows	WL1
Treelines	WL2
Scrub	WS1
Immature woodland	WS2
Ornamental/non-native shrub	WS3

4.4.1 BL3 - Buildings and artificial Surfaces

There are pathways located around throughout the boundary of the survey area. Additionally, there is also the car park and facilities buildings for GAA pitches located in the west of the site. There are no species present in these areas.

In the context of this site and the lands immediately adjacent, this manmade habitat is considered to be of **less than local ecological importance** given its lack of species present.

4.4.2 GA2 - Amenity grassland (improved)

There is a large area in the centre of the survey area, which is currently dedicated to sports pitches and amenity grassland and there are also sections of amenity grassland along the pathways in the south of the area. The species within these grassland areas include Red Clover *Trifolium pratense*, White Clover *Trifolium repens*, Dandelion *Taraxacum* spp., Creeping Buttercup *Ranunculus repens*, Meadow Buttercup *Ranunculus acris*, Silver Plantain *Plantago lanceolata*, Daisy *Bellis perennis*, Common Bent *Agrostis capillaris*, Red Fescue *Festuca rubra*, Thistle *Cirsium vulgare*, Hedge Mustard *Sisymbrium officinale*, Herb Robert *Geranium robertianum* and Perennial Ryegrass *Lolium perenne*.

Throughout the bird surveys throughout the Winter of 2022/2023, the bird species Black-headed Gull and Common Gull were seen frequently within this habitat, however there were no other wintering or breeding birds of concern found within this area.

In the context of this site and the lands immediately adjacent, this amenity habitat is considered to be of **less than local ecological importance** given its lack of species diversity and its low utilisation by birds**.**

Figure 4-4: The amenity grassland found within the site

4.4.3 GS2 - Dry meadows and grassy verges

There are sections of a dry meadow located in the east, south and within a small section of the north of the survey area (Figure 4-5). The species within these areas include White Clover, Dandelion, Cluster Dock *Rumex conglomeratus*, Hogweed *Heracleum sphondylium*, Meadow Buttercup, Creeping Buttercup, Common Bent, Couch *Elytrigia repens*, Wild Garlic *Allium ursinum*, Silver Plantain, Wild Sage *Salvia officinalis*, Cuckooflower *Cardamine pratensis*, Red Fescue, Meadow Fescue *Festuca pratensis*, Yorkshire Fog *Holcus lanatus*, Yellow Oatgrass *Trisetum flavescens*, Soft Brome *Bromus hordeaceus* and within the north meadow section there was a Square Stalked St John's Wort *Hypericum tetrapterum*.

Within this location, there were signs of many invertebrate species, detailed below, which would provide pollinator services, and as a source of food for terrestrial mammals, birds and bats. Cuckoo flower is one of the plants that Orange-tip butterfly lay eggs on.

Therefore, in the context of this site and the lands immediately adjacent, this grassland habitat is considered to be of **high local ecological importance** given its species diversity and its utilisation by invertebrate species, the foraging potential for birds, bats and other terrestrial mammals**.**

Figure 4-5: The dry meadow grassland located in the east of the site

4.4.4 GS2/WS1 - Dry meadows and grassy verges / Scrub

There is a length of Scrub that is located in the north of the site, which contains small outer belt of meadow grassland. The Scrub vegetation of this area contains Bramble *Rubus fruticosa* agg., some Rose *Rosa* spp. occasional newly planted Apple trees *Malus* spp., Scots Pine *Pinus syvestris*, Dock *Rumex* spp., Thistle and Alexander's *Smyrnium olusatrum*. The boundary of the scrub has a belt of dry meadow species with Red Clover, Meadow Buttercup, Hedge Mustard and Shepherds Purse *Capsella bursa-pastoris*.

During the bird surveys species including Goldcrest were recorded on site. Goldcrest is currently listed as a Red List species within the Birds of Conservation Concern Ireland. As Goldcrest nest within dense Bramble patches, this scrubby area is considered to be of **high local ecological importance** for bird species on site.

4.4.5 FW2 - Depositing/lowland rivers

Woodstown Stream is located in the eastern section of the site, flowing through the woodland habitat. There were no species noted within this stream.

As this stream is within the Dodder_SC_010 sub catchment, and it feeds into both the Dodder_040 and Owenagawer_010 riverine water bodies, this stream is considered to be of **regional/county importance**.

4.4.6 WD1 - (Mixed) broadleaved woodland

There are some smaller pockets of broadleaved woodland along the north boundary of the site (Figure 4-6) and throughout the south of the site, and an additional stretch of mature broadleaved woodland in the east of the site. The tree species within the pockets of woodland include Sycamores *Acer pseudoplatanus*, Ash *Fraxinus excelsior* (some with, and some without Dieback), Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Silver Birch *Betula pubescens*, Wild Cherry *Prunus avium*, Lime *Tilia cordata x platyphyllos*, Elder *Sambucus nigra*, and some of these trees have a cover of Ivy *Hedera helix* on them. The shrub and ground layer within these woodland pockets include Bramble, *Rosa* spp., Hogweed, Nettle *Urtica dioica*, Bush Vetch *Vicia sepium*, Thistle, Cut-leaved Crane's-bill *Geranium dissectum*, Red Valerian *Centranthus ruber*, Creeping Buttercup, Petty Spurge *Euphorbia peplus*, Cow Parsley *Anthriscus sylvestris*, Daisy, Cock's Foot *Dactylis glomerata*, Shepherd's Purse and False Brome *Brachypodium sylvaticum*.

The strip of woodland in the east of the site includes Ash, Beech *Fagus sylvatica*, Hawthorn, Oak *Quercus* spp., Honeysuckle *Lonicera periclymenum*, and one Irish Whitebeam *Sorbus hibernica* was noted within this woodland area.

Overall, in the context of the site and the lands immediately adjacent, the broadleaved woodlands on the site are considered **to be of high local importance**, given the presence of the Irish Whitebeam: an

endemic species of Vulnerable status within the Irish Red Data List within the east of the site, feeding and foraging habitat for mammals, and bat roost and bird nesting potential in the pocket woodland areas.

Figure 4-6: Mixed broadleaved woodland in the north of the site

4.4.7 WD2 - Mixed broadleaved/conifer woodland

There is a small section of a mixture of broadleaved and conifer woodland that is located in the west of the site. The tree species in this area include Wild Cherry, Ash, Scots Pine, Sycamore and Lime, with an understory of Herb Robert, Dandelion, Alexander's, Cleavers *Gallium aparine* and Nettle.

In the context of the site and the lands immediately adjacent, this habitat is considered to be of **high local ecological importance** given the nesting options for breeding birds, along with feeding and foraging options for birds, bats and other mammals.

4.4.8 WD5 - Scattered trees and parkland

Within the west of the survey area, near to the GAA facilities and car park (Figure 4-7), are areas of scattered trees and parkland. The trees in this area include Oak, Scot's Pine, Beech, Wild Cherry, Sycamore, Horse Chestnut *Aesculus hippocastanum* and Lime, with a ground cover of continued species from the amenity grassland including Dandelion, Creeping Buttercup, Meadow Buttercup, Silver Plantain, Daisy and Perennial Ryegrass.

In the context of the site and the lands immediately adjacent, this habitat is considered to be of **high local ecological importance** given feeding and foraging options for birds, bats and other mammals.

Figure 4-7: Area of scattered trees located between the GAA pitches and the car park

4.4.9 WL1-Hedgerows

There is a hedgerow located outside the northern boundary of the survey area. The species within this hedgerow include Hawthorn, Ash, Elder, Field Maple *Acer campestre* and Lime, Honeysuckle, Sycamore saplings, young Scots Pine, Alder, Oak, *Rosa* spp. and a low diversity understory of Bramble, Clover, Dandelion, mixed grass, Cleavers, some Willowherb *Epilobium* spp. in places, and some Ornamentals. Within this hedgerow is also the invasive non-native species Butterfly Bush *Buddleja davidii*.

In the context of the site and the lands immediately adjacent, this habitat is considered to be of **high local ecological importance** given the nesting options for breeding birds, along with feeding and foraging options for birds, bats and other mammals, and provide an important habitat for invertebrates.

4.4.10 WL2-Treelines

There are small treelines, many of which are located around the GAA facilities and one small stretch in the south-west of the site which include the tree species Sycamore, a young Larch *Larix* spp, with False Oat-grass *Arrhenatherum elatius*, Perennial Ryegrass and Cocksfoot at base of trees.

These treelines also contain the non-native invasive species Cherry Laurel *Prunus laurocerasus*.

Bird species recorded within these treelines include Goldcrest, Robins and Blue Tits which may use the habitat for breeding and foraging opportunities.

In the context of the site and the lands immediately adjacent, this habitat is considered to be of **high local ecological importance** given the nesting options for breeding birds, along with feeding and foraging options for birds, bats and other mammals.

4.4.11 WS1 - Scrub

There is a section of Scrub along the north boundary of the site, which includes Grey Willow *Salix cinerea*, Bramble, Daisy Bush *Olearia* spp., and ground vegetation of Nettles, Thistle and Dock.

During the bird surveys species including Goldcrest were recorded on site. Goldcrest is currently listed as a Red List species within the Birds of Conservation Concern Ireland. As Goldcrest nest within dense Bramble patches, this scrubby area is considered to be of **high local ecological importance** for bird species on site.

4.4.12 WS2 - Immature Woodland

There is a small patch of immature woodland in the north-west of the site which includes 17 planted Apple tree saplings, Meadow Buttercup, Yorkshire Fog and Thistle.

In the context of this site and the lands immediately adjacent, these managed habitats are considered to be of **high local ecological importance** given its ability to support foraging opportunities for mammals, bats and birds, and to support invertebrate fauna.

4.4.13 WS3 - Ornamental/non-native shrub

There is a small pocket of ornamental planting in the west of the site which includes Dogwood *Cornus sanguinea*, Holly *Ilex aquifolium* and a noticeable cover of Cheesewood *Pittosporum* spp. and Fuchsia *Fuchsia magellanica*.

In the context of the site and the lands immediately adjacent, this habitat is considered to be of **less than local ecological importance**, given its high cover of ornamental planting, and low coverage of native species.

4.5 Protected Flora

No floral species listed on the Flora Protection Order 2022 were recorded by the JBA Ecologist during the ecological walkover survey of the proposed site. The NBDC shows no record of any protected flora species being present within site or its immediate vicinity (NBDC, 2023). During the walkover survey, Irish Whitebeam *Sorbus hibernica* was recorded within the woodland in the east of the site. This species is currently listed as Vulnerable within the Irish Red List of Vascular Plants. Located throughout the site were many clusters of Cuckooflower *Cardamine pratensis*, this species is listed as being of Least Concern within the Irish Red List of Vascular Plants. The locations of Cuckooflower and of the Irish Whitebeam are shown below (Figure 4-8).

In the context of the site and the lands immediately adjacent, this woodland in the east of the site is considered to be of **high local importance**, while the rest of the site has no noticeable species present and is considered to be of **negligible importance** for flora.

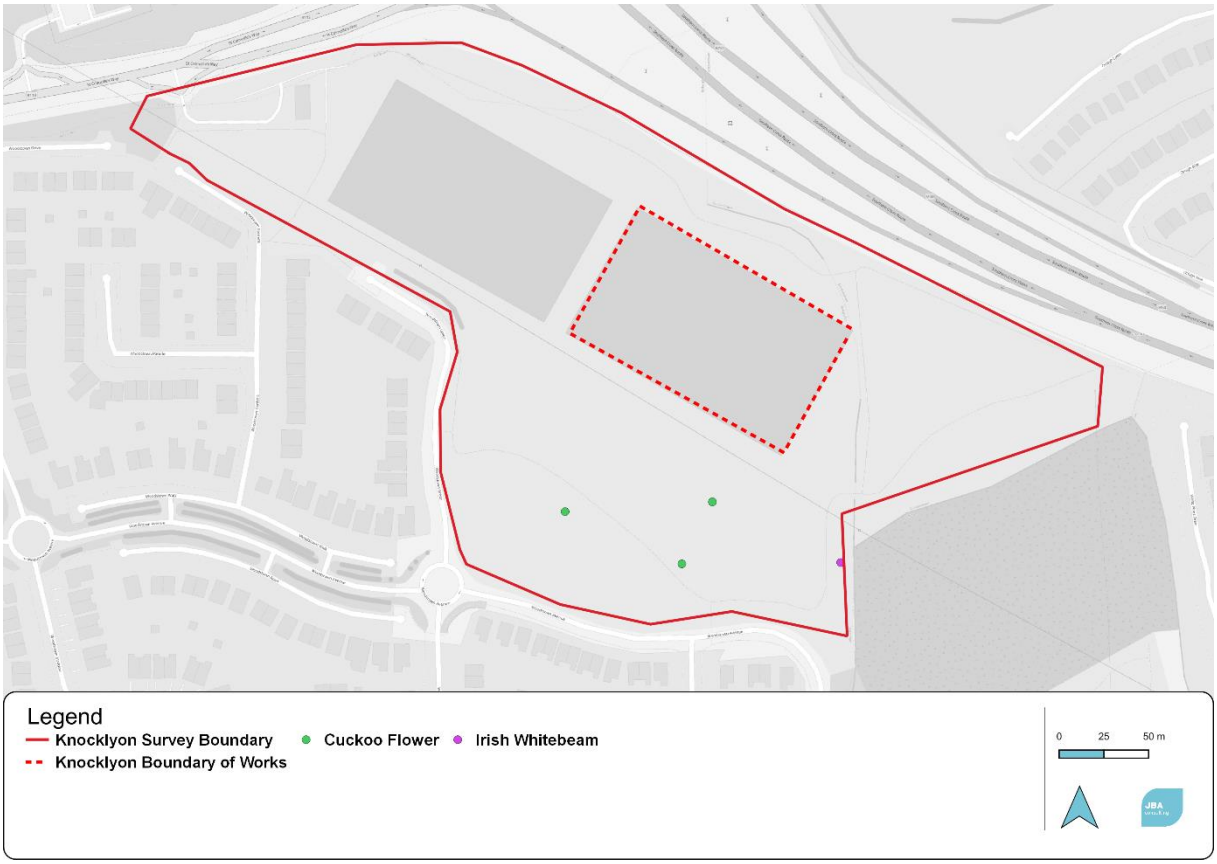


Figure 4-8: Location of Flora of Interest within the site (© OpenStreetMap contributors, 2023)

4.6 Protected Fauna

4.6.1 Mammals

JBA staff did not record any direct or indirect evidence of protected mammals recorded on-site during the ecological walkover survey. The following mammals are recorded within 5km within NBDC records (NBDC, 2023)

- Badger *Meles meles*
- Hedgehog *Erinaceus europaeus*

Species that are granted further legal status in addition to the Wildlife Act includes:

- Otter *Lutra lutra* (EU Habitats Directive Annex II and IV)

Badger and Hedgehog are species that are sometimes found within urban and suburban parklands, where they might use this site for commuting and foraging. Hedgehog is the most likely of the three species to utilise the park given the recent NBDC recordings of individuals within the adjacent housing estates.

While not present during the site survey, or within local records, Pygmy Shrew *Sorex minutus* is likely to also use this park for foraging and under the precautionary principal is included within this assessment.

While not present on site, Otter is recorded within the River Dodder, which the local stream feeds into. Due to this, any pollutants that enter the Woodstown Stream could potentially impact on the Otter downstream

This site is considered to be of **high local** ecological importance for the above mammalian species.

4.6.2 Bats

Desk Study

A number of bats have been recorded in recent years within a 5km radius of the proposed site (NBDC, 2023), these include: Daubenton's Bat *Myotis daubentonii*, Leisler's Bat/Lesser Noctule *Nyctalus leisleri*, Common Pipistrelle *Pipistrellus pipistrellus sensu lato* and Soprano Pipistrelle *Pipistrellus pygmaeus*.

Bat species are regarded as being of international ecological importance given the level of EU protections afforded to them under Annex IV of the Habitats Directive.

Preliminary Bat Roost Survey

During the ecological walkover of the proposed site the trees within the pockets of (Mixed) Broadleaved woodlands on site were assessed to have low bat roosting potential.

Bat presence / activity on-site

Walking transect surveys for bats were taken on the 4th of July, 28th of July and the 31st of August of 2022.

Two periods of Static detector surveys were undertaken by JBA between the 4th and 20th of July, and again between the 28th of July and the 3rd of August of 2022. Static detectors were left in the area of two of the pockets of woodland on the site. The species recorded during these periods include Common Pipstrelle *Pipistrellus pipistrellus sensu lato*, Soprano Pipistrelle *Pipistrellus pygmaeus* and Leisler's Bat *Nyctalus leisleri* and records of each day of static activity is recorded in Table 4-6.

Table 4-6: Results from the static detector surveys

Date	Species	Count
4th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 17 • 4 • 1
5th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 22 • 3 • 2
6th June	• Common Pipistrelle	• 13
7th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 28 • 3 • 1
8th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 42 • 5 • 3
9th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 53 • 3 • 4
10th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 81 • 6 • 12
11th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 69 • 19 • 16
12th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 91 • 9 • 1

Date	Species	Count
13th June	• Common Pipistrelle • Soprano Pipistrelle	• 74 • 41
14th June	• Common Pipistrelle • Soprano Pipistrelle	• 65 • 64
15th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 64 • 23 • 4
16th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 49 • 9 • 19
17th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 89 • 15 • 12
18th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 85 • 9 • 15
19th June	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 60 • 11 • 2
20th June	• Common Pipistrelle • Soprano Pipistrelle	• 175 • 25
28th July	• Common Pipistrelle • Soprano Pipistrelle	• 12 • 4
29th July	• Common Pipistrelle • Soprano Pipistrelle	• 9 • 3
30th July	*No species present*	*NA*
31st July	• Common Pipistrelle • Soprano Pipistrelle • Leisler's Bat	• 29 • 6 • 4
1st August	*No species present*	*NA*
2nd August	• Common Pipistrelle • Soprano Pipistrelle	• 10 • 8
3rd August	*No species present*	*NA*

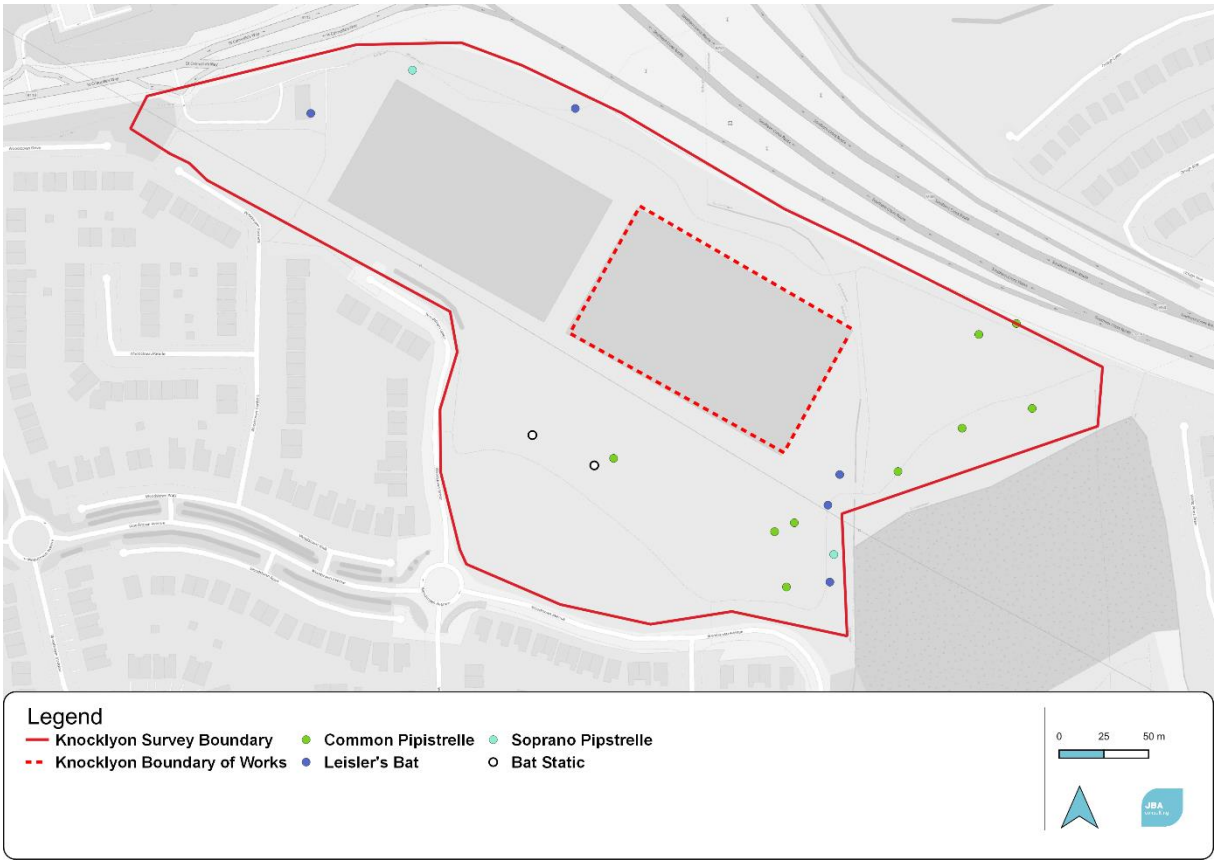


Figure 4-9: Locations of bats encountered during the walking transect survey
(© OpenStreetMap contributors, 2023)

The proposed site has been valued as being of **high local ecological** importance for bats, due to the level of bat activity recorded during the transect survey, and the bat roost potential of woodlands.

4.6.3 Breeding and Wintering Birds

The JBA Ecologist recorded no bird species of conservation concern within the site boundary during the initial ecological walkover. In the period between November 2022 and March 2023. In summary, there was a frequent occurrence of Common Gull and Black-headed Gull, however there were no other wintering birds of concern. A full list of the recorded species during these surveys are located below in Table 4-7.

Table 4-7: Bird species encountered during Bird Surveys

Day/Date	Time of arrival/departure	Species
9th November 2022	• Present for full survey	• 37 Black-headed gulls
8th December 2022	• Leaving at 9:45 • Regular passing • Others present	• Approx. 26 Black-headed gulls • Woodpigeon • Goldcrest and Blue tit (trees near pylon)
16th December 2022	• 9:30 flying over the site, didn't land • Main Treeline	• 1 Black-backed Gull • Blue Tits and Robins in main tree section
22nd December 2022	• Present on arrival • 9:10 -Arrival of birds	• Between 32 and 57 mixed flock of Black head and common gulls, and 1 first year Herring Gull • Approximately 25 Common, 47 Black-headed gull

Day/Date	Time of arrival/departure	Species
	• Others present	• House Sparrow, Robins, Dunnock (All along the verge of the field in the treeline)
6th January	• 9:35 - 9:55	• Approx. 44 Gulls (Approx. 32 Black-headed, 12 Common)
25th Jan	• 10:20 - Arrival of birds	• 14 Black-headed, 6 Common Gull
8th Feb	• 9am - Departure of birds • 10:25	• 26 Gull species (Mixture of Common and Black headed) • Arrival of 3 Common and 4 Black-headed
17th Feb	• 9:15 • 9:45 Arrival of birds • 10:10 Arrival of birds	• 2 Redwing (present within the tree border) • 33 Gulls (28 Black-headed, 5 Common) • 74 Gulls (66 Black-headed, 8 Common)
22nd Feb	• 10:10 - Arrival of birds	• Mixture of Gulls (17 Black-headed, 7 Common)
28th Feb	• Present on Arrival • 10:00 Arrival of birds • 10:15 Arrival of more birds • 10:25 Departure of all present Gulls • 10:55 Arrival of gulls	• 8 Black-headed Gulls (North of the field) • 6 Common, 19 Black-headed Gulls • 10 Common, 27 Black-headed Gulls • 27 (17 Black-headed, 8 Common, 2 Herring)

Species are afforded protections under Annexes II and III of the EU Birds Directive. Some are currently listed on the Breeding - Amber List of the Birds of Conservation Concern Ireland (BoCCI) 2020-2026.

Additionally, recent local NBDC records (within 5km radius) within the last 10 years highlight the presence of a number of bird species of concern (BoCCI, 2020-2026). These records included the Amber list species Black-headed Gull *Chroicocephalus ridibundus*, Common Starling *Sturnus vulgaris*, Great Cormorant *Phalacrocorax carbo*, Greenfinch *Carduelis chloris*, Mew Gull *Larus canus* and Willow Warbler *Larus canus.*

These records also include the Red List species Barn Owl *Tyto alba*, Grey Wagtail *Motacilla cinerea* and Goldcrest *Regulus regulus.*

The proposed site has been valued as being of **high local ecological importance** for the above breeding bird species of conservation concern due to the records of Red list breeding bird species on and in the vicinity of the site, and the site is being valued of **less than local ecological importance** for wintering birds due to the low records of utilisation and low presence in the vicinity.

4.6.4 Amphibians

While there was no record of Amphibians during the ecological walkover surveys, the desktop survey revealed the relatively recent 2020 record of Common Frog *Rana temporaria* within 5km of the site, while Woodsdown Stream provides suitable habitat for spawning and foraging. Due to this, any pollutants that enter the Woodstown Stream could potentially impact on amphibians within the watercourse and downstream.

Therefore, under the precautionary principal, this site is considered to be of **high local ecological importance for amphibian species,** given the resources for spawning and foraging.

4.6.5 Fish

While there was no record of European *Eel Anguilla* on site during the ecological walkover survey, the desktop study revealed the relatively recent presence of European Eel populations downstream of the site, in the River Dodder (Kelly et al, 2014), which the local Woodstown Stream feeds into. There has been a dramatic decline in Eel populations related to climate change, overfishing, habitat loss, and chemical contamination in water habitats, and this species is now regarded as Critically Endangered (King et al., 2011).

The proposed site and its surrounding areas have been valued as being of **high local importance** for the European Eel, given its short distance, surface water connection to populations of this endangered species reported in the River Dodder.

4.6.6 Terrestrial Invertebrates

A pollinator survey was conducted on the 4th of August 2022. While the JBA Ecologist did not document the presence of any terrestrial invertebrates of conservation concern within the site; the invertebrates that were recorded are listed in Table 4-8 below and are shown in Figure.

Table 4-8: Invertebrate species encountered during Pollinator Surveys

Species	Count
Wasp *Vespula* spp	2
Peacock Butterfly *Aglais io*	1
Common Carder Bee *Bombus pascuorum*	1
White tailed bumblebee *Bombus terrestris*	1
Moth Lepidoptera	1
Hoverfly Diptera	1
Common Blue Butterfly *Cupido minimus*	1
Meadow brown *Maniola jurtina*	7
Cinnabar Moth (Caterpillar phase) *Tyria jacobaeae*	1
Crickets	3

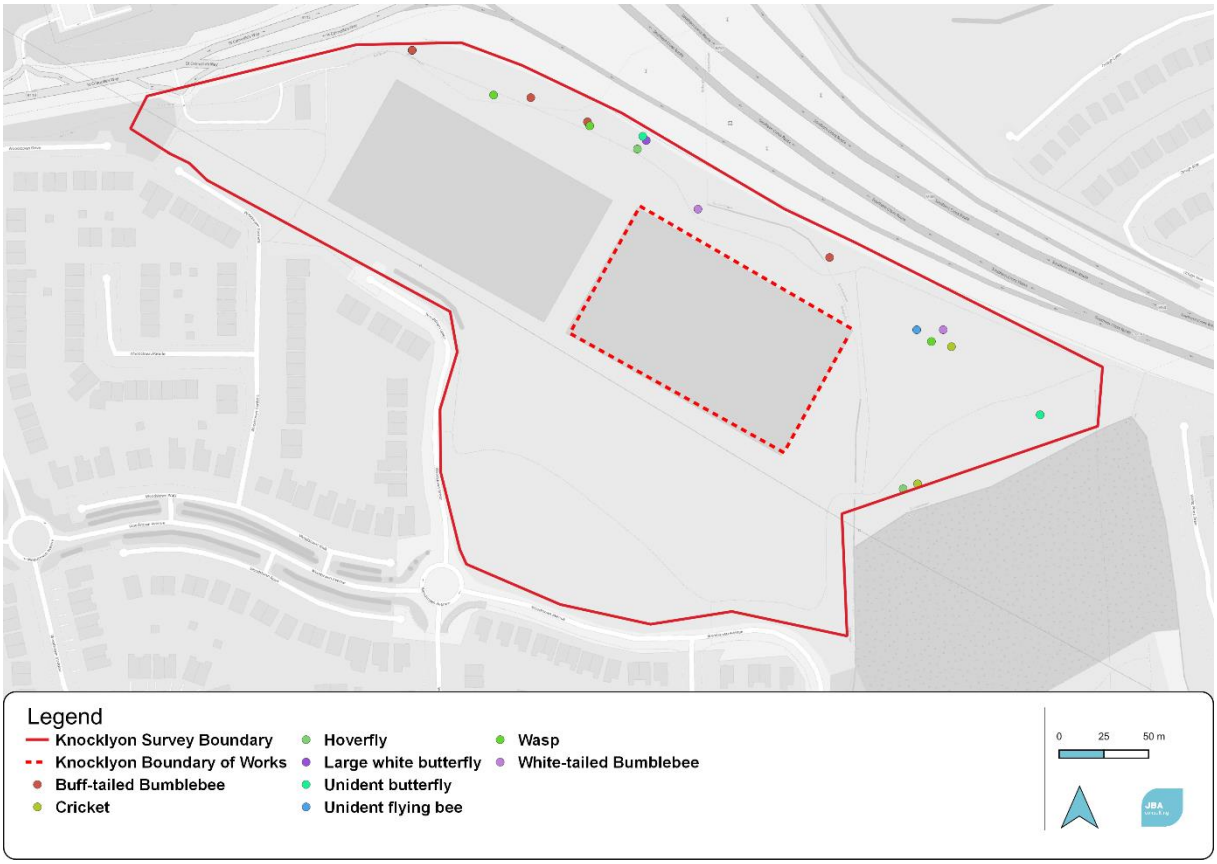


Figure 4-10: Location of pollinators found within the site (© OpenStreetMap contributors, 2023)

Given the conservation status of these terrestrial invertebrates, they are considered to be of **low local ecological importance** within the context of the sitegiven the lack of any species of conservation concern among these encounters. However the habitats supporting these invertebrates are assessed as **high local importance**, thus impacts on invertebrates will be minimised by mitigation provided for these habitats.

4.7 Invasive Non-native species

Invasive non-native species recorded on-site during ecological walkovers of the site include Butterfly Bush and Sycamore, these species are stated to be a Medium Impact species. Cherry Laurel was also encountered on the site, this species is a High Impact species, however none of these three species are listed on the third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/2011.

4.8 Screening of Designated Sites & Ecological Features

The screening of designated sites and ecological features identified during the desktop study and ecological survey are given in Table 4-9. Sites and features screened out are not considered further in this assessment. Ecological features carried forward are assessed for potential impact during construction and operation in the following sections.

Table 4-9: Summary of ecological features and the screening assessment.

Designated site / Ecological feature	Value	Screening	Reasoning
Glenasmole Valley SAC	International	Screened out (lack of connectivity)	See Appropriate Assessment Screening Report
Wicklow Mountains SAC	International	Screened out (lack of connectivity)	See Appropriate Assessment Screening

Designated site / Ecological feature	Value	Screening	Reasoning
			Report
Wicklow Mountains SPA	International	Screened out (lack of connectivity)	See Appropriate Assessment Screening Report
South Dublin Bay SAC	International	Screened out (lack of connectivity)	See Appropriate Assessment Screening Report
South Dublin Bay and River Tolka SPA	International	Screened out (lack of connectivity)	See Appropriate Assessment Screening Report
North Dublin Bay SAC	International	Screened out (lack of connectivity)	See Appropriate Assessment Screening Report
North Bull Island SPA	International	Screened out (lack of connectivity)	See Appropriate Assessment Screening Report
Glenasmole Valley pNHA	National	Screened out	Lack of connectivity
Dodder Valley pNHA	National	Screened out	Lack of connectivity
North Dublin Bay pNHA	National	Screened out	Lack of connectivity
South Dublin Bay pNHA	National	Screened out	Lack of connectivity
Dolphins, Dublin Bay pNHA	National	Screened out	Lack of connectivity
Buildings and artificial surfaces	Less than local	Screened out	Low value habitat
Amenity grassland (improved)	Less than local	Screened out	Low value habitat
Dry meadows and grassy verges	High Local	**Screened in**	Habitat offers foraging and commuting opportunity for birds, bats and mammals
Dry meadows and grassy verges/Scrub	High Local	**Screened in**	Habitat offers foraging, nesting and commuting opportunity for birds, bats and mammals
Depositing/lowland rivers	County/Regional	**Screened in**	Feeds into regionally important rivers
(Mixed) broadleaved woodland	High Local	**Screened in**	Habitat offers foraging, nesting and commuting opportunity for birds, bats and mammals Irish Whitebeam, a Vulnerable, Endemic species present
Mixed broadleaved/conifer woodland	High Local	**Screened in**	Habitat offers foraging, nesting and commuting opportunity for birds, bats and mammals
Scattered trees and parkland	High Local	**Screened in**	Habitat offers foraging, nesting and commuting opportunity for birds, bats and mammals

Designated site / Ecological feature	Value	Screening	Reasoning
Hedgerows	High Local	**Screened in**	Habitat offers foraging, nesting and commuting opportunity for birds, bats and mammals
Treelines	High Local	**Screened in**	Habitat offers foraging, nesting and commuting opportunity for birds, bats and mammals
Scrub	High Local	**Screened in**	Habitat offers foraging, nesting and commuting opportunity for birds, bats and mammals
Immature woodland	High Local	**Screened in**	Habitat offers foraging, nesting and commuting opportunity for birds, bats and mammals
Ornamental/non-native shrub	Less than local	Screened out	Low native cover, high ornamental cover
Flora - General	Negligible	Screened out	No species of concern for the majority of the site
Flora - Irish Whitebeam	High Local	**Screened In**	Irish Whitebeam, a Vulnerable Endemic species present
Mammals	High Local	**Screened In**	Grassland, woodland and treeline offers commuting and foraging habitat**.**
Bats	High Local	**Screened In**	Treelines, parklands and grassland offer foraging and commuting opportunity**.**
Breeding Birds	High Local	**Screened In**	Treelines, Hedgerows and Woodland habitats offer nesting and foraging habitat
Wintering Birds	Low Local	Screened out	Site not utilised by wintering birds of concern
Amphibians	High Local	**Screened In**	**Resources for foraging and spawning**
Fish	High Local	**Screened in**	**The river Dodder downstream, with recorded Eel presence**
Terrestrial Invertebrates	Less than local	Screened out	Low Value
Invasive non-native species	-	Screened out	Not within the site of works

5 Other Relevant Plans and Projects

5.1 Cumulative Effects

As part of the Screening for an Appropriate Assessment, in addition to the proposed works, other relevant projects and plans in the region that may induce cumulative impacts must also be considered at this stage.

5.2 Plans

The following projects or plans were identified as potential sources of cumulative impacts:

- South Dublin County Development Plan 2022-2028
- Greater Dublin Drainage Strategy
- Third Cycle River Basin Management Plan for Ireland 2022-2027
- Planning Applications (retrieved from Data.gov.ie - Planning Application Sites, April 2023)

5.2.1 South Dublin County Development Plan 2022-2028

The proposed scheme's development is in line with the South Dublin County Development Plan 2022-2028. It is an objective of the Plan to ensure that all development within the County conforms to key design principles which includes the promotion of sustainable energy and environmental services. These goals include the requirement that the planning system will 'be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the requirements of all relevant environmental legislation and the sustainable management of our natural capital.

The Plan also aims to protect and enhance surface water quality, to support, improve and protect Natura 2000 sites, and to develop an integrated Green Infrastructure network to enhance biodiversity, provide accessible parks, open spaces and recreational facilities (SDCC, 2022a). The plan also states that work will be in conjunction with Irish Water to protect existing water and drainage infrastructure, to promote investments aiming to support environmental protection and facilitate the sustainable growth of the county.

A Screening for Appropriate Assessment was carried out on the plan, which was concluded that an Appropriate Assessment was necessary for this project. The associated Natura Impact Report concluded that there are no likely significant direct, indirect or secondary impacts of the project on any Natura 2000 sites (SDCC, 2022b), **therefore the SDCC Development Plan is not anticipated to contribute to cumulative or in-combination impacts.**

5.2.2 Greater Dublin Drainage Strategy

The Greater Dublin Drainage Strategy sets out the strategic planning for the development of wastewater treatment in the Greater Dublin Area in relation to the Ringsend Waste Water Treatment Plant (WWTP) Upgrade, Greater Dublin Drainage Project and associated wastewater network drainage projects (Irish Water, 2018). The proposed developed connects with the Local Authority sewer system which is included in this strategy. The Ringsend WWTP Upgrade includes plans to expand the WWTP to its ultimate capacity, together with associated network upgrades required. The Greater Dublin Drainage Project is planned to relieve both the Ringsend WWTP and network loading by construction of a new WWTP at Clonshaugh, an orbital sewer and provision of an outfall pipe discharging 1km north east of Ireland's Eye. The Ringsend WWTP upgrade is in progress and carried out in stages, with an increased capacity of 400,000 PE by the first half of 2021 and the ultimate capacity of 2.4 million PE to be in operation by 2025 (Irish Water, 2018). The Greater Dublin Drainage Project is strategically important to the Dublin Region in that it will provide capacity for residential and commercial growth (Irish Water, 2018).

The Greater Dublin Drainage Strategy is not anticipated to contribute to cumulative or in-combination effects.

5.2.3 Third Cycle River Basin Management Plan for Ireland 2022-2027 (DoHPLG, 2022)

The first cycle of River Basin Management Plans included the Eastern River Basin District - River Basin Management Plan (ERBDMP) 2009 – 2015 (WFD (2010). The plans summarised the waterbodies that

may not meet the environmental objectives of the WFD by 2015 and identified which pressures are contributing to the environmental objectives not being achieved. The plans described the classification results and identified measures that can be introduced in order to safeguard waters and meet the environmental objectives of the WFD.

- Prevent deterioration of water body status.
- Restore good status to water bodies.
- Achieve protected areas objectives.
- Reduce chemical pollution of water bodies

The 2nd cycle River Basin Management Plan (RBMP) for Ireland 2018-2021 sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2021 (DoHPLG, 2018a). Changes from previous River Basin Management Plans is that all River Basin Districts are merged as one national River Basin District. The Plan provides a more coordinated framework for improving the quality of our waters — to protect public health, the environment, water amenities and to sustain water-intensive industries, including agri-food and tourism, particularly in rural Ireland.

The 3rd and current cycle aims to build on the initiatives of the second cycle, particularly the governance and implementation structures, and to improve the establishment of Irish Water, An Forum Uisce, the Local Authority Waters Programme and the Agricultural Sustainability Support and Advisory Programme.

The third cycle draft Catchment Report for Liffey and Dublin Bay Catchment (Catchment Science & Management Unit, 2021) identified that between Cycles 2 and 3 there has been an overall small improvement in the catchment's status. The overall change in quality between Cycles 2 and 3 include 2 waterbodies that have achieved High Status, which is an increase of one, 56 which achieve Good Status has been increased by four , 23 achieving a Moderate Status which is a decrease in four waterbodies, and 24 achieving a Poor Status an increase of 1 between cycles. There are no Bad Status waterbodies as of Cycle 3, which is a decrease of one from Cycle 2. The main significant pressures are aquaculture, anthropogenic, atmospheric, historically polluted sites and waste pressures followed by agriculture, urban run-off and forestry.

The Third Cycle River Basin Management Plan for Ireland 2022-2027 is not anticipated to contribute to cumulative or in-combination effects.

5.3 Other Projects

There are no other projects dating back three years, which are not retention applications, home extensions and/or internal alterations that have the potential overlapping construction and short-term residual impact phases with the proposed development.

5.4 Summary

The County Development Plan, RBMP and projects within the locality of the proposed project are considered in combination with the currently proposed enhancement project in the following Impact Assessment section.

6 Impact Assessment

6.1 Introduction

The impacts on the valued ecological features are assessed here. The initial assessment considers the potential impact pathways and whether these apply to the ecological features. The impact assessment considers the project and the anticipated effects in the absence of any mitigation.

The potential impacts from the enhancement works are assessed under the following:

- Disturbance to habitats and species
- Habitat loss (foraging, commuting, general refuge and nesting)
- Pollution events to the local watercourse

The following sections describe the nature of immediate / short-term impacts, as well as any medium- or long-term impacts, predicted for designated protected sites, habitats and species in the absence of implemented mitigation measures during the maintenance works.

6.2 Do Nothing Scenario

If the proposed works were not to go ahead and the present land management continues as is, the ecological value of the site would remain unchanged.

6.3 Habitats & Species

6.3.1 Dry meadows and grassy verges

The dry meadow and grassy verges while present beyond the site boundary will still be vulnerable surface water (run-off) polluting events (e.g., leaking or spilled hydrocarbons) which may occur within the site. These impacts will have a knock-on effect on the protected faunal groups which frequent this habitat for commuting, foraging or refuge purposes. Due to the habitats' distance from the site, they are anticipated to be physically disturbed or degraded, i.e., soil compaction from machinery during the construction phase of the development.

Therefore, in the absence of mitigation, during the construction phase, **a slight, temporary negative impact** is anticipated for the dry meadow habitat.

6.3.2 Dry meadows and grassy verges / Scrub

The dry meadow and grassy verges / scrub area, while present beyond the site boundary will still be vulnerable to surface water (run-off) polluting events (e.g., leaking or spilled hydrocarbons) which may occur within the site. These impacts will have a knock-on effect on the protected faunal groups which frequent this habitat for commuting, foraging or refuge purposes. Due to the habitats' distance from the site, they are anticipated to be physically disturbed or degraded, i.e., root/soil compaction from machinery during the construction phase of the development.

Therefore, in the absence of mitigation, during the construction phase, **a slight, temporary negative impact** is anticipated for the dry meadow and scrub transitional habitats.

6.3.3 Depositing/lowland rivers, Fish and Amphibians

The Woodstown Stream is in close proximity to the site, but it is not to undergo any habitat loss as a result of the physical footprint of the site. The waterbody adjacent to the site would be vulnerable to surface water (run-off) polluting events (e.g., leaking or spilled hydrocarbons) which may occur within the site. Furthermore, minor impacts will have a knock-on effect on the protected faunal groups which frequent these habitats for commuting, foraging or refuge purposes, and on fish communities that are present downstream of this watercourse.

Therefore, in the absence of mitigation, during the construction phase, **a slight, temporary negative impact** is anticipated for the Woodstown Stream habitat.

6.3.4 (Mixed) Broadleaved Woodland islands, Mixed broadleaved/conifer woodland, Immature woodland, Hedgerows

These habitats, while present beyond the site boundary, are in close proximity to the site and are vulnerable to surface water (run-off) polluting events. (e.g., leaking or spilled hydrocarbons) which may occur within the site. While the works will not be located near these woodland habitats there may be accidental damage to tree limbs or root compaction through the movement and storage of equipment during the construction phase of the development. These impacts would have a knock-on effect on the protected faunal groups which frequent these habitats for commuting, foraging nesting or refuge purposes.

Therefore, in the absence of mitigation, during the construction phase, **a slight, temporary negative impact** is anticipated for these habitats.

6.3.5 Scattered trees and parkland, Treelines, Scrub,

These habitats, while present beyond the site boundary are in close proximity to the site and are vulnerable to surface water (run-off) polluting events. (e.g., leaking or spilled hydrocarbons) which may occur within the site. The works will be limited to the within amenity grassland east of the site and there will not be any direct impact on these tree habitats through root compression and limb damage.

Therefore, in the absence of mitigation, during the construction phase, **a slight, temporary negative impact** is anticipated for these habitats.

6.3.6 Flora - Irish Whitebeam

This species while present beyond the site boundary, is in close proximity to the site and is vulnerable to surface water (run-off) polluting events. (e.g., leaking or spilled hydrocarbons) which may occur within the site.

Therefore, in the absence of mitigation, during the construction phase, **a slight, temporary negative impact** is anticipated for Irish Whitebeam

6.3.7 Mammals - Badger and Hedgehog

While no signs of Badger or Hedgehog were present during the ecological walkover, this does not ensure that these local mammal species do not occur or occasionally visit the site area. Bearing this in mind, minor impacts may arise in the form of disturbance to foraging and commuting activities, as well as potential injury/loss of life to individuals in the case of the accidents within the construction site (e.g. accidental trappings), after failure to exclude entry.

Therefore, in the absence of mitigation, during the construction phase, **temporary negative impact of slight significance** is anticipated for these mammal species.

6.3.8 Bats - Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat

Three bat species (Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat) were reported within the site boundary during the transect. Given the poor bat roosting potential on site, these species are likely only utilising the site for commuting and opportunistic foraging, and their sensitivity to changes within the proposed site's boundaries would be low. Daubenton's Bat, while not encountered during the transect surveys has been reported within 2km of the site, however it is unlikely to forage within the site boundary due to the lack of water feature within the site.

During the construction phase, the proposed development is not anticipated to have an adverse impact on population numbers of the bat species identified as using the site, as there will be no reduction in potential roosting locations due to the proposed development. The site currently has low-moderate foraging and commuting suitability for bats. However, potential minor impacts on individuals using the site could be posed by external lighting during the construction phase.

Impacts during construction will be temporary and given the presence of treelines and grasslands adjacent to the site, which would provide alternative commuting and foraging habitats for bats, temporary impacts are not anticipated to be significant. However, lighting used incorrectly could also impact on surrounding habitats.

Therefore, in the absence of lighting design mitigation, **temporary negative impact of slight significance** from the project on bat species are anticipated.

6.3.9 Breeding Birds

Local breeding birds will potentially be physically disturbed from their foraging activities during the construction works. While there are many bird species in the general area of conservation concern, the extent of the works on the site are small, contained, and temporary, there are many alternate grass areas in the vicinity of the site that will provide the birds ample opportunity for foraging. Therefore **slight, temporary, negative impacts on any locally important ecological feature will have an overall negligible impact on foraging breeding birds**.

Though, in the absence of mitigation, the disruption to trees containing nests during breeding season would increase the impact, elevating the overall impact to a **temporary negative impact of slight significance**. Therefore, mitigation will be provided to avoid this scenario.

6.4 Operational Phase

6.4.1 Dry meadows and grassy verges

Given the nature and extent of the project's operations, minor adverse impacts in the form of the dispersal of artificial pitch pellets into adjacent areas through loss during windy and rainy weather events, through loss of pellets through adhering to athlete's clothing and footwear, and during refilling and maintenance of the park, are anticipated for this grassland habitat, therefore, in the absence of mitigation for the duration of the operational phase of the development there will be a **continuous slight, negative impact** on this grassland habitat.

6.4.2 Dry meadows and grassy verges / scrub

Given the nature and extent of the project's operations, minor adverse impacts in the form of the dispersal of artificial pitch pellets into adjacent areas through loss during windy and rainy weather events, through loss of pellets through dispersal on athlete's clothing and during refilling and maintenance of the park, are anticipated for this transitional habitat, therefore, in the absence of mitigation for the duration of the operational phase of the development there will be a **continuous slight, negative impact** on this transitional habitat.

6.4.3 Depositing/lowland rivers, Otter ,Fish and Amphibians

Given the nature and extent of the project's operations, minor adverse impacts in the form of the dispersal of artificial pitch pellets into adjacent areas through loss during windy and rainy weather events, through loss of pellets through dispersal on athlete's clothing and during refilling and maintenance of the park are anticipated, however through the vegetative buffer present between the proposed pitch and the watercourse, **operational impacts from development are not anticipated** to disrupt this aquatic habitat or species groups.

6.4.4 (Mixed) Broadleaved Woodland islands, Mixed broadleaved/conifer woodland, Immature woodland, Hedgerows

Given the nature and extent of the project's operations, minor adverse impacts in the form of the dispersal of artificial pitch pellets into adjacent areas through loss during windy and rainy weather events, through loss of pellets through dispersal on athlete's clothing and during refilling and maintenance of the park, are anticipated for these woodland habitats, therefore, in the absence of mitigation for the duration of the operational phase of the development there will be a **continuous slight, negative impact** on this these woodland habitats.

6.4.5 Scattered trees and parkland, Treelines, Scrub,

Given the nature and extent of the project's operations, minor adverse impacts in the form of the dispersal of artificial pitch pellets into adjacent areas through loss during windy and rainy weather events, through loss of pellets through dispersal on athlete's clothing and during refilling and maintenance of the park, are anticipated for these woodland habitats, therefore, in the absence of

mitigation for the duration of the operational phase of the development there will be a **continuous slight, negative impact** on this these woodland habitats.

6.4.6 Flora - Irish Whitebeam

Given the nature and extent of the project's operations, adverse impacts are not anticipated for this species as the local vegetation buffers will prevent any artificial pitch pellets from impacting the area of the Whitebeam, therefore, the operational phase of the development will have a **neutral impact** on this species habitat.

6.4.7 Mammals - Badger, Hedgehog and Shrew

The above mammal species which may frequent the proposed site will not experience any adverse operational impacts related to the scale of habitat loss. They may be impacted given the proposed flood lighting of the development if the lighting is not appropriately fitted to accommodate their presence.

In the absence of mitigation the **operational phase of the development will have a slight, negative impact** on the local nocturnal fauna.

6.4.8 Bats - Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat

The above bat species which may frequent the proposed site will not experience any adverse operational impacts related to the scale of habitat loss, and they will not experience any further operational impacts related to the 3m height of the fencing around the pitch. They may be impacted given the proposed flood lighting of the development.

In the absence of mitigation, the **operational phase of the development will have a slight, negative impact** on the local nocturnal fauna.

6.4.9 Breeding Birds

Given the nature and extent of the project's operations, adverse impacts are not anticipated for the identified bird species, therefore, the **operational phase of the development will have a neutral impact** on the identified breeding bird species.

6.5 Invasive Non-native Species

There were no invasive non-native High or Medium Impact species currently under the third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/2011 species were recorded on-site during the ecological walkover, and neither the construction nor operational phase of the project are anticipated to contribute to the spreading of invasive species.

6.6 Summary

The following potential significant impacts have been identified below, with the necessary mitigation is discussed in the next chapter:

Construction Phase

- Degradation of the local woodland east of the site of works.
- Degradation of dry meadow grassland, hedgerow and treeline habitats via pollution events; root compaction; and direct habitat loss, thus reducing the capacity of these habitats to support local wildlife.
- Disturbance and/or degradation of commuting and foraging habitats for mammals, birds and terrestrial invertebrates, as well as potentially accidental fatal entrapment for these faunal groups during the construction phase.
- Degradation of the local watercourse which feeds downstream into the River Dodder through spillage events during the construction phase.

Operational Phase

- Continuous degradation of dry meadow grassland, hedgerow and treeline habitats via the spread of artificial pitch pellets thus reducing the capacity of these habitats to support local wildlife.
- Disturbance to foraging activities of nocturnal ground-dwelling mammals and bats via the presence of the site's flood lighting.

The mitigation is based on existing guidance documentation and where necessary additional mitigation is proposed to reduce the impacts identified above.

7 Mitigation

The following mitigation is recommended to ensure that the proposed works do not adversely impact on the ecological receptors outlined in Section 6.

Mitigation measures for anticipated impacts on designated sites and ecological features are outlined below.

7.1 Mitigation for Project - Construction Phase

The activities for the project for the construction phase shall remain within the boundary for the proposed site. Within this area, the mitigation measures outlined below shall be implemented within the contractor's operation plan.

- A Construction and Environment Management Plan (CEMP) will be submitted to South Dublin County Council for agreement prior to site works commencing. This CEMP will incorporate the mitigation measures listed here.
- The CEMP will also strictly adhere to best practice environmental guidance including but not limited to the following:
- - CIRIA Guidance C532 Control of water pollution from construction sites. Guidance for consultants and contractors. (CIRIA, 2019 - www.ciria.org);
- - CIRIA Guidance C741: Environmental good practice on site guide (Charles & Edwards, 2015; CIRIA, 2019 - www.ciria.org);
- - CIRIA Guidance C750D: Groundwater control: design and practice (Preene et al., 2016; CIRIA, 2019 - www.ciria.org);
- Construction method statements will be submitted to South Dublin County Council for agreement prior to site works commencing.

7.1.1 Site Compound

- It is preferred that the works compound be located in the amenity grassland directly to the north-west of the area between of the proposed pitch boundary and the car park, in order to locate it away from the higher valued scrub, treeline and scattered trees and parkland habitats which are located adjacent to the east, north and south of the development area.
- Only plant and materials necessary for the construction of the works will be permitted to be stored at the compound location.
- Site establishment by the Contractor will include the following:
- - Site offices;
- - Site facilities (canteen, toilets, drying rooms, etc.);
- - Office for construction management team;
- - Secure compound for the storage of all on-site machinery and materials;
- - Temporary car parking facilities;
- - Temporary fencing;
- Site Security to restrict unauthorized entry;
- Bunded storage of fuels and refuelling area.
- A separate container will be located in the Contractors compound to store absorbents used to contain spillages of hazardous materials. The container will be clearly labelled, and the contents of the container will be disposed of by a licenced waste contractor at a licenced site. Records will be maintained of material taken off site for disposal.
- A maintenance programme for the bunded areas will be managed by the site environmental manager. The removal of rainwater from the bunded areas will be their responsibility. Records will be maintained of materials taken off site for disposal.

- The site environmental manger will be responsible for maintaining all training records.
- Drainage collection system for washing area to prevent run-off into surface water system.
- Wherever reasonably practical, refuelling of vehicles will be carried out off site to reduce risk of accidental hydrocarbon pollution events.

7.1.2 Water Quality

Relevant legislation and best practice guidance that have been considered includes but not limited to the following:

- Water Framework Directive (2000/60/EC);
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009;
- Local Government (Water Pollution) Acts 1977-1990;
- CIRIA C532 *Control of water pollution from construction sites*. Guidance for consultants and contractors. (www.ciria.org);
- CIRIA Guidance C750D: *Groundwater control: design and practice* (Preene *et al.*, 2016) (www.ciria.org);
- CIRIA C515 Groundwater control – design and practice, 2nd ed. (CIRIA, 2021 - www.ciria.org)
- CIRIA Guidance C741: *Environmental good practice on site guide* (Charles & Edwards, 2015; CIRIA, 2020 - www.ciria.org)

To prevent watercourse pollution:

- Adoption of a surface water plan including appropriate barrier controls to prevent any polluted surface water from the site reaching the adjacent habitats of high local ecological value.
- Minimise area of exposed ground by maintaining existing vegetation in vicinity of site compound/pier infrastructure.
- Oil booms and oil soakage pads should be maintained on-site to enable a rapid and effective response to any accidental spillage or discharge. These shall be disposed of correctly and records will be maintained by the environmental manager of the used booms and pads taken off site for disposal.
- Fail-safe site drainage and bunding through drip trays on plant and machinery will be provided to prevent discharge of chemical spillage from the sites to surface water.
- Any accidental discharge will be controlled by use of oil booms in the water prior to construction starting.

7.1.3 Dust generation management

The following measures will be implemented to prevent the generation and spread of dust from the site to nearby areas:

- Limit the breaking of the topsoil or earth stripping from occurring during dry and windy weather.
- Wheel washing of vehicles leaving the site, covering of fine dry loads or spraying of loads prior to exiting the site, and if necessary regular cleaning of public roads in the vicinity of the entrance.
- Appropriate maintenance of vehicles and machinery to minimise any extensive release of exhaust pollutants during works (OPR, 2004).

7.1.4 Concrete Management Procedures

The following measures will be implemented to prevent liquid concrete/ cement-based dust entering the adjacent habitats of ecological value.

- Wherever reasonably possible, pre-cast concrete features should be utilised to minimise the risk of a concrete-based pollution event.
- Concrete delivery, concrete pours and related construction methodologies will be part of the procedure agreed with the contractor to mitigate any possibility of spillage or contamination of

the local environment. Particular attention will be paid during the pouring process in order to avoid leakages or spills of concrete.

- Washout of concrete plant will occur off site at a designated impermeable area with waste control facilities.
- Raw, uncured or waste concrete will be stored appropriately prior to disposal by licenced contractor.
- The contractor's construction methodology will require the use of precast elements where practical; the use of secondary protection shuttering for concrete pours; all pours to be carried out in dry weather conditions; and that all trucks be cleaned prior to leaving respective depots.
- The contractor will be required to use experienced operators for the work; provide an appropriate level of continuous monitoring during any concrete pours by experienced management; and have method statements approved by the client prior to commencing works. Works will be carried out using recommendations from current guidance and relevant codes of practise as outlined in **EA (2011) -** *Managing concrete wash waters on construction sites: good practice and temporary discharges to ground or to surface waters*.

7.1.5 Pollution Control and Spill Prevention

Spill kits containing absorbent pads, granules and booms will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site foremen's vehicles will carry large spill kits at all times. Absorbent material will be used with pumps and generators at all times and used material disposed of in accordance with the Waste Management Plan. All used spill materials e.g., Absorbent pads will be placed in a bunded container in the contractor's compound. The material will be disposed of by a licenced waste contractor at a licenced facility. Records will be maintained by the environmental site manager.

Regular inspections and maintenance of plant and machinery checking for leaks, damage or vandalism will be made on all plant and equipment.

In the event of a spill the Contractor will ensure that the following procedure are in place:

- Emergency response awareness training for all Project personnel on-site works.
- Appropriate and sufficient spill control materials will be installed at strategic locations within the site. Spills kits for immediate use will be kept in the cab of mobile equipment.
- Spill kits will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site vehicles will carry spill kits at all times. Spill kits must include suitable spill control materials to deal with the type of spillage that may occur and where it may occur. Typical contents of an on-site spill kit will include the following as a minimum:
- - Absorbent granules;
- - Absorbent mats/cushions;
- - Absorbent booms;
- -Track-mats, geotextile material and drain covers.
- All potentially polluting substances such as oils and chemicals used during construction will be stored in containers clearly labelled and stored with suitable precautionary measures such as bunding within the site compound.
- All tank and drum storage areas on the site will, as a minimum, be bunded to a volume not less than the following;
- - 110% of the capacity of the largest tank or drum within the bunded area, or
- - 25% of the total volume of substances which could be stored within the bunded area.
- The site compound fuel storage areas and cleaning areas will be rendered impervious and will be constructed to ensure no discharges will cause pollution to surface or ground waters.
- Designated locations for refuelling are within Site Compound.
- Potentially contaminated run off from plant and machinery maintenance areas will be managed within the site compound surface water collection system.

Damaged or leaking containers will be removed from use and replaced immediately.

7.1.6 Noise and vibration

The construction works will be limited to daylight hours where possible, ensuring minimum disturbance to commuting and foraging activities of local wildlife. With regard to construction activities, reference will be made to British Standard BS 5228-1:2009 Code of practice for noise and vibration control on construction and open sites. Noise, which offers detailed guidance on the control of noise from construction activities. A variety of practicable noise control measures will be employed. These include:

- Erection of barriers at construction works boundary as necessary and around items such as generators or high duty compressors.
- Limiting the hours during which site activities likely to create high levels of noise are permitted. Construction activities will take place Monday to Friday, between 08:00 and 18:00, and on Saturdays, between 08:00 and 13:00.
- A site representative responsible for matters relating to noise will be appointed to liaise with South Dublin County Council.

Additional guidance relevant to acceptable vibration and noise levels will be followed and is contained in the following documents:

- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- British Standard BS 5228-2: 2009: Code of Practice for Noise and Vibration Control on Construction and Open Sites: Vibration.
- NRA: 2004: Guidelines for the Treatment of Noise and Vibration in National Road Schemes.

7.1.7 General Avoidance Measures

Although it has been identified that there will be no permanent impact through disturbance to wildlife during the work, it is advised that general avoidance measures be undertaken to protect wildlife while the works are being carried out.

General avoidance measures that should be incorporated by the contractors working on site include:

- Limit the hours of working to daylight hours, to limit disturbance to nocturnal and crepuscular animals;
- Due to the presence of bats on site the use of lighting at night during construction should be avoided. If the use of lighting is essential, then a directional cowl should be fitted to all lights to prevent light spill and to be directed away from treelines/groups of trees, areas of scrub and meadow grassland (in addition, see Section 7.1.8).
- Contractors must ensure that no harm comes to wildlife by maintaining the site efficiently and clearing away materials which are not in use, such as wire or bags in which animals can become entangled; and
- Any pipes should be capped when not in use (especially at night) to prevent local fauna becoming trapped. Any excavations should be covered overnight to prevent animals from falling and getting trapped. If that is not possible, a strategically placed plank should be placed to allow animals to escape

7.1.8 Construction Site Lighting (If required)

Light levels and type:

Construction site lighting that meets the lowest light levels permitted under health and safety is preferable for bats. The specification and colour of light treatments, such as single bandwidth lights and no UV light are essential. LED luminaires are ideal and should be used where possible due to their sharp cut-off, lower intensity, and dimming capability. A warm white spectrum (<3000K) should be used in the lighting located along the boundaries of the site to reduce the blue light component.

Hours of illumination during works:

The lighting will be controlled by photocells which go on/off at sunrise and sunset as per set lux levels. Additionally, 'Virtual Midnight' dimming will need to be incorporate on-site, which automatically dims the lights by 33% between midnight and 6am.

Column heights of lamp posts:

As bats most likely forage in the unlit areas within and surrounding the site, the introduction of new lighting as a result of the new development, with accompanying light spillage, is anticipated to result in the bats becoming averse to commuting and foraging within the proposed site and potentially the adjacent habitats also. In order to reduce the amount of light spillage where it is not needed, the height of lamp columns during construction should be restricted. A height of 6m or less is necessary to avert lighting impacts

7.1.9 Meadow grass compaction, Root compaction and limb damage avoidance

In order to avoid the damage and compaction of roots and vegetation, storage and movement of machinery should be avoided in rooting zones areas or by areas occupied by the meadows east of the site of works, local treelines, standalone trees or hedgerow vegetation. Fencing should be in place to the east of the site to prevent entry of vehicles into these areas.

7.1.10 Sowing of Remedial Grassland and Landscaping

The areas outside of the zone of development that are damaged as a result of machinery accessing the site will have remedial sowing of grass. This sowing mix combined with the natural seedbank within the soil will help replace the functionality provided by the current grassland habitat.

7.2 Mitigation for Project - Operation Phase

Floodlighting Design and Operation

As bats are most likely to forage in the unlit areas within and surrounding the site, the introduction of new lighting as a result of the new development, with accompanying light spillage, is anticipated to result in the bats becoming averse to commuting and foraging within the proposed site and potentially the adjacent habitats also. The floodlighting plan (including design, light intensity and timing of lighting during operation) will be reviewed by a suitably qualified Ecologist to ensure proper mitigation against unacceptable effects on ecology.

Floodlighting will be designed and operated to minimise the vertical light spill onto woodland, hedgerow, scrub and areas of meadow to the east, south, and west of the site. This is to keep these areas as dark spaces for nocturnal species.

Light levels and type:

The specification and colour of light treatments, such as single bandwidth lights and no UV light are essential. LED luminaires are ideal and should be used where possible due to their sharp cut-off, lower intensity, and dimming capability. A warm white spectrum (3000K) should be used in the lighting located along the boundaries of the site to reduce the blue light component.

7.2.1 Management of synthetic pitch

During the operational phase of the project, artificial pitch pellets will disperse from the pitch through being carried on athlete's clothing, through the spread of artificial pitch pellets during heavy rain or wind events and during sweeping or infilling maintenance of the pitch during it's use periods.

These will be mitigated through:

7.2.1.1 Pitch Detox Stations and Timber Kickboards

There will detox brushing brush station at the entrance to the pitch for users to prevent pellets from being transferred onto clothing, with a mesh insert grill to catch microplastics for reuse.

A timber kickboard in place along the boundary of the pitch will be maintained which will prevent the spread of pellets during heavy wind events.

7.2.1.2 Maintenance vehicle brush down

The brushing down of vehicles after they are utilised during maintenance (i.e. Sweeping, infilling) of the artificial pitch, and before they leave the site, will prevent the spread of pellets from the body of the equipment.

7.2.2 Soakaway drainage

Surface water that accumulates on the pitch during heavy rain will not enter the location's sewage system or into the local watercourse on site through the integration of a silt trap chamber which will then be fed into a soakaway chamber. Drained water will pass through both a geotextile membrane and a gravel backfill within the carrier drain section into the silt trap chamber, and an additional geotextile membrane liner around the perimeter, except the base, of the soakaway. Maintenance of this geotextile filtration will be ongoing in order to ensure ongoing filtration of the artificial pellets from the soakaway.

7.3 Additional Biodiversity Recommendations for the Operational Phase

7.3.1 Landscape Plan

It is recommended that the Landscape Plan incorporate planting of native trees and shrubs; augmenting areas of woodland, and providing thickening of hedgerow habitat. This would allow greater connectivity between various areas of the site and strengthen existing ecological corridors.

7.3.2 All Ireland Pollinator Plan

It is recommended that actions from the All-Ireland Pollinator Plan be implemented through the operation and management of the pitches. Measures outlining pollinator-friendly management of Sports Clubs are detailed in this guidance document: Sports Clubs » All-Ireland Pollinator Plan (pollinators.ie)

This document outlined 5 ways to make sports clubs more biodiversity friendly where feasible, and that these will be in line with existing ecological function of the site. This can be summarised as:

- Manage some off-pitch grass for pollinators;
- Manage existing native hedgerows for biodiversity;
- Plant biodiversity-friendly trees, shrubs and flowers;
- Reduce use of herbicides
- Provide nesting places for wild bees

8 Residual Impact

Residual ecological impacts are those that remain once the development proposals have been implemented. The main aim of ecological mitigation, compensation and enhancement is to minimise or eliminate residual impacts.

8.1 Construction Phase

Preparatory and construction works will result in disturbance to the foraging and commuting habitat for protected species such as ground-dwelling mammals, bats, birds and amphibians.

Implementation of mitigation measures during the construction works phase, along with good site management and construction practices will help to minimise any significant and/or permanent impact on the environment. This will be included in a Construction Environmental Management Plan (CEMP). Included in this will be best practice measures for visual and audible disturbance, as well as control of surface and ground water pollution, which will minimise any impact on local habitats and the species reliant on them.

With the proposed mitigation implemented the residual impact during the construction phase is assessed to be of temporary negative impact on account of the disturbance to habitats of high local ecological importance, as well as the local protected species.

8.2 Operational Phase

The proposed remedial planting within the development, i.e., tree and hedge planting; and sowing of wildflower meadows will help maintain the overall floral and faunal biodiversity of the site, while the mitigations in place will prevent the spread of artificial turf pellets into adjacent habitats. Overall, the works will have a negligible residual impact on the biodiversity within and adjacent to the site.

9 Summary of Impact Assessment

9.1 EcIA Table

Table 9-1 presents a summary of the impacts envisaged when mitigation approaches are included. Residual impacts are also described.

All other ecological impacts can be avoided, mitigated or compensated so there is no anticipated significant impact for the remaining species considered in the assessment.

Table 9-1: Summary of Impacts; Mitigations; and Significance of Residual Impacts on ecological features

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Dry meadows and grassy verges	Accidental introduction of pollutants into the habitat, degrading its condition and its ability to support the species associated with the habitat	High Local	Slight, temporary negative impact during the Construction Phase	Strict adherence to: The mitigations outlined in Sub-sections 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, in relation to the location of the compound and prevention of pollutants from entering local habitats during pollution spill events The mitigations outlined in sub-section 7.1.9 in relation to the movement of machinery and prevention of meadow compaction or vegetation damage	Neutral residual impact during the operational phase
			Continuous, slight, negative impact during the Operational Phase	Strict adherence to: The mitigations outlined in Sub-Section 7.2.2 in relation to the prevention of pellet dispersal into local habitats.	
Dry meadows and grassy verges / Scrub	Accidental introduction of pollutants into the habitat, degrading its condition and its ability to support the species associated with the habitat	High Local	Slight, temporary negative impact during the Construction Phase	Strict adherence to: The mitigations outlined in Sub-sections 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, in relation to the location of the compound and prevention of pollutants from entering local habitats during pollution spill events. The mitigations outlined in sub-section 7.1.9 in relation to the movement of machinery and prevention of meadow compaction or vegetation damage	Neutral residual impact during the operational phase

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
			Continuous, slight, negative impact during the Operational Phase	Strict adherence to The mitigations outlined in Sub-Section 7.2.2 in relation to the prevention of pellet dispersal into local habitats.	
Depositing/lowland rivers	Accidental introduction of pollutants into the habitat, degrading its condition and its ability to support the species associated with the habitat	High Local	Slight, temporary negative impact during the Construction Phase	Strict adherence to The mitigations outlined in Sub-sections 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, in relation to the location of the compound and prevention of pollutants from entering local habitats during pollution spill events.	Neutral residual impact during the operational phase
Mammals - Otter			No impacts during the operation phase		
Fish					
Amphibians					
(Mixed) Broadleaved Woodland	Accidental introduction of pollutants into these habitats, degrading their condition and their ability to support the species associated with these habitats	High Local	Slight, temporary negative impact during the Construction Phase	Strict adherence to: The mitigations outlined in Sub-sections 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, in relation to the location of the compound and prevention of pollutants from entering local habitats. The mitigations outlined in sub-section 7.1.9 in relation to the movement of machinery and prevention of root compaction or limb damage.	Neutral residual impact during the operational phase
Mixed broadleaved/conifer woodland					
Immature woodland					
Scrub					
Hedgerows			Continuous, slight, negative impact during the Operational Phase	Strict adherence to: The mitigations outlined in Sub-Section 7.2.2 in relation to the prevention of pellet dispersal into local habitats.	

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Scattered trees and parkland Treelines Scrub	Accidental introduction of pollutants into these habitats, degrading their condition and their ability to support the species associated with these habitats	High Local	Slight, temporary negative impact during the Construction Phase	Strict adherence to: The mitigations outlined in Sub-sections 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, in relation to the location of the compound and prevention of pollutants from entering local habitats. The mitigations outlined in sub-section 7.1.9 in relation to the movement of machinery and prevention of root compaction or limb damage.	Neutral residual impact during the operational phase
			Continuous, slight, negative impact during the Operational Phase	Strict adherence to: The mitigations outlined in Sub-Section 7.2.2 in relation to the prevention of pellet dispersal into local habitats.	
Flora - Irish Whitebeam	Pollution events causing damage to the species during the construction phase	High Local	Slight, temporary negative impact during the Construction Phase	Strict adherence to: The mitigations outlined in Sub-sections 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, in relation to the location of the compound and prevention of pollutants from entering local habitats. The mitigations outlined in sub-section 7.1.9 in relation to the movement of machinery and prevention of root compaction or limb damage	Neutral residual impact during the operational phase
			No impacts during the operation phase		

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Ground-dwelling Mammals - Badger, Hedgehog and Pygmy Shrew	Disturbance of foraging and commuting activities during construction phase. Accidental entrapments causing injury or fatality.	High Local	Slight, temporary negative impact during the Construction Phase	Strict adherence to: The mitigations outlined in Sub-sections 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, in relation to the location of the compound and prevention of pollutants from entering local habitats, ensuring the protection of habitats which are used by local fauna. The mitigations outlined in sub-section 7.1.6, 7.1.7 and 7.1.8 in relation the prevention of disturbance and/or accidental entrapment of fauna.	Neutral residual impact during the operational phase
			Continuous, slight, negative impact during the Operational Phase	Strict adherence to The mitigation outlined in Sub-section 7.2.1 in relation to the management of lighting during the operational phase. The mitigations outlined in Sub-Section 7.2.2 in relation to the prevention of pellet dispersal into local habitats.	
Bats - Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat	Disturbance of foraging and commuting activities through development if additional lighting used at night. Physical and visual audible disturbance from construction works	High Local	Slight, temporary negative impact during the Construction Phase	Strict adherence to: The mitigations outlined in Sub-sections 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, in relation to the location of the compound and prevention of pollutants from entering local habitats that would interfere with foraging or commuting of mammals. The mitigations outlined in sub-section 7.1.6, 7.1.7 and 7.1.8 in relation the prevention of disturbance and/or accidental entrapment of fauna.	Neutral residual impact during the operational phase

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
			Continuous, slight, negative impact during the Operational Phase	Strict adherence to The mitigation outlined in Sub-section 7.2.1 in relation to the management of lighting during the operational phase. The mitigations outlined in Sub-Section 7.2.2 in relation to the prevention of pellet dispersal into local habitats.	
Breeding Birds	Disturbance of foraging and commuting activities through damage to the treelines, hedges, scrub woodlands, and adjacent amenity grassland habitats.	High Local	Slight, temporary negative impact during the Construction Phase	Strict adherence to: The mitigations outlined in Sub-sections 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, in relation to the location of the compound and prevention of pollutants from entering local habitats that would interfere with foraging or nesting of birds. The mitigations outlined in sub-section 7.1.6, 7.1.7 and 7.1.8 in relation the prevention of disturbance and/or accidental entrapment of fauna	Neutral residual impact during the operational phase

9.2 Cumulative Impacts

As there are no significant residual impacts on ecological features (following mitigation measures) from this development, there is therefore no potential for other plans or projects identified in Section 5 to act in combination with it. Therefore, significant cumulative impacts are not expected to occur on the ecological features within the proposed site.

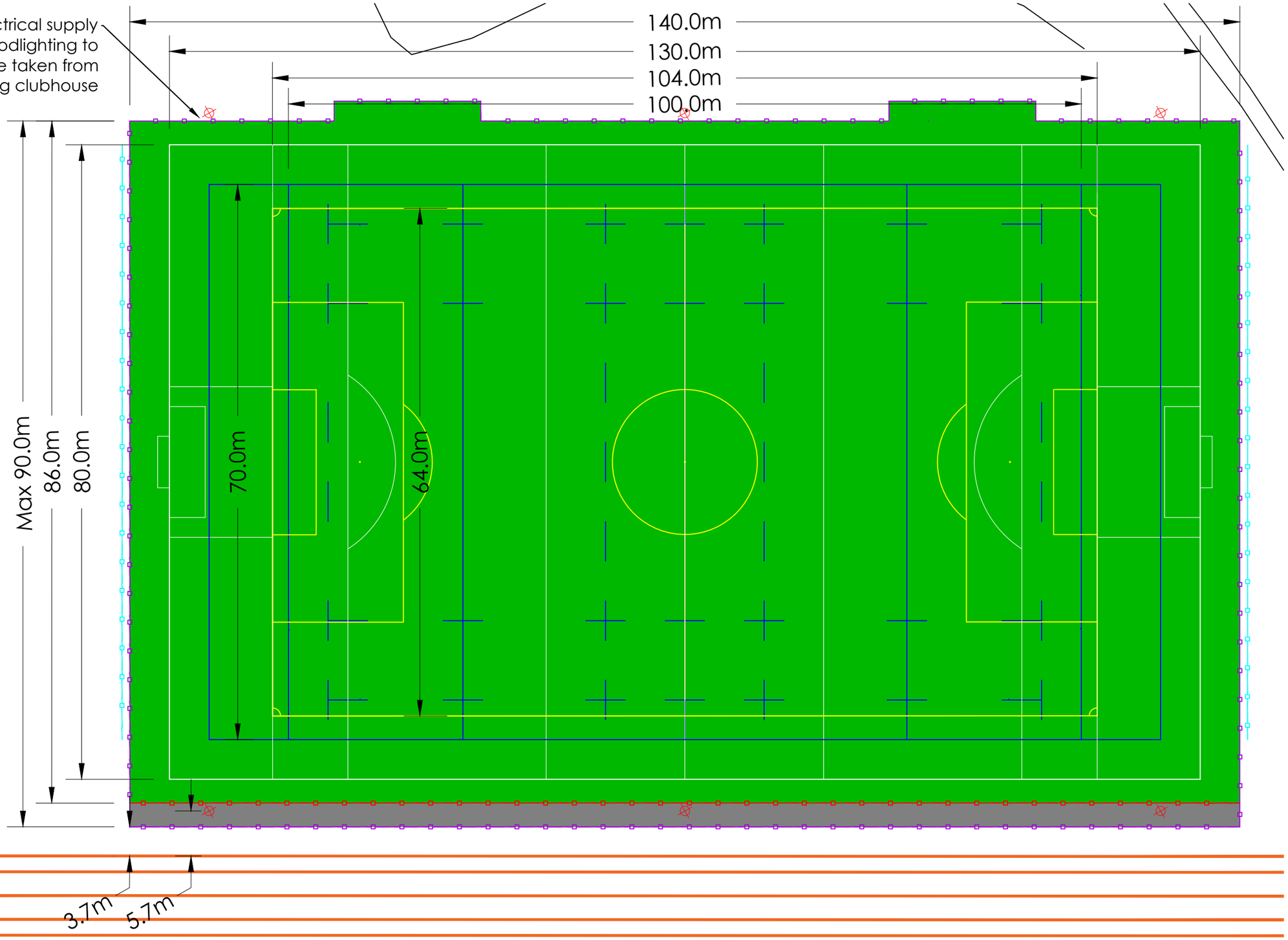
10 Conclusion

The proposed development project has been shown to potentially impact a number of different habitats with high local importance (dry meadows and grassy verges; hedgerow treelines and scrub, depositing/lowland rivers) and faunal groups (ground-dwelling mammals; bats; breeding birds; amphibians and fish), whose ecological importance is of high local level in the context of this proposed site.

Based upon the information supplied, regarding the site layout and drainage plans; and provided that the development is constructed in accordance with the mitigation measures outlined above, there will be no significant impacts alone or in-combination with other projects and plans, as result of the development and associated works on the ecology and local species of the area and on any designated conservation sites.

Given the scale of this development and its suitable landscape plan, the local ecology, including mammals, bats, birds, amphibians and fish, will benefit from the maintained ecological function of the site associated with the operational phase of this project.

A Site Layout Plan



N

NOTES
It is the contractors responsibility to check design levels and sizes for compliance. Any discrepancies or errors to be identified to the design team.

Line markings to be finalized at detailed design stage.

Synthetic Area

Length	- 140.0m
Width	- 81.m
Recess area x 2	- 2.5m x 18.5m
Total	**- 11,433m^2**

KEY

- Perimeter Fencing
- Spectator Fencing
- Ballstop Netting
- 60mm 3G Synthetic Turf
- Floodlighting Column
- ESB Power Line

01 GENERAL ARRANGEMENT
SCALE: 1:500

REVISION	DETAILS	BY	DATE	CHECKED

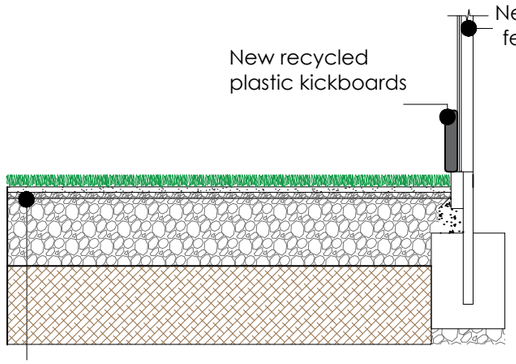
sportslabsconsult
info@sportslabsconsult.com

KNOCKLYON PARK
GENERAL ARRANGEMENT
CONSTRUCTION OF A NEW ARTIFICIAL PITCH

0 5 10 20
Scale bar 1:500

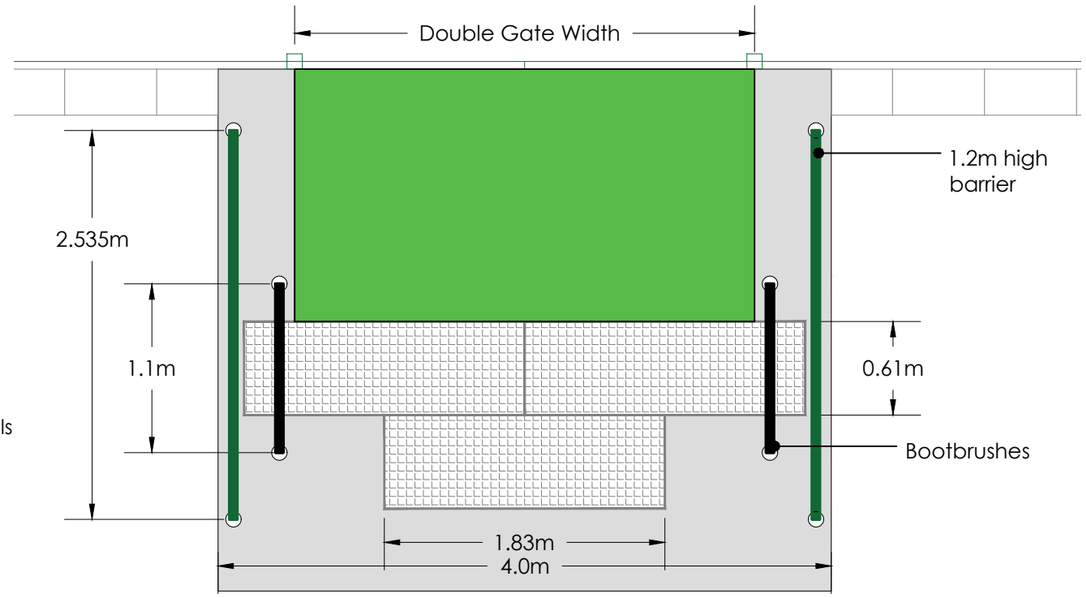
Date: 04/2023 Scale: 1:500 @ A3	Job. No. 3096	Drawn by: GS Checked by: CH

NOTES
It is the contractors responsibility to check design levels and sizes for compliance. Any discrepancies or errors to be identified to the design team.

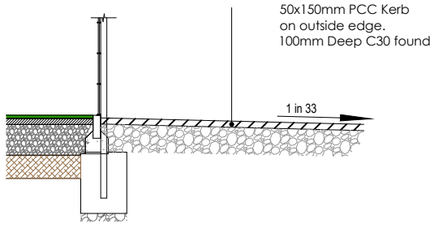


- New 3G Artificial turf (FIFA Quality)	60mm
- New Shockpad	Submit Proposals
- New Engineered Base	40mm
- New Sub-Base Material Modified Type 1 inc. Blinding	300mm
- New Geo-grid as specified	-
- New Geo-textile membrane	-
- Formation	-

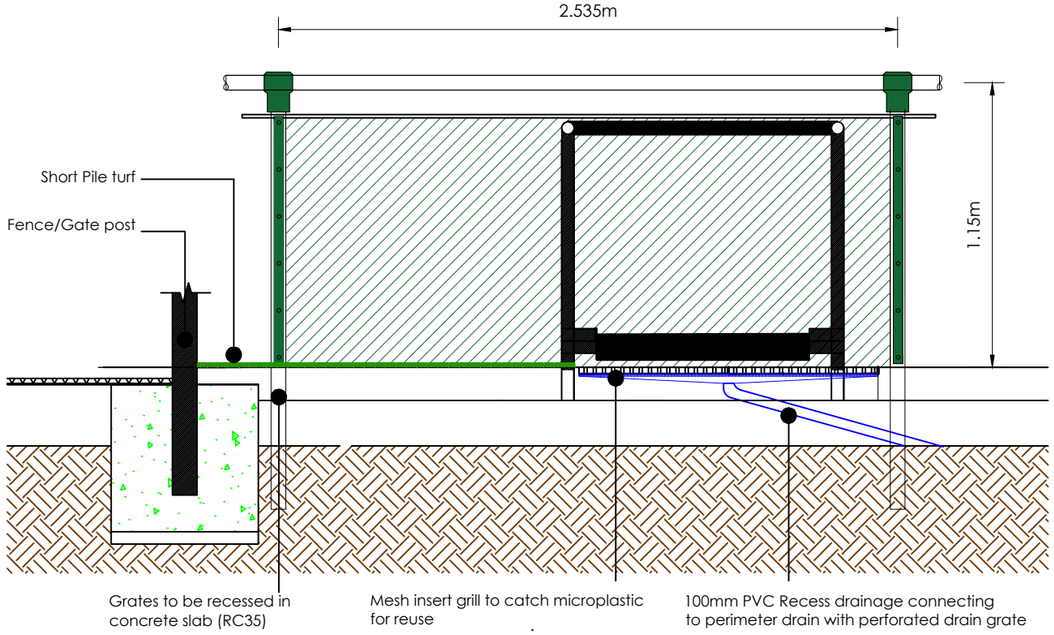
01 STANDARD PITCH KEY IN SECTION
SCALE: 1:25



02 TYPICAL DETOX AREA PLAN
SCALE: 1:25



03 STANDARD ACCESS PATH SECTION
SCALE: 1:40



04 TYPICAL DETOX AREA SECTION
SCALE: 1:25

REVISION	DETAILS	BY	DATE	CHECKED

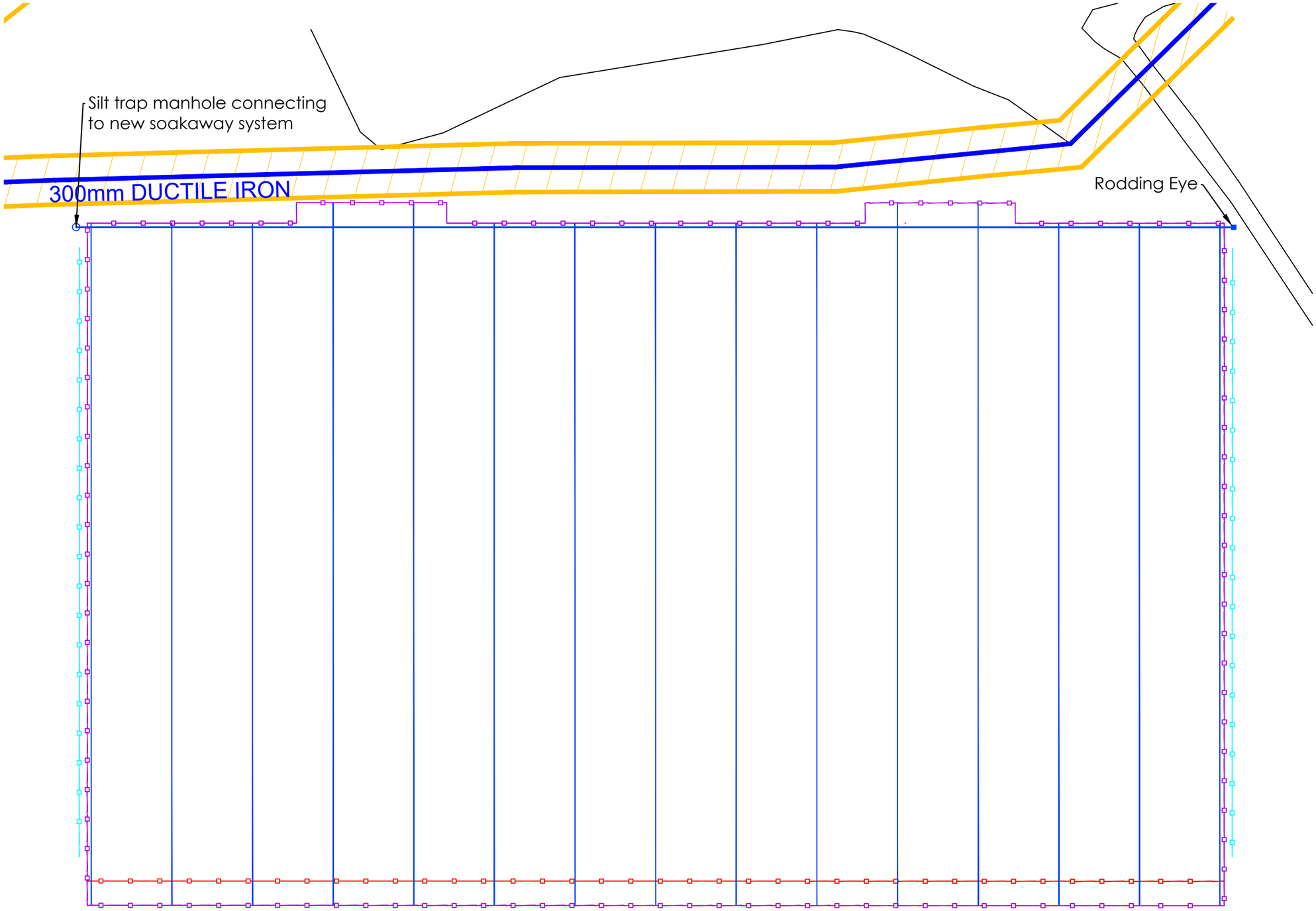
sportslabsconsult
info@sportslabsconsult.com

KNOCKLYON PARK
CONSTUCTION DETAILS
CONSTRUCTION OF A NEW ARTIFICIAL PITCH

0 5 10 20 30 40 metres
Scale bar 1:1000 (metres)

Date: 04/2023	Job. No. 3096	Drawn by: CH
Scale: VARIES		Checked by: DD

B Site Drainage Plan



01 DRAINAGE
SCALE: 1:500

N

NOTES
It is the contractors responsibility to check design levels and sizes for compliance. Any discrepancies or errors to be identified to the design team.

New parallel drainage system
consisting of;

Lateral drainage - 80mm diamater at 6.0m centres

Carrier drainage - 150mm diamater, location as shown

Cut Off drainage - 300mm wide, location as shown

KEY

- Existing Kerb-Line
- Existing Manhole
- New Drainage Network
- New Manhole

REVISION	DETAILS	BY	DATE	CHECKED

sportslabsconsult

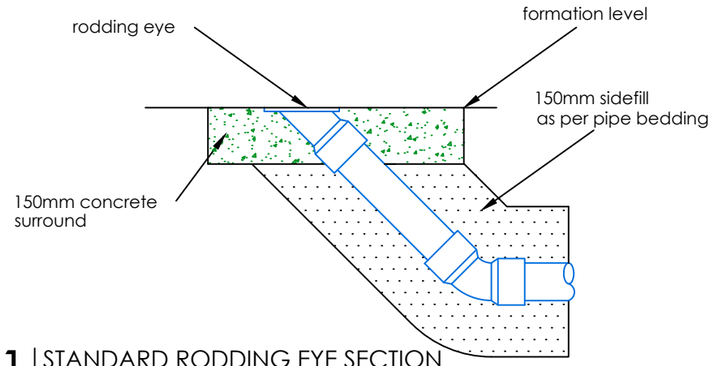
info@sportslabsconsult.com

KNOCKLYON PARK
DRAINAGE LAYOUT
CONSTRUCTION OF A NEW ARTIFICIAL PITCH

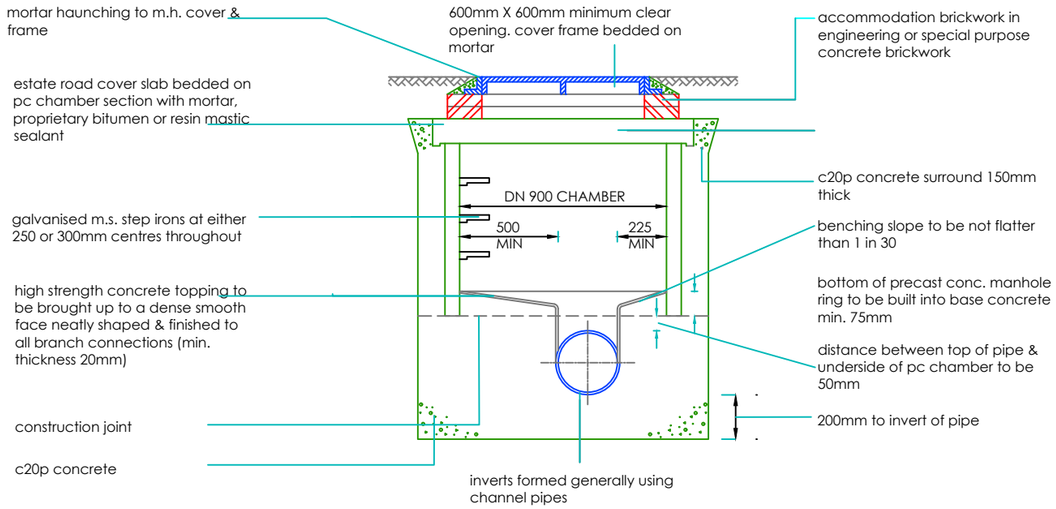
0 5 10 20
Scale bar 1:500

Date: 04/2023 Scale: 1:500 @ A3	Job. No. 3096	Drawn by: CH Checked by: DD

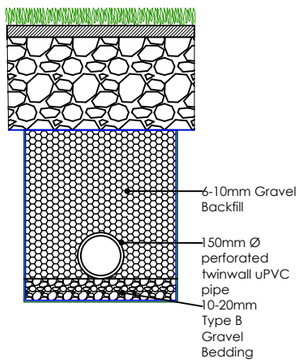
NOTES
It is the contractors responsibility to check design levels and sizes for compliance. Any discrepancies or errors to be identified to the design team.



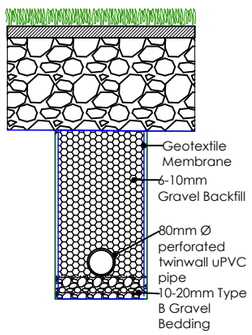
01 STANDARD RODDING EYE SECTION



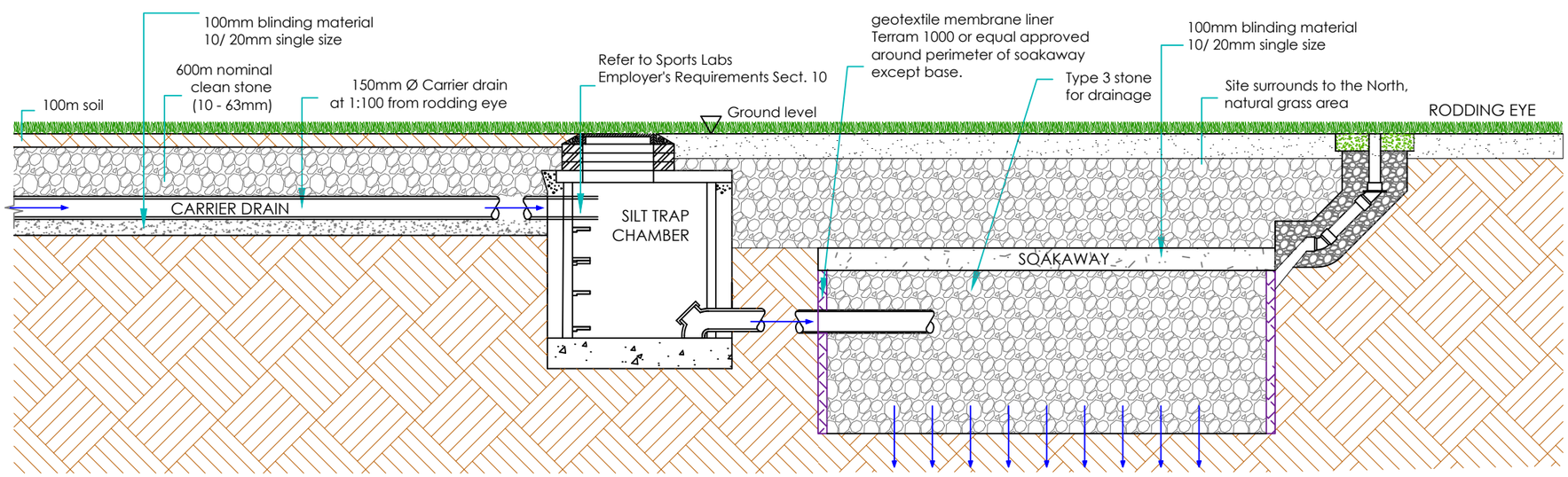
02 STANDARD MANHOLE SECTION



03 STANDARD LATERAL DRAIN SECTION



04 STANDARD CARRIER DRAIN SECTION



05 SOAKAWAY
SCALE: NTS

REVISION	DETAILS	BY	DATE	CHECKED

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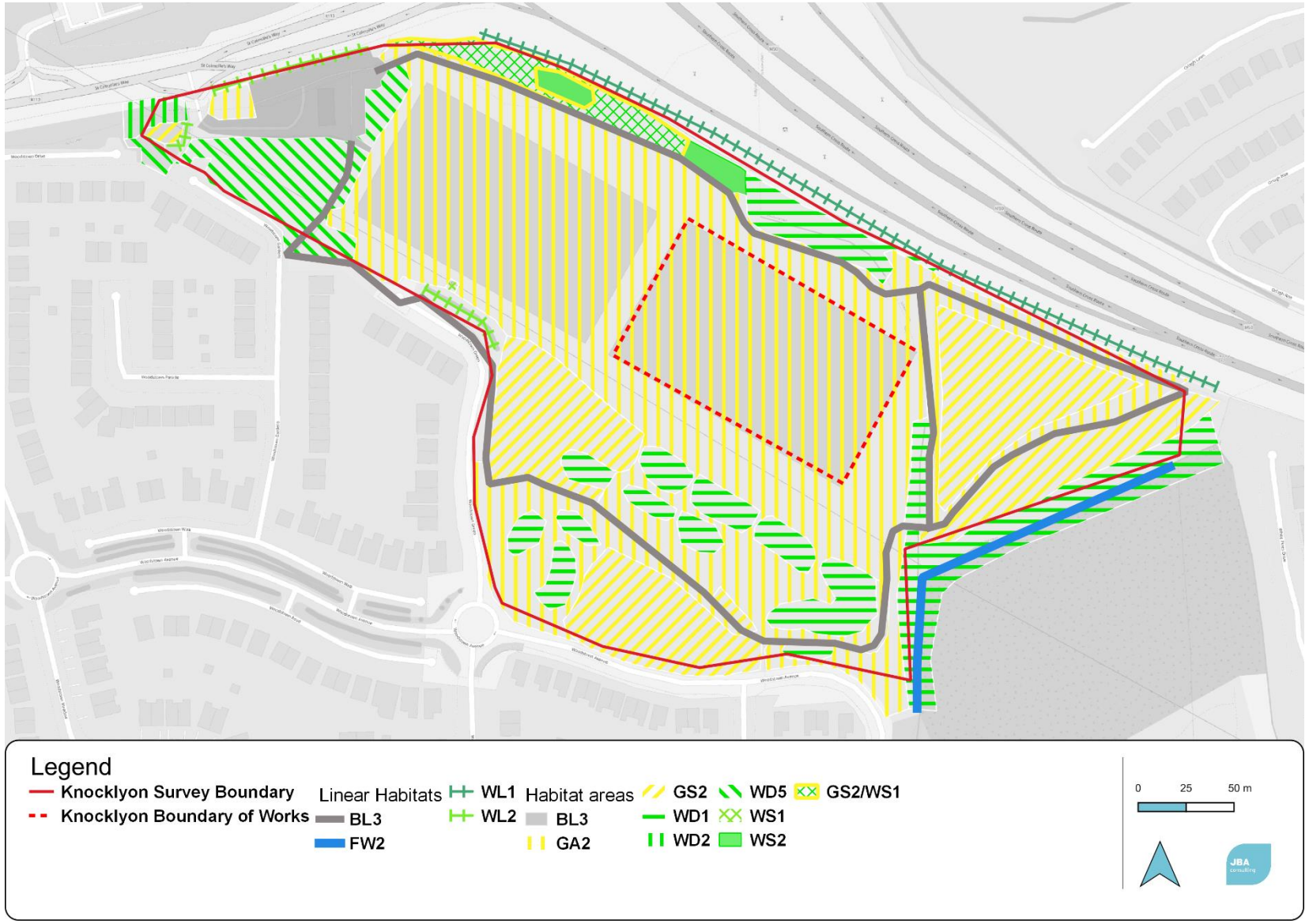
info@sportslabsconsult.com

KNOCKLYON PARK
DRAINAGE DETAILS
CONSTRUCTION OF A NEW ARTIFICIAL PITCH

0 10 20 50

Date: 04/2023	Job. No. 3096	Drawn by: CH
Scale: VARIES		Checked by: DD

C Habitat Map



D Relevant Policy and Legislation

The legislation discussed below is intended as a guide only and does not replace formal legal advice.

D.1 Biodiversity Policy Guidance

'Biodiversity: The National Biodiversity Action Plan 2017-2021 (DCHG, 2017) sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and has been developed in response to The Earth Summit, held in Rio de Janeiro in 1992 (UN Convention on Biological Diversity) and subsequent EU and International Biodiversity strategies and policies.

As part of the Action Plan process Local Authorities (LA) must produce Biodiversity Action Plans (BAP). BAPs highlight local biodiversity issues and set out a series of objectives and action plans for the conservation of priority species and habitats where they occur in each district or county.

D.2 Designated Sites and Nature Conservation

D.2.1 Statutory Designated Nature Conservation Sites

Sites with statutory designations receive varying degrees of legal protection under Irish statute (i.e. Wildlife Act 1976 and Wildlife (Amendment) Act (2000) and European Directives (i.e. the EC Birds Directive (2009/147/EC) and EC Habitats Directive (92/43/EC). The EU directives were transposed into Irish national law and subsequent amendments were revised and consolidated in the European Communities (Birds and Natural Habitats) Regulations 2011 and Irish Statutory Instrument 477/2011

There are a number of statutory designations used for sites of high nature conservation value in Ireland, which are applied depending upon the importance of the site in a local, regional, national or international context. These include:

- National
- Natural Heritage Area (NHA)
- Wildfowl Sanctuary
- Statutory Nature Reserve
- Refuge for Fauna
- European
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- International
- UNESCO Biosphere Reserve
- Ramsar Convention Site
- National Park (Category II) Sites

D.2.2 Non-Statutory Designations

Non-statutory sites are afforded no statutory legal protection, but are normally recognised by local planning authorities and statutory agencies as being of local nature conservation value

A proposed Natural Heritage Area (pNHA) is an area deemed to be of special interest containing important wildlife habitat and often containing rare or threatened species. They may also be selected on the basis of their geology or geomorphology.

D.2.3 Protected and Notable Species

A number of species are protected under Irish and international legislation. In Ireland, primary protection is provided under the 1976 Wildlife Act and Wildlife (Amendment) Acts (2000 & 2010) and revision 2018. Species of European importance receive additional protection in Ireland under the Birds and Natural habitats Regulations 2011.

The Flora (Protection) Order (2015) makes it illegal to cut, uproot or damage a listed species in any way. It is illegal to alter, damage or interfere in any way with their habitats.

E National Biodiversity Data Centre (2023)

E.1 Recent records (within 10 years) of protected species within the 5km of the site

Common Name	Date of Last Record	Designation
Amphibians		
Common Frog *Rana temporaria*	03/03/2020	EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
Birds		
Barn Owl *Tyto alba*	21/07/2021	Protected Species: Wildlife Acts Birds of Conservation Concern - Red List
Black-headed Gull *Chroicocephalus ridibundus*	30/12/2022	Protected Species: Wildlife Acts Birds of Conservation Concern - Amber List
Common Starling *Sturnus vulgaris*	16/01/2023	Protected Species: Wildlife Acts Birds of Conservation Concern - Amber List
Common Wood Pigeon *Columba palumbus*	22/01/2023	Protected Species: Wildlife Acts EU Birds Directive >> Annex II & Annex III
Great Cormorant *Phalacrocorax carbo*	01/09/2017	Protected Species: Wildlife Acts Birds of Conservation Concern - Amber List
Greenfinch *Carduelis chloris*	11/04/2020	Protected Species: Wildlife Acts Birds of Conservation Concern - Amber List
Grey Wagtail *Motacilla cinerea*	21/01/2023	Protected Species: Wildlife Acts Birds of Conservation Concern - Red List
Goldcrest *Regulus regulus*	15/04/2020	Protected Species: Wildlife Acts Birds of Conservation Concern - Red List
Mallard *Anas platyrhynchos*	30/12/2022	Protected Species: Wildlife Acts EU Birds Directive >> Annex II & Annex III
Mew Gull *Larus canus*	28/01/2023	Protected Species: Wildlife Acts Birds of Conservation Concern - Amber List
Willow Warbler *Larus canus*	02/05/2020	Protected Species: Wildlife Acts Birds of Conservation Concern - Amber List
Mammals		
Daubenton's Bat *Myotis daubentonii*	27/08/2014	EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Eurasian Badger *Meles meles*	28/07/2018	Protected Species: Wildlife Acts
European Otter *Lutra lutra*	05/12/2022	EU Habitats Directive >> Annex II & Annex IV Protected Species: Wildlife Acts
Lesser Noctule *Nyctalus leisleri*	24/08/2012	EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Pipistrelle *Pipistrellus pipistrellus sensu lato*	24/08/2012	EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Soprano Pipistrelle *Pipistrellus pygmaeus*	24/08/2012	EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
West European Hedgehog *Erinaceus europaeus*	16/05/2021	Protected Species: Wildlife Acts

E.2 Recent records (within 10 years) of invasive species within the 5km of the site

Common Name	Date of Last Record	Designation
Flora		
Butterfly-bush *Buddleja davidii*	26/03/2022	Medium Impact Invasive Species
Giant Knotweed *Fallopia sachalinensis*	06/06/2021	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Himalayan Honeysuckle *Leycesteria formosa*	04/08/2022	Medium Impact Invasive Species
Japanese Knotweed *Fallopia japonica*	16/08/2022	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Sycamore *Acer pseudoplatanus*	06/06/2021	Medium Impact Invasive Species
Three-cornered Garlic *Allium triquetrum*	26/03/2022	Medium Impact Invasive Species Regulation S.I. 477 (Ireland)
Mammals		
Eastern Grey Squirrel *Sciurus carolinensis*	28/07/2022	High Impact Invasive Species EU Regulation No. 1143/2014 Regulation S.I. 477 (Ireland)
European Rabbit *Oryctolagus cuniculus*	22/06/2014	Medium Impact Invasive Species

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