ECOLOGICAL IMPACT ASSESSMENT

FOR THE PROPOSED

CORKAGH PARK DEVELOPMENT, CLONDALKIN, COUNTY DUBLIN

for: **South Dublin County Council**

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1 INTRODUCTION

1.1 OVERVIEW AND AIMS

This report assesses potential impacts that may arise from the proposed Corcagh Park Development on biodiversity within the receiving environment, in accordance with the following guidance documents:

- *Draft Guidelines on Information to be contained in Environmental Impact Statement Reports.* (2017) Environmental Protection Agency.
- *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine* (2018). Chartered Institute of Ecology and Environmental Management (CIEEM), Ver. 1.1 Updated September 2019.
- *Guidelines for Preliminary Ecological Appraisal.* (2017) Chartered Institute of Ecological and Environmental Management (CIEEM), Second Edition.
- *A Guide to Habitats in Ireland* (2000), Fossitt JA.
- *Best Practice Guidance for Habitat Survey and Mapping.* (2011) The Heritage Council.

It aims to discuss the existing ecological environment, the potential impacts of the proposed works in Corkagh Park and avoidance and mitigation measures in relation to habitats, flora and fauna in the zone of influence (ZOI) of the proposed works in Corkagh Park. A separate stand-alone AA Screening Report is also included in the planning application documentation.

1.2 LEGISLATIVE CONTEXT

Specific focus is placed on protected species/habitat features as well as those of local or national importance. Ireland's *National Biodiversity Action Plan 2017–2021*[1], in accordance with the Convention on Biological Diversity, is a framework for the conservation and protection of Ireland's biodiversity, with an overall objective to secure the conservation, including, where possible, the enhancement and sustainable use of biological diversity in Ireland and to contribute to collective efforts for conservation of biodiversity globally. The plan is implemented through legislation and statutory instruments concerned with nature conservation. The Planning and Development Acts, 2000 (revised September 2020) and the European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1989 to 1999 are particularly important in that regard and include a number of provisions directly concerned with the protection of natural heritage and biodiversity.

The Wildlife Acts, 1976–2012 are the principal mechanism for the legislative protection of wildlife in Ireland. They outline strict protection for species that have significant conservation value. In summary, the Wildlife Acts protect species from injury, disturbance and damage to breeding and resting sites. All species listed in the Wildlife Acts must, therefore, be a material consideration in the planning process. The Flora (Protection) Order, (2015) gives legal protection to certain species of wild flora, *i.e.*, vascular plants, mosses, liverworts, lichens and stoneworts. Under the Order, it is an offence to uproot, damage, alter, or interfere with any species listed species listed within the Order, or to damage or alter their supporting habitats.

The European Communities (Birds and Natural Habitats) Regulations, 2011–2015 transpose into Irish law Directive 2009/147/EC (the Birds Directive) and the Habitats Directive, which list habitats and species of Community, *i.e.*, European Union (EU), importance for conservation and that require protection. This protection is afforded in part through the designation of areas that represent significant populations of listed species within a European context, *i.e.*, Natura 2000 sites. An area designated for bird species is classed as a Special Protection Area (SPA), and an area designated for other protected species and habitats is classed as a Special Area of Conservation (SAC). Birds listed in Annex I of the Birds Directive in SPAs and habitats and species listed in Annexes I and II, respectively, of the Habitats Directive in SACs in which they are designated features have full European protection. Species listed on Annex IV of the Habitats Directive are strictly protected wherever they occur, whether inside or outside European sites. Annex I habitats outside of SACs are

[1] NPWS: https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf

still considered to be of national and international importance and, under Article 27(4)(b) of the European Communities (Birds and Natural Habitats) Regulations, 2011, public authorities have a duty to strive to avoid the pollution or deterioration of Annex I habitats and habitats integral to the functioning of SPAs.

Sites of national importance for nature conservation are afforded protection under planning policy and the Wildlife Acts, 1976–2012. NHAs are sites that are designated under statute for the protection of flora, fauna, habitats and geological interest. Proposed NHAs (pNHAs) are published sites identified as of similar conservation interest but have not been statutorily proposed or designated.

The International Union for the Conservation of Nature and Natural Resources (IUCN) provides a global approach for evaluating the conservation status of species to inform and catalyse action for biodiversity conservation through the Red List of Threatened Species.

1.3 APPROACH TO ECOLOGICAL EVALUATION AND IMPACT ASSESSMENT

Assessing impact significance is a combined function of the value of the affected feature (its ecological importance), the type of impact and the magnitude of the impact. It is necessary to identify the value of ecological features within the study area in order to evaluate the significance and magnitude of possible impacts.

The following parameters are described when characterising impacts (following CIEEM (2018), EPA (2017) and TII (2009, Rev. 2)):

Direct and Indirect Impacts - An impact can be caused either as a direct or as an indirect consequence of a proposed plan or project.

Magnitude - Magnitude measures the size of an impact, which is described as high, medium, low, very low or negligible.

Extent - The area over which the impact occurs – this should be predicted in a quantified manner.

Duration - The time for which the effect is expected to last prior to recovery or replacement of the resource or feature.

- Temporary: Up to 1 Year;
- Short Term: The effects would take 1-7 years to be mitigated;
- Medium Term: The effects would take 7-15 years to be mitigated;
- Long Term: The effects would take 15-60 years to be mitigated;
- Permanent: The effects would take 60+ years to be mitigated.

Likelihood – The probability of the effect occurring taking into account all available information.

- Certain/Near Certain: >95% chance of occurring as predicted;
- Probable: 50-95% chance as occurring as predicted;
- Unlikely: 5-50% chance as occurring as predicted;
- Extremely Unlikely: <5% chance as occurring as predicted.

The CIEEM Guidelines define an ecologically significant impact as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographic area. The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified (CIEEM, 2018).

The results of the ecological survey were evaluated to determine the significance of identified features located in the study area on an importance scale ranging from international-national-county-local. The local scale is approximately equivalent to one 10km square but can be operationally defined to reflect the character of the area of interest. Because most sites will fall within the local scale, this is sub-divided into three categories: high local importance, local importance, and local value. The criteria used for assessing the importance of ecological features are shown in Table 1.

Table 1 Criteria used in Assessing the Importance of Ecological Features

Importance	Criteria
International	An internationally designated site or candidate site (SPA, cSPA, SAC, cSAC, Ramsar Site, Biogenetic Reserve). Also, sites which qualify for designation as SACs or SPAs – this includes sites on the NGO shadow list of SAC's.
National	A nationally designated site or candidate site (NHA, pNHA). Sites which hold Red Data Book (Curtis and McGough, 1988) plant species.
County	Sites which hold nationally scarce plant species (recorded from less than 65 of the national 10km grid squares); unless they are locally abundant. Sites which hold semi-natural habitats likely to be of rare occurrence within the county. Sites which hold the best examples of a semi-natural habitat type within the county.
High Local Importance	Sites which hold semi-natural habitats and/or species likely to be of rare occurrence within the local area. Sites which hold the best examples of a high quality semi-natural habitat type within the local area.
Local Importance	Sites which hold high quality semi-natural habitats.
Local Value	Any semi-natural habitat.

2 METHODOLOGY

2.1 DESK STUDY

A desktop review was carried out to identify features of ecological importance within the proposed works in Corkagh Park site and the wider environment. Ecological impact assessment is conducted following a standard source-pathway-receptor model, where, in order for an impact to be established all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism is sufficient to conclude that a potential effect is not of any relevance or significance.

- Source(s) – *e.g.,* pollutant run-off from proposed works.
- Pathway(s) – *e.g.,* groundwater connecting to nearby qualifying wetland habitats.
- Receptor(s) – qualifying aquatic habitats and species of European sites.

Specific focus was put into the assessment of sensitive receptors of protected species/habitat features; as well as those of local or national importance. A source is any identifiable element of the proposed works in Corkagh Park proposal which is known to have interactions with ecological processes. Pathways are any connections or links between the source and the receptor. This report determines if direct, indirect or cumulative adverse effects will arise from the proposed works in Corkagh Park.

This report is supported by recent data collected for the ecological baseline surveys of Corkagh and Clondalkin Parks; conducted by Roughan & O'Donovan Engineers for the Corkagh Park Development on various dates between October 2019 and July 2020[2]. This report also makes reference to ecology surveys carried out for the Camac River Flood Alleviation Scheme[3] where relevant.

2.2 FIELD SURVEY

Data was collected during a walkover survey conducted on the 8TH of September 2021. The data represents a walkover of the entire proposed Corkagh Park site. A habitat survey of the site was conducted following standard guidelines set out in 'Best Practice Guidance for Habitat Survey and Mapping' developed by the Heritage Council of Ireland[4]. Habitats were classified using habitat descriptions and codes published by the Heritage Council in 'A Guide to Habitat Types in Ireland'[5]. Plant species nomenclature follows Rose's 'The Wild Flower Key: How to identify wild flowers, trees and shrubs in Britain and Ireland[6]. A list of the dominant and notable plant species was taken for each habitat type. Particular emphasis was given to the possible occurrence of rare or legally protected plant species (as listed in Flora Protection Order 1999) or Red-listed plant species (Curtis & McGough 1985, Wyse Jackson *et al.* 2016).

Observations were made for fauna species present or likely to occur on site. Emphasis was placed on mammals and birds, and especially for species listed in the respective Red lists, namely; Gilbert *et al.* 2021[7] (birds), and Marnell *et al.* 2019[8] (mammals). For mammals, the survey was focused on signs of their presence/activity, such as tracks, feeding marks and droppings, as well as any direct observations. Regarding bats, the main focus was on evaluation of suitable habitats to support roosting individuals or communities; however, an ecological assessment of habitat suitability was undertaken throughout the site. The assessment process undertaken for bats followed the BCT

[2] Roughan & O'Donovan Consulting Engineers, 2021. Ecological Baseline Surveys of Corkagh and Clondalkin Parks, Dublin 22 Summer and Winter Survey Report. Prepared for South Dublin County Council.
[3] AECOM Ireland Consulting Engineers, 2020. River Camac FAS Ecology Survey Summary. Prepared for Dublin City Council, South Dublin County Council and the Office of Public Works.
[4] Smith, George F., et al. "Best practice guidance for habitat survey and mapping." The Heritage Council: Ireland (2011)
[5] Fossitt, J.A., 2000. A guide to habitats in Ireland. Heritage Council/ Chomhairle Oidhreacht
[6] Rose, F., O'Reilly, C., Smith, D.P. and Collings, M., 2006. The wild flower key: how to identify wild flowers, trees and shrubs in Britain and Ireland. Frederick Warne.
[7] Gilbert, G., et al. 2021. Birds of Conservation Concern in Ireland 4: 2020–2026. *Irish Birds*, *43*, pp.1-22.
[8] Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

Guidelines[9]. Chapter 4 of these guidelines identify the approach to assess 'preliminary ecological appraisal for bats'. This chapter sets out methods for identifying habitat suitability which do not constitute assumptions. Based on the information from the assessment the survey effort requirements are identified. Internal roost inspections were conducted in August 2021 within the public toilet facilities and associated buildings (under Licence from the NPWS). A preliminary bat roost assessment was also undertaken for all trees to be removed in the central hub area

Bird species were recorded by sight and sound during a bird point count during the ecological walk over, following the Birdwatch Ireland Country Breeding Bird survey methods. In addition, all linear hedgerows were walked and species were recorded. Particular attention was focused on areas within the site of high ecological value that interact or overlap with parts of the proposal to provide civil recreation.

During all surveys, particular attention was given to assessing the presence of rare or protected species. Each species identified was assessed in term of the EU Habitat Directive (92/43/EEC), Bird Directive (2009/147/EC), the Wildlife Act (1976), the Wildlife Amendment Act (2000) and the Red Data Lists for threatened and protected species, published on the NPWS website[10].

2.2.1 LIMITATIONS

The ecological site walk-over to inform this assessment was carried out in autumn (8th September, 2021), which is not the optimum time for botanical and breeding bird surveys. However, the site is currently a sub-urban parkland site, which is currently frequently visited and utilised for a range of social, community and amenity activities – and managed as such. The proposal aims to enhance and maintain the current facilities on site for the local community, with respect to the current ecological features and sensitivities.
With support from the previous comprehensive baseline surveys carried out in the past 2-3 years, the current survey effort and assessment is deemed sufficient for the proposed site context and the proposed project therein. Therefore, overall, it is considered that there are no significant limitations to the present assessment of the ecological importance of the site.

[9] Collins, J. (ed.) 2016. Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.
[10] NPWS website for protected species and habitats data accessed at: https://www.npws.ie/maps-and-data

3 PROPOSED CORKAGH PARK DEVELOPMENT

The proposed development is comprised of a series of alterations to the existing Corkagh Park, Clondalkin, Dublin 22. In the wider landscape context, the park is located South West of Dublin City, with Clondalkin and the M50 Motorways to the east, and business parks and the greater Dublin area to the west. Locally the park is bordered by the N7 and Roadstone Quarry to the south, local cricket, baseball and golf clubs to the west, and suburban housing estates to the north and east (Figure 3.1). The park is also intersected by the Camac River, a tributary of the River Liffey, which flows from the South West to the North East of the park. The Camac River then joins the River Liffey approximately 8.8km downstream. Corkagh Park is thus located in a highly modified, suburban environment, at the intersection between greater Dublin, suburban living, and the city centre.

The proposed alterations to Corkagh Park are approximately 120 Ha. (300 acres), and are part of a larger Corkagh Park Development which plans to broaden the destination appeal of the park, and better position the Regional Park within the overall tourism proposition of the Dublin Suburbs and Clondalkin Village in particular. Guided by the County Development Plan, national Tourism policy, the South Dublin Tourism Strategy 2015, and the Corkagh Park Development and Delivery Plan (2020), South Dublin County Council proposes a range of integrated projects via the Master Plan which aim to use the Park's strategic position to elevate Corkagh Park to an authentic visitor experience.

The proposal comprises the following elements:

1. Repurposing and Upgrade of Corkagh Park Arrival Points
2. Bespoke Signage and Branding Strategy
3. Key Routes/Pathways Upgrade
4. Activity Zones including Parkland Features, Spaces & Elements, consisting of:
    a) Family Fun Zone: path for fairy trail, additional fairy houses, viewing and picnic areas
    b) Engaging with Nature Zone: viewing decks onto the ponds and picnic areas
    c) The Hub Zone: café, play areas and multifunctional space for markets and events.

As part of the project proposal, South Dublin County Council will undertake and produce the comprehensive site surveys and studies to support the projects proposed in the proposed works in Corkagh Park, including:

- Survey of capacity of existing surface water management and drainage infrastructure including CCTV and desktop analysis
- Flood Risk Assessment Identification (Stage 1)
- Services and utilities (desktop, GPR & CCTV)
- Topographical Survey
- Site/ground and soil investigation
- Archaeological Desktop and Field Study
- Architectural Heritage Inventory for the Project Area
- Preliminary structural Survey of Walled Garden's walls and preliminary structural and conditional surveys of existing pontoon and waterside structures
- Arboriculture survey that assesses present condition of the tree/bush and hedgerow vegetation within the separate Project Areas within the Park.

For detailed design drawings see the associated report CRP - RP - 001 - Part VIII Summary of Proposals - particularly the CRP (90) LP 200 SERIES - General Arrangement PlansCRP_RP_001.

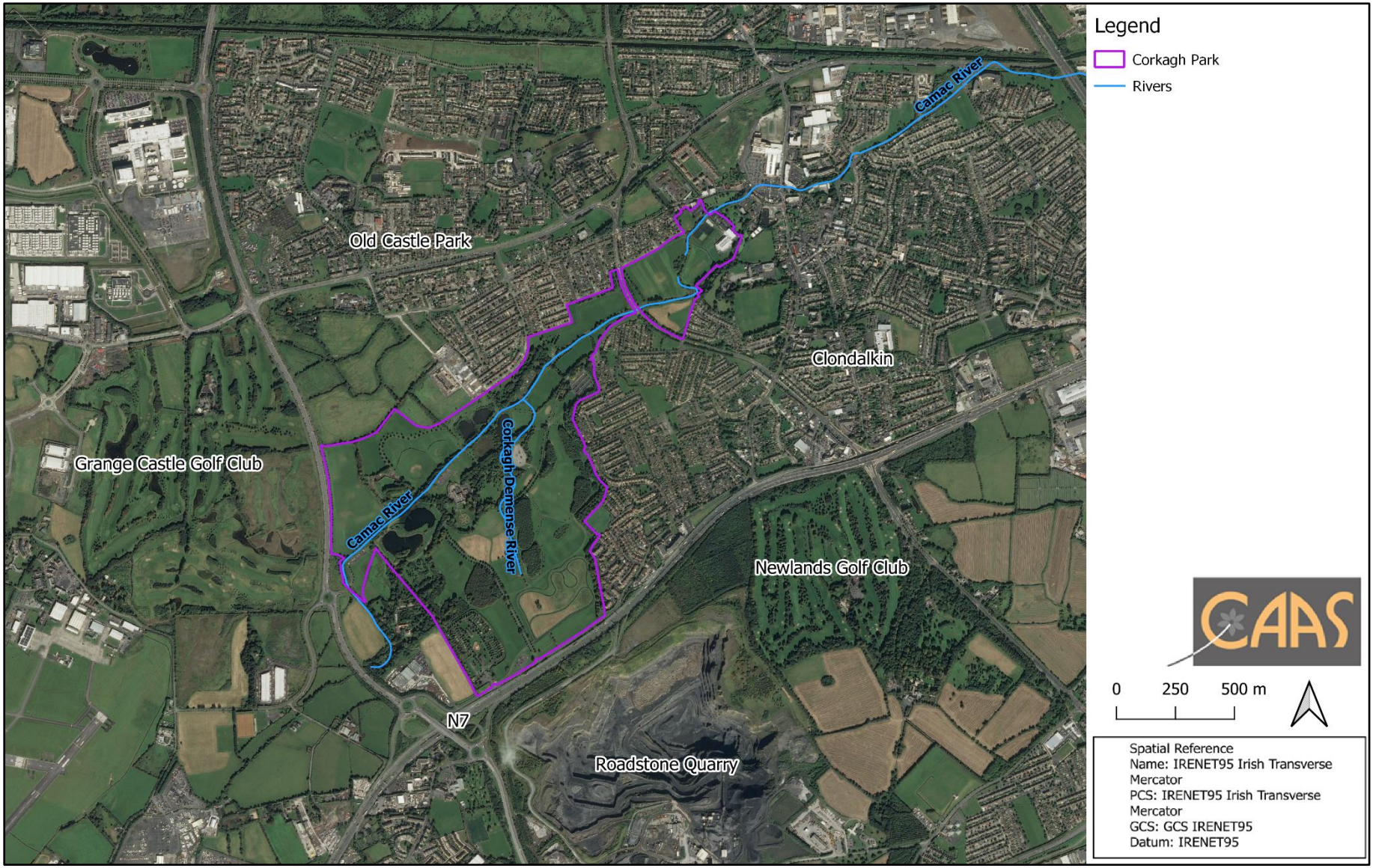

Figure 3.1 Location of Corkagh Park

3.1 RECEIVING ENVIRONMENT

3.1.1 OVERVIEW

The proposed Corkagh Park area site lies within an area that consists predominately of suburban development, business parks, improved agricultural grassland, and pockets of mature broadleaf woods and hedgerows (Figure 3.1). The area as a whole provides a buffer between urban Dublin city, and progression to semi-natural/natural areas west of the site. The typical semi-natural habitat of the local area surrounding the proposed site, *i.e.,* hedgerows and broadleaf woodland pockets, is mature and well established, giving it a higher value as an area of ecological corridors and as part of a patchwork of locally important habitats (Figure 3.7 & Figure 3.8).

3.1.2 ZONE OF INFLUENCE

The operational phase works are not anticipated to have any impacts beyond the plan boundary due to the proposed characteristics of the project and the existing use of the site (public parkland). The construction phase works may have some effects beyond the boundary due to increased noise pollution, imposing of artificial lighting conditions and possible water quality effects to the surrounding area. Possible operational phase impacts could be lighting and drainage alteration. The Camac River flows through the site and connects to the Liffey River. However, the Development and the alterations proposed to the park therein, are short-term in the construction phase, with an operational phase similar to the current operation and condition of Corkagh Park. Following the source-pathway-receptor model identifying the potential likely sources a Zone of Influence (ZOI) was established; 2km radius around the proposed site. Given the nature of the proposed works, impacts are not foreseen to be significant beyond this distance.

3.1.3 DESIGNATED AREAS

In accordance with the European Commission Methodological Guidance (EC, 2001), a list of European Designated Sites that can be potentially affected by the works has been compiled. A dedicated Appropriate Assessment Screening, reviewing all European sites within the zone of influence of the project, was undertaken. A review of the conservation objectives and qualifying interests of these sites was undertaken in order to identify what habitats and/or species could be vulnerable to risk of impact from the proposed works in Corkagh Park. This was done by assessing whether any source receptor links existed between the qualifying interests of the designated sites and the proposed site.

When assessing ecological impacts, the CIEEM Guideline recommend a 15km zone of influence as an adequate buffer for potential effects. Due to the characteristics of the project, all other Natura 2000 sites and pNHA/NHA sites beyond threshold distances of 15km are considered to be of sufficient distance from the proposed site, that no significant effects could be caused either directly or indirectly or in combination with other plans or projects to their interest features. Any impacts caused by the Corkagh Park Development have no valid impact pathway to transfer along to reach any of the receptor interest features. These sites are 'screened out' and not considered further.

A stand-alone Screening Report submitted separately to this assessment, expands on the potentially affected designated sites and their conservation objectives in more detail. Appendix I provides a list of all of the designated sites considered within the assessment arranged by distance from the proposed Corkagh Park Development which are assessed as part of this report. Figure 3.2 displays the Nature 2000 sites within a 15km radius buffer of the proposed project. The proposed site has a surface water hydrological pathways connecting it to Natura 2000 sites in Dublin Bay, via the Camac River which connects with the River Liffey, approximately 8.8km downstream of Corkagh Park.

In addition to examining European sites, NHAs and pNHA have been considered. Figure 3.3 displays the National sites within a 15km buffer of the park. Although NHAs and pNHAs do not form part of the Natura 2000 Network, they often provide an important supporting role to the network, particularly when it comes to fauna species which often do not obey site boundaries. There are however, NHAs and pNHAs that are designated for features that are not important at an international level and thus may not interact with the Natura 2000 network.

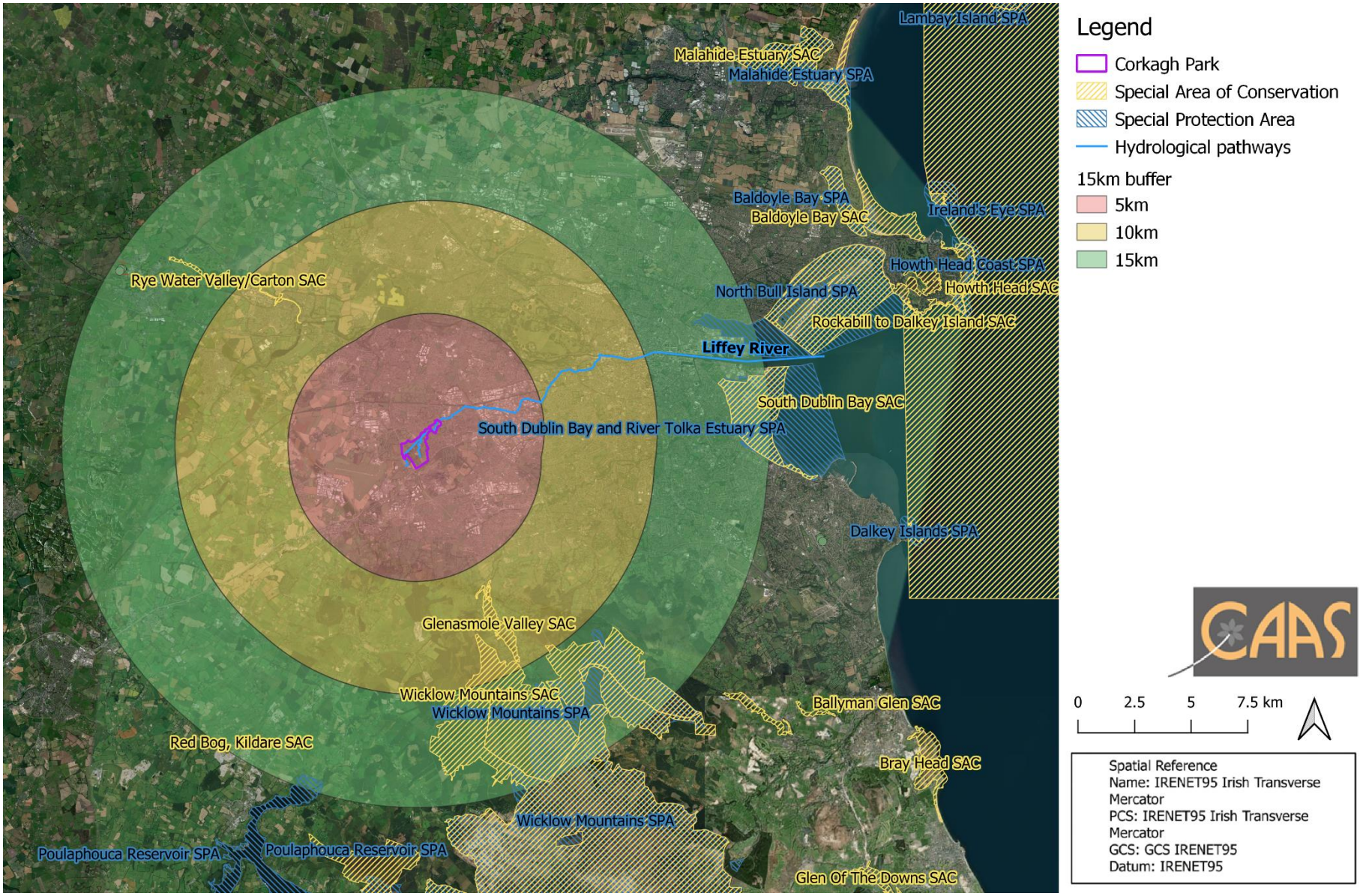

Figure 3.2 Natura 2000 sites within a 15km buffer of the Corkagh Park Development area.

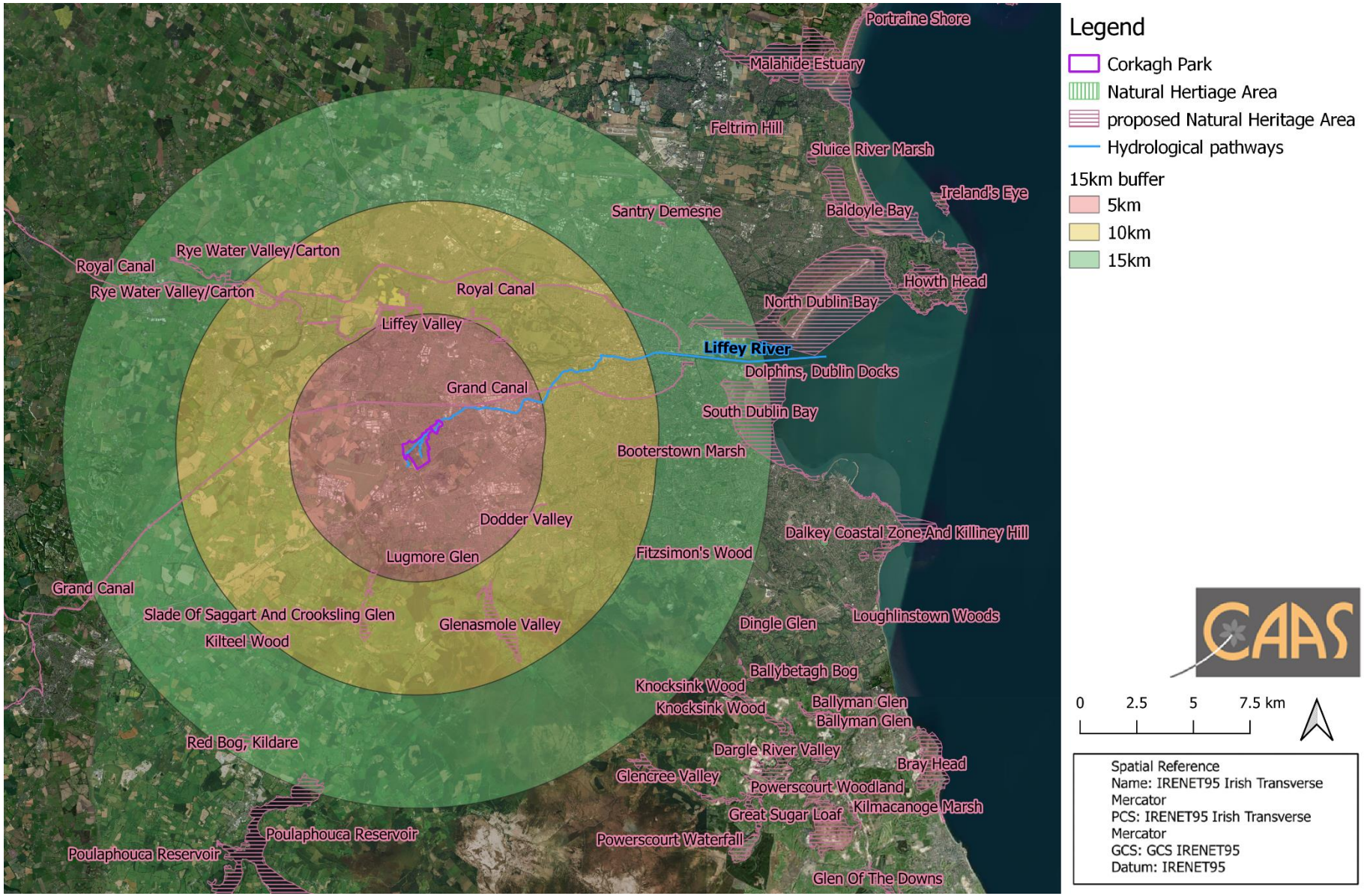

Figure 3.3 Natural Heritage Areas within a 15km buffer of the Corkagh Park Development area.

3.1.4 RECORDS OF PROTECTED, RARE OR OTHER NOTABLE FLORA AND FAUNA SPECIES

The digital database of the National Biodiversity Data Centre (NBDC) was consulted to assess known records of rare, protected and invasive species that occur in the surrounding landscape. The collation of this information, as well as examination of aerial photographs allowed areas of potential ecological importance to be highlighted prior to field survey work. A search was undertaken of records of Red Data Book and Protected species held by the National Biological Data Centre Database. A list of the rare and/or protected species from the two 10km x 10km grid squares which intersect the study area (O02 and O03) is provided in Appendix II[11].

3.1.4.1 Invasive Flora Species

Publicly available NBDC data was accessed to identify invasive species in the two 10km x 10km grid squares which intersect the study area (O02 and O03). 12 of the flora species and 7 of the fauna species listed in Appendix II, that have been recorded in the hectads O02 and O03 which contain the proposed site, are subject to restrictions (Third Schedule) under Regulation 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011.

[11] National Biodiversity Centre data. Accessed: 23rd September 2021

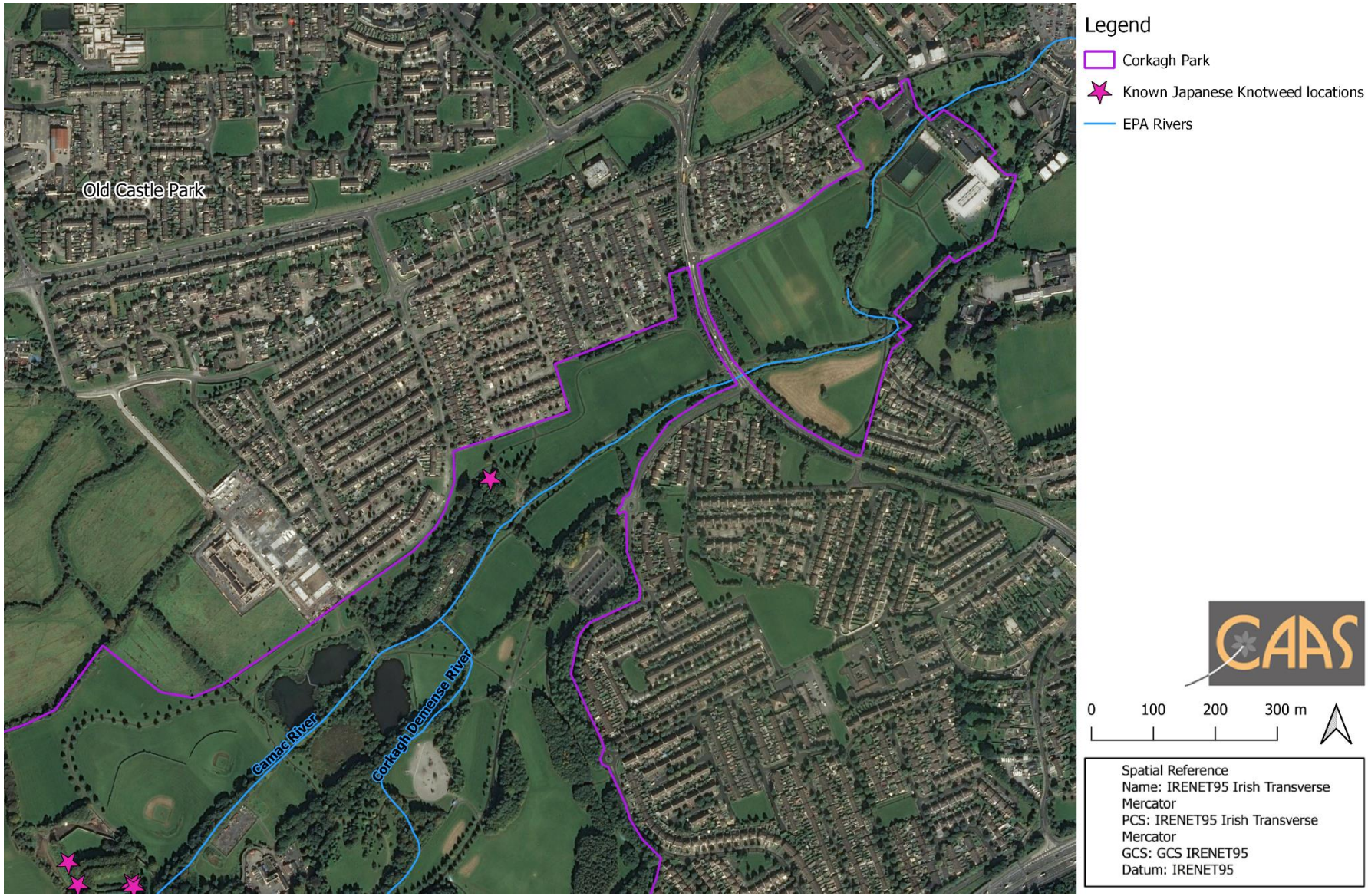

Figure 3.4 Invasive species location map - part 1

Figure 3.5 Invasive species location map - part 2

3.1.5 FIELD SURVEY RESULTS

The result of the ecological site visit of September 2021 are discussed below. A detailed habitat map is provided in Figure 3.6. Where relevant, the current survey's results are discussed and compared with previous recent ecological surveys of the Corkagh Park area, in particular the ecological baseline surveys carried out by ROD Consulting Engineers[2].

3.1.5.1 Habitats and Flora

No Annex I habitats were found on site. Some of the habitats present on site are of high local importance in terms of support for local biodiversity, resource availability, and ecological connectivity across an urban landscape to other pockets of area of ecological value in the greater Dublin landscape (see Figure 3.6 for a habitat map). The habitats found on site, and their relative ratios, are typical of parkland areas; with almost half of the habitat consisting of amenity grassland (GA2). The remaining habitats types in Corkagh Park are composed of recently planted broadleaf woodland (WD1) and treelines (WL2), semi-mature to mature hedgerow (WL1).

Although almost half of the site is composed of amenity grassland, the remaining habitats constitute higher local importance – which has potential to develop into a higher value refuge for local mammal, bird, insect and floral species, while providing local community needs as proposed. In particular, there are several substantial mature trees there is the aforementioned freshwater habitats and there are pockets of woodland to develop in the future from recent planting into more mature stands. The woodland patches are not stratified and have little light spill from the canopy. This is contributing to the low diversity of the woodland floor. The stands also require maintenance in the form of thinning to allow large light flooding and growth space. This habitat type has potential to increase in ecological value for Corkagh Park in the future.

There are freshwater habitats consisting of the Camac River (freshwater river: FW2), which runs to the Liffey, drainage ditches (FW4) and several maintained artificial ponds (FL8), which support local and migrating bird species. The water quality of the Camac River was assessed via Q-value sampling in 2018 by Sweeny Consultancy for South Dublin County Council[12]. 11 sites along the river were surveyed for water quality – their locations ranged from just southwest of Corkagh Park to just north east of the boundary. The results showed an unsatisfactory condition overall for the river. However, higher quality sites were recorded upstream of Corkagh Park and a good invertebrate diversity was found at a site just south of the Fonthill Rd. entrance to the park. This suggests potential to maintain a higher quality of water status than unsatisfactory overall for the Camac River, which the Corkagh Park Development can contribute to. The Camac River, and the associated ponds, is thus given here a high local ecological value. It is worth noting also that a previous survey carried out for white clawed-crayfish[12] recorded individuals in drainage ditches leading to the artificial ponds; suggesting they are sufficient in quality to support the species, and other invertebrate communities. This, in combination with the connectivity with the Camac renders the drainage ditches of Corkagh park of higher ecological value to the local area than drainage ditches are typically afforded.

The habitat types recorded, their distributions, and their ecological significance are aligned with the results from pervious ecological baseline surveys carried out for Corkagh Park[2,3]. A comprehensive habitat map of the proposed site is supplied in Figure 5, and a description of each of the habitats identified on site along with a species list for each can be found in Appendix III.

3.1.5.2 Invasive species

Himalayan Balsam was recorded on site on the 8th September 2021 visit (see Figure 3.7 for location). There are also several standing records of Japanese Knotweed with the site[2], which are currently being controlled and are not spreading (Figure 3.7). No new sites for Japanese Knotweed were identified during the September 2021 site visit. Additional ecology surveys of the wider Camac River and catchment (i.e., upstream and downstream of Corkagh Park), carried out for the Camac Flood Alleviation Scheme in June and September 2020, also identified several sites with Japanese Knotweed

[12] Sweeney Consultancy, 2018. Macroinvertebrate Biodiversity Assessment of a Section of the River Camac. Prepared for South Dublin County Council.

along the river system – and noted it as the "most frequently recorded" of invasive species in the area. Giant Rhubarb, *Rhododendron ponticum* and Canadian waterweed were also recorded in/along the river during this survey. These records illustrate the delicate position of the Camac River currently, regarding invasive species.

Figure 3.6 Habitat map of Corkagh Park

3.1.5.3 Fauna

Non-volant mammals
Evidence of potential use of the site by badger was present, in the form of a small number of trails (evident along the hedgerows within the site). However, no evidence of residence of badger was found on site. Considering the size and extent of the park, the frequency of badger signs is considered very low, indicating low usage of the site by badger.
Surveys carried out of badger in Corkagh Park for an ecological baseline in January and February 2020[2] using camera traps in addition to tracking, similarly found no evidence of badger in the parks during any surveys.

The site has produced records of hedgehog near the walled garden in 2020[2], indicating the potential of the more undisturbed areas such as the walled garden to support species, and provide a haven. The site holds a population of grey squirrel, but is most likely too fragmented to have potential to support any populations of red squirrels even upon the elimination of grey squirrel. No evidence of pine marten or any other mammals of note were found on site during the September 2021 site visit.

Otter spraint has been recorded on three separate occasions at the same position of the Camac River, just downstream of the proposed works - namely in Dec 2019, Jan 2020 and March 2020[2] (Figure 3.7). High water levels observed on site during the September 2021 survey may have washed any current spraint off the repeatedly used rocky location. Regardless, this is a repeatedly used site for territorial marking in the last 2 years, where the surrounding habitat has not changed, and thus should be treated as still actively used for the current assessment.

Bats
Activity survey: A walked bat transect was carried out on the night of September 8th 2021. The transect took a route through the centre of the park, some of the more open areas of the park, and woodland corridors previously un-surveyed (Figure 3.7 & Figure 3.8). This transect - in combination with previous surveys from May and July 2020[2] - can provide a rounded view of bat populations and usage throughout the site.

As expected for such a site, soprano and common pipistrelle were the two most common species in recorded passes (Table 2). Daubenton's bat also carried a significant proportion of the calls recorded on the night, which would be expected also due to the high volume of freshwater habitat in the park and along the transect. 3 passes were recorded for the Brown long-eared bat. This species may just be utilising the site for commuting or transient foraging. Bat roost surveys carried out in the summer of 2020 specifically for the brown long-eared found no evidence of current roosting in buildings previously reported to have brown long-eared roosts.

Table 2 Bat survey results

Common name	Scientific name	# Bat passes
Soprano pipistrelle	*Pipistrellus pygmaeus*	51
Common pipistrelle	*Pipistrellus pipistrellus*	37
Daubenton's bat	*Myotis daubentonii*	11
Brown long-eared bat	*Plecotus auritus*	3
Leisler's bat	*Nyctalus leisleri*	2

The current assessment examined trees on site for bat roost potential, and found that there are mature, well-established trees present throughout the site some of which may have the potential to support minor bat roosts in the summer months. However, it is determined in this assessment, that further bat acoustic surveys to assess these trees for the presence of roosts are not required for the following reasons:

- The implementation of mitigation measures for the protection and preservation of the mature trees and corridors found on site, as well as suitable best practice operational phase management of night lighting, will be recommended to ensure the retention of the current value and integrity of the site for local bat species.

- The proposal aims to preserve mature trees on site, and increase overall biodiversity.

Bat roost survey: The targeted internal roost search of the buildings in the central hub area resulted in no evidence of bat roost activity. The structures were identified to be free from bats with no historic sign of any activity. This survey was conducted under licence from the NPWS. The Trees to be removed in this area also had no bat roost features present and therefore an emergence survey was not required.

Birds

Much of the woodland and hedgerow habitat within Corkagh Park holds high local value for nesting breeding birds. In addition to the vegetative habitat, there is significant freshwater habitat within the site that supports a number of resident and migrant water birds[2] (Table 3).

A bird point count focused on passerines was conducted on site, for a duration of 15 minutes – in addition to treeline walks and records of species on the water features of Corkagh Park (particularly the ponds to the east and west of the site). The bird species seen and heard were recorded and the results in Table 3 below. 21 species were recorded, with a wide representation of song bird, water bird and sea bird recorded – both resident and migrant. Indicating the range of resources in the park which support local bird populations, and migrants. Of the 21 species recorded, 7 are on the Amber List, and 1 is on the Red List (the Tufted Duck), of the Birds of Conservation Concern in Ireland[13].

Table 3 Bird survey results

Common name	Scientific Name	Heard	Seen	Red list status[13]	Habitat type
Blue tit	*Cyanistes caeruleus*	Y	N	Green	Hedgerow
Great tit	*Parus major*	Y	N	Green	Hedgerow
Common chaffinch	*Fringilla coelebs*	Y	N	Green	Hedgerow
Robin	*Erithacus rubecula*	Y	N	Amber	Woodland / Hedgerow
Blackbird	*Turdus merula*	Y	Y	Green	Woodland / Hedgerow
Wood Pidgeon	*Columba palumbus*	Y	Y	Green	Woodland / Hedgerow
Barn swallow	*Hirundo rustica*	Y	Y	Green	Flight over grassland
Magpie	*Pica pica*	Y	Y	Green	Woodland edge
House sparrow	*Passer domesticus*	Y	Y	Amber	Hedgerow
Hooded crow	*Corvus cornix*	Y	Y	Green	Flight over grassland
Jackdaw	*Corvus monedula*	Y	Y	Green	Flight over grassland
Rook	*Corvus frugilegus*	Y	Y	Green	Grassland
Starling	*Sturnus vulgaris*	Y	Y	Amber	In flight over grassland
Little grebe	*Tachybaptus ruficollis*	Y	Y	Amber	Freshwater pond
Tufted duck	*Aythya fuligula*	N	Y	Red	Freshwater pond
Mute swan	*Cygnus olor*	N	Y	Amber	Freshwater pond
Mallard	*Anas platyrhynchos*	N	Y	Green	Freshwater pond
Coot	*Fulica atra*	N	Y	Amber	Freshwater pond
Moorhen	*Gallinula chloropus*	N	Y	Green	Freshwater pond
Grey heron	*Ardea cinerea*	Y	Y	Green	Freshwater pond and scots pine roost
Common gull	*Larus canus*	N	Y	Amber	In flight across site

It is noted that the beginning of September is at the crossing point between the end of the breeding bird season and the beginning of the winter bird season – thus is not the optimal time for both.

[13] Gilbert, G., et al. 2021. Birds of Conservation Concern in Ireland 4: 2020–2026. *Irish Birds*, *43*, pp.1-22.

Therefore, as mentioned, this assessment is augmented by the baseline surveys of the baseline ecological surveys carried out for breeding and winter birds in May and June of 2020[2]. These surveys recorded 36 bird species from walked dawn transects and point counts. And additional 4 Amber List species, and 2 Red List species were recorded in addition to the species represented above.

The proposed project may have short term, low to medium levels of disturbance to these species during construction phase (via noise and air quality disruption), but will have long-term positive impacts overall for local populations of these species through the continued protection and maintenance of Corkagh Park, as an amenity area for local human populations, and the edge, woodland and freshwater habitats contained therein.

Amphibians
No frogs were seen during the September 2021 survey, but seasonality must be taken into account. Indeed, previous surveys conducted in summer 2020 for the ecological baseline study of Corkagh Park, recorded common frog on "numerous occasions", in freshwater habitats but also up to 100m away from any standing water. Frogs were considered from this survey to be successfully breeding in the park grounds. A newt survey was also conducted in 2020 for the same baseline surveys, but no records were collected.

Similar to the bird populations which utilise the park; the proposed project may have short term, low to medium levels of disturbance to these species during construction phase (via noise and air quality disruption), but will have long-term positive impacts overall for local populations of these species through the continued protection and maintenance of Corkagh Park, as an amenity area for local human populations, and the edge, woodland and freshwater habitats contained therein.

Invertebrates
The Camac River has a previously recorded population of White-clawed crayfish. A survey of the Camac River population at 11 sites along the river (including survey sites within Corkagh Park) was carried out in 2018 by Sweeny Consultancy for South Dublin County Council[14]. The survey found individuals at all 11 sites, with varying combinations of males, females, and a significant proportion of juveniles from the previous year, indicating an actively breeding population (locations shown in Figure 3.7 & Figure 3.8). A more recent survey of 21 locations along the entire Camac River was carried out by AECOM in 2020[3]. This survey similarly found actively breeding populations in 12 of the 21 survey sites finding actively breeding populations (active adults and juveniles). The study also noted that white-clawed crayfish were thus thought to be "slightly more widespread" in the Camac River than previously thought.

[14] Sweeney Consultancy, 2018. Macroinvertebrate Biodiversity Assessment of a Section of the River Camac. Prepared for South Dublin County Council.

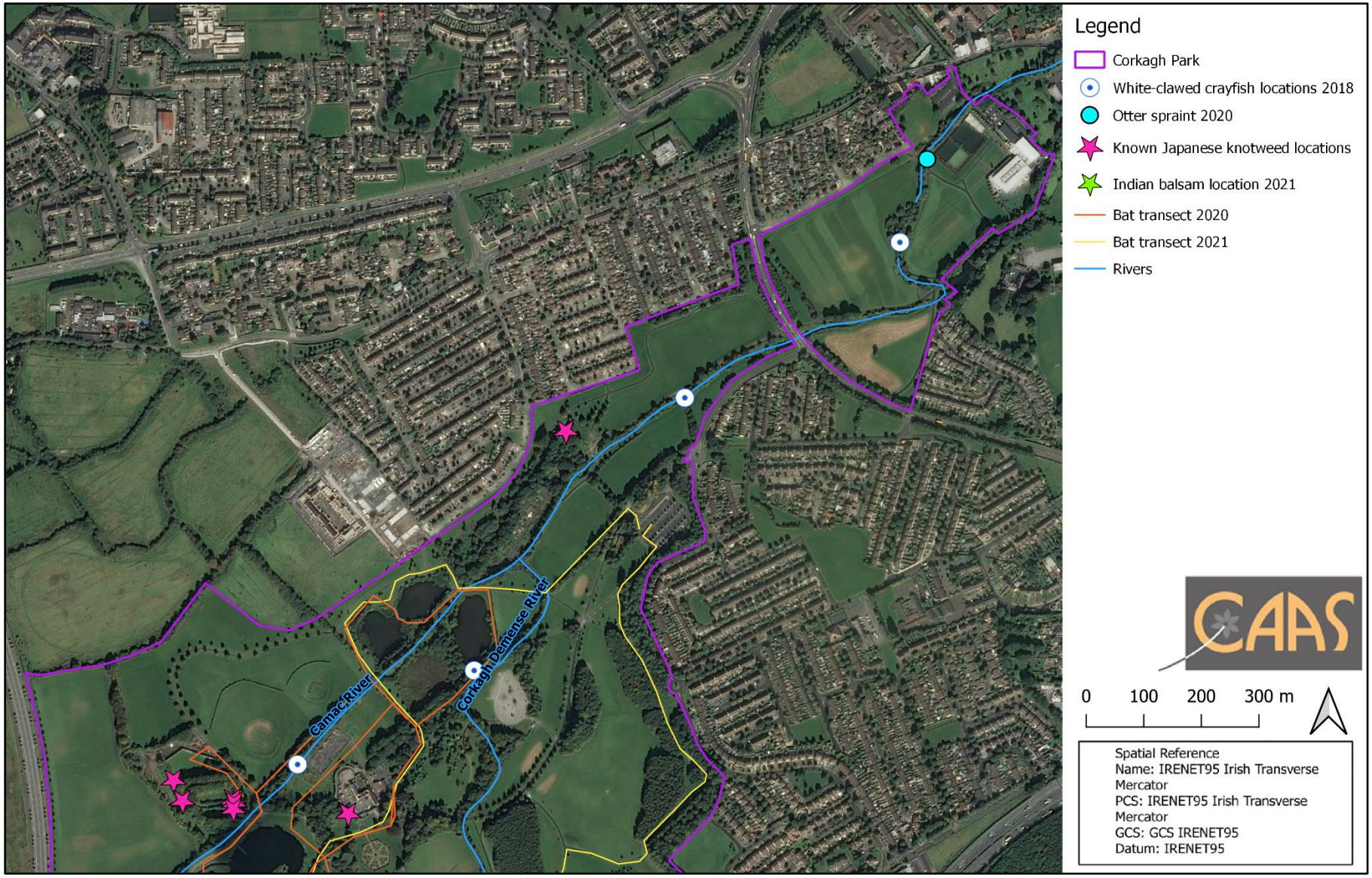

Figure 3.7 Additional ecological features map (pt. 1 of 2: northern section)

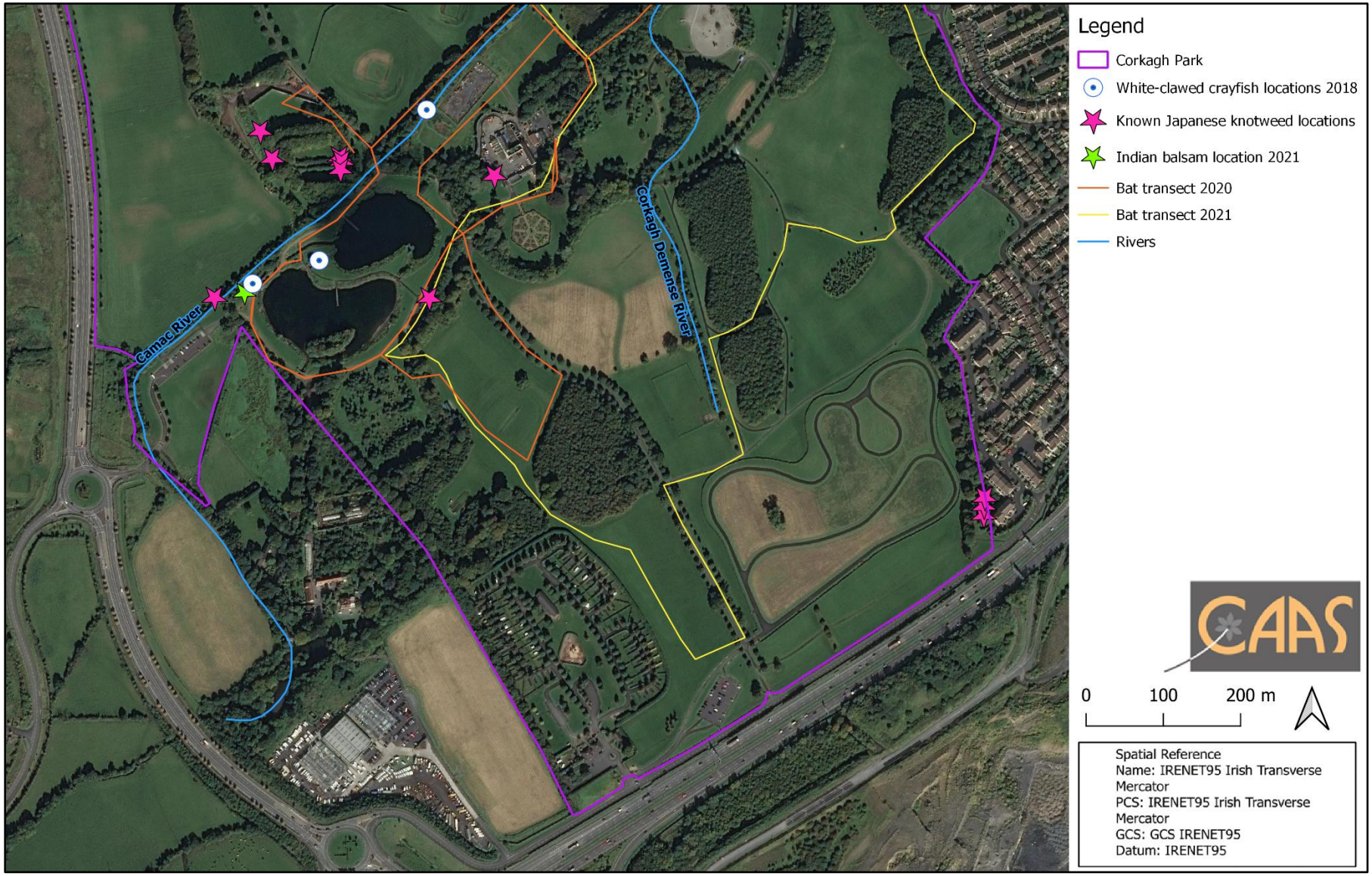

Figure 3.8 Additional ecological features map (pt. 2 of 2: southern section)

3.1.6 SUMMARY OF ECOLOGICAL EVALUATION AND RECOMMENDATIONS

Overall, the site of the proposed Corkagh Park Development has local importance relative to its surroundings in terms of ecological value. The park does contain aspects of higher local importance ecologically, such as the Camac River, ponds, mature hedgerows, and semi-mature woodland patches. These aspects also show evidence of having capacity to increase in biological complexity and ecological value.

Furthermore, as with most cities, the urban and sub-urban parks remaining within them are refugia for wildlife. Thus, the suburban context of the site, and surrounds of golf courses, business parks and housing estates, makes this an isolated resource that acts as an essential ecological stepping stone for bird, bat and mammal species.

The proposed project aims to enhance the local amenity value of Corkagh Park with a view to minimal interruption or disturbance to the current habitats within the park. As part of the Development, it is thus imperative that all design and features are sensitive to the local ecology, and sensitive features. Data from the freshwater and invasive species surveys in particular illustrate that the sensitive aspects of the park are scattered through the park and present in the waterways (see Figure 3.4 and Figure 3.5), but there is potential to increase biodiversity and ecological value also. In this regard, the particularly sensitive features of Corkagh Park ecology with regard to the Development are:

1. the Camac River;
2. all ponds;
3. lighting;
4. native hedgerows and woodland; and,
5. invasive species.

Therefore, executing the Corkagh Park Development in an ecologically sensitive regard should have emphasis on the following (along with measures detailed in section 5):

1. establishing strict buffer zones for the Camac River during the construction phase;
2. establishing buffer zones around the ponds during the construction phase;
3. low lumen-directional (cowled) lighting at night where lighting is required;
4. retention and planting of native vegetation; and,
5. delivering an invasive species management plan for the construction and operational phases.

In addition, as the construction phase is the only phase identified here as having potential impacts, a CEMP should be produced for the Development, detailing how the above sensitive ecological aspects of the park, and the overall biodiversity of the site, will be protected and monitored during the construction phase with regard to dust, noise, lighting and invasive species.

The proposed project has potential for impacts to bird and bat populations during the construction phase, but as the project's construction phase is temporary, with an operational phase in keeping with the current conditions and management of the site – these potential impacts are negligible following completion of the project.

The project will most likely have a long-term positive impact for local biodiversity in terms of enhancing resources and habitat for local populations of birds, bats and insects, and bolstering habitat connectivity with the surrounding pockets of woodland and high value habitat.

4 POTENTIAL IMPACTS

Based on the baseline ecological environment and the extent and characteristics of the proposed works in Corkagh Park, the following potential impacts have been identified:

1. Augmentation of existing habitats, as well as the potential removal of trees;
2. Water quality
3. Construction, earthworks and dust;
4. Lighting during construction and operation;
5. Noise and vibration; and,
6. Invasive species

These potential impacts are discussed below:

1. Augmentation of existing habitats, as well as the potential removal of trees
   - The removal of vegetation on site has potential to negatively impact breeding bird populations via reduction of available foraging, roosting or breeding habitat.
   - Removal of vegetation could also result in a reduction in insect life, also indirectly affecting mammal and bird populations.

2. Water quality
   - The Camac River, artificial ponds, and drainage ditches all show evidence of supporting valuable local floral and faunal populations – and are thus highly sensitive aspects of the site to any changes in water quality.
   - The Corkagh Park Development has elements that are located throughout the park.
   - Due to the wide range of the proposed Development elements and valuable freshwater habitats located also throughout the park, it is imperative the mitigation is put in place to protect all water features during all stages of construction.

3. Construction and Earthworks
   - The Corkagh Park Development could interact with local habitats vis dust, soil removal, and construction disturbance.
   - Sensitive freshwater habitats and vegetative habitats could be negatively impacted by dust produced during construction and earth works needed to carry out the development.

4. Lighting during construction and operation
   - Strong lighting in the area of the proposed project could impact species that use the site for foraging and commuting, if not implemented with the appropriate ecological considerations.
   - Bats, non-volant mammals, and birds are sensitive to any significant changes in lighting within semi-natural habitat in which they reside.

5. Noise/vibration
   - The construction phase and movement of heavy vehicles across the site could cause localised disturbance of breeding birds and wading birds that may use the habitats within the site area.
   - However, there is likely to be an existing degree of habituation to regular traffic on the site so this impact may not be across the whole site.
   - The operational phase is expected to be very similar to current noise and vibration levels from amenity usage of the site and thus no potential impact is foreseen for the operational phase; except in the area around the new sound stage.
   - The sound stage and central hub area is an existing high-density area in the park, previous use of area as a pet farm, high levels of activity, proposal to remove general depot traffic from this area (with exception of occasional maintenance vehicles required to service the area)

6. Invasive species
   - The park is sensitive with regard to invasive species, especially its freshwater habitats – which are of high local importance for white-clawed cray fish and Red List bird species.

- Construction near waterways (where Japanese knotweed and Indian Balsam have been recorded within the park) could easily spread invasives if the appropriate management protocols are not strictly implemented and enforced.

4.1.1 POTENTIAL IMPACTS ON DESIGNATED SITES

The AA Screening Report accompanying this report sets out the likelihood and significance of any potential effects to European designated sites as a result of the proposed Corkagh Park Development. The AA screening found no significant adverse effects foreseen to be likely to affect the ecological integrity of any European sites. There is a direct hydrological link from the park to European sites, via the Camac River which links into the River Liffey and into Dublin Bay, approximately 12.5km downstream, and the closest site that not hydrologically linked to the site is approximately 5.93km away. These distances are sufficient for no potential for impacts to European sites as a result of the proposed project to be likely. Thus, there is no likelihood of interaction with European sites at any scale that would result in potential for significant adverse effects to their ecological integrity as a result of the proposed Corkagh Park Development.

5 MITIGATION MEASURES / MONITORING

The proposed site has been identified to have an overall low local ecological importance due to the majority of high intensity agricultural pasture within the site, and the suburban landscape context. However, there are habitats present on site which were identified as high local importance during the walkover survey of January 2021; namely a small linear patch of mature woodland (consisting of approx. 25 mature native trees) along the northern stone wall site boundary.

Overall, it is assessed that the implementation of the proposed project will have a net gain in terms of the ecological resources present and current levels of biodiversity. However, mitigation measures are required to ensure that all potential impacts are minimised.

Considering the key areas for potential impacts identified in section 4 above; the following mitigation measures are recommended for each one:

1. Augmentation of existing habitats, as well as the potential removal of trees

   The removal of vegetation on site has potential to negatively impact breeding bird populations; however, the implementation of the project will result in a net gain of tree cover and therefore there will be no long-term negative impact. However, the following shall apply to any vegetation that must be removed:

   - ✓ No vegetation will be removed during the breeding bird season (1st March to the 31st of August).
   - ✓ No vegetation is removed beyond the minimum required to complete the task.
   - ✓ Timing of works will be as brief as possible to minimise potential disturbance effects.
   - ✓ Any vegetation removal or disturbance works that must take place during the breeding season should have a suitable qualified ecologist consulted prior to any works commencing and where required an Ecological Clerk of Works will be appointed to oversee works.

2. Water quality

   - ✓ Buffer zones of a minimum 5m put in place around all water features and courses i.e., ponds, drainage ditches, and river.
   - ✓ Maintain buffer zones for the duration of construction with fencing and clear demarcation of buffer zone and its purpose.

3. Construction and Earthworks

   Elements of the proposed Corkagh Park Development that have potential to interact with existing habitats which have been identified to have local importance overall with certain aspects having a higher local value such as the freshwater habitats on site. Therefore, it is recommended that:

   - ✓ Dust and debris control measures be implemented where relevant.
   - ✓ As above, buffer zones of 5m are to be established with all water features on site during construction.
   - ✓ Where works are occurring within the lakes such as the viewing platforms work - the 5m buffer zones do not apply; however, a construction environmental management plan specifically targeting hydrological interactions will be implemented. This will include measures to minimise interactions with the bank, bunding of all hazardous material, the use of silt fences (where necessary) etc. All works in this area should have the minimum allowable timeline. Consultation with Inland Fisheries Ireland should be engaged with for all such works.

4. Lighting during construction and operation

   Strong lighting in the area of the proposed project could impact species that use the site for foraging and commuting if not carefully controlled. Bats, other mammals, birds and insects would be sensitive to any significant changes in lighting within semi-natural habitat within the parkland and the freshwater habitats.

There are a few stands of operational phase lighting being installed in the park; lighting throughout the park was avoided as a mitigation measure. However, some security lighting in areas such as the café will be installed. Similarly, there will be lighting during the construction phase.

The operational phase lighted will need to be controlled to minimise light pollution as a matter of good practice – such as:

- ✓ Implementation of lights out hours when not required for safety on site (evening and night hours).
- ✓ UV levels of the lighting installed: very low level or zero UV is preferential, as this has the least effect on insect activity, and thus the minimal interruption to bat foraging possible: Low Pressure Sodium (SOX) is preferrable, as it is emitted at single wavelengths, with very low UV emitted. (BCI, 2010[15]; Stone, 2013[16]).
- ✓ Where possible, lighting can be dimmed or switched off at night or during periods of low human activity, by implementing variable lighting regimes controlled remotely by CMS (central management system) units (BCI, 2010[17]; Stone, 2013[18]).
- ✓ Cowled directional lighting will be used in all areas to minimise light spill and ensure the minimum area is illuminated. Where possible lighting alternatives should be considered such as low lumen bollard lighting.

Construction phase lighting will need to be controlled to minimise light pollution as a matter of good practice – such as:

- ✓ Implementation of lights out hours when construction is not active on site (evening and night hours).
- ✓ UV levels of the lighting installed: very low level or zero UV is preferential, as this has the least effect on insect activity, and thus the minimal interruption to bat foraging possible: Low Pressure Sodium (SOX) is preferrable, as it is emitted at single wavelengths, with very low UV emitted. (BCI, 2010[17]; Stone, 2013[18]).
- ✓ An Ecological Clerk of Works (EcOW) will be appointed to ensure all on site construction lighting aligns with the conditions set out above. Any deviation from the environmental envelope identified in this EcIA will be reported to the South Dublin Biodiversity officer.
- ✓ Where possible, lighting can be dimmed or switched off at night or during periods of low human activity, by implementing variable lighting regimes controlled remotely by CMS (central management system) units (BCI, 2010[17]; Stone, 2013[18]).

5. Noise/vibration

Most of the construction phase works are small scale in size and temporary in time scale.

- ✓ Nevertheless, the establishment of best practice measures for minimising and reducing noise and vibration from construction where possible should be detailed in a CEMP.
- ✓ There are no mitigation measures proposed for operational phase impacts from noise sources – particularly with regard to the sound stage. These impacts are identified to be residual issues.

6. Invasive species

The park is sensitive with regard to invasive species, especially its freshwater habitats; which are of high local importance for white-clawed cray fish and Red List bird species.

- ✓ Thus, an invasive species management plan, detailing management of and stands found during construction and prevention of spread protocol is essential
- ✓ The establishment of and strict adherence to buffer zones for the freshwater habitats in particular, during the construction phase, is also imperative for restricting the risk from invasive species spread.

[15] Bat Conservation Ireland (2010) Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers
[16] Stone, E.L. (2013) Bats and lighting: Overview of current evidence and mitigation
[17] Bat Conservation Ireland (2010) Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers
[18] Stone, E.L. (2013) Bats and lighting: Overview of current evidence and mitigation

The project's aim is to increase the amenity value of the site. However, the very continuation and encouragement of use of the park for local amenity value in turn protects the park from any substantial development that would further reduce and fragment the site. With the implementation of the above mitigation measures, the long-term impact of the proposed Development is thus positive for the ecological integrity and biodiversity of the site itself, and for supporting local wildlife populations.

The absence of the application of the above mitigation measures would render the project having the potential to have significant adverse effects on a habitat of high local importance within the site area. It is thus recommended to implement these measures as part of the proposed project to avoid potential impacts to the ecological integrity of the site.

5.1 CUMULATIVE IMPACTS

Plans of relevance in the context of this proposal include:

- South Dublin County Development Plan 2016 – 2022
- South Dublin County Draft Development Plan 2022 – 2028
- Draft Biodiversity Action Plan for South Dublin County 2020 - 2026

This being an urban parkland there are numerous other proposed projects in the vicinity including works which are at planning stage or underway on various sites. A review of the South Dublin County Council's planning database for projects within the scheme area (200m radius from the site redline boundary) over the past 5 years identified that the projects within the area are small scale works predominantly relating to the alterations of existing structures, small private home extensions, extension of permissions, and minor developments which fall under the South Dublin County Development Plan housing targets (see accompanying Appropriate Assessment for complete list).

All other construction and infrastructure work in the local area are small in scale and best practice construction measures will also be implemented for each. Due to the scale and nature of the proposed works there are no significant adverse effects identified as a result of the implementation of the proposed Corkagh Park Development. On this basis, assessment guidance (CIEEM, 2018) indicates that there is no need to consider cumulative effects. However, taking a precautionary approach, relevant plans and projects (as listed above and in the accompanying Appropriate Assessment) have nonetheless been reviewed and assessed.

These developments will increase cumulative impacts of the proposed project but only during the construction phase, and, given the overall long-term negligible impacts of the proposed project, the overall cumulative impacts for local biodiversity as a result of the proposed project are also negligible.

6 RESIDUAL IMPACTS

Given the nature of the works proposed, there will be no net decrease in terms of the ecological integrity of the site due to the maintenance of the vast majority of natural features and vegetation, maintenance of existing habitat and introduction of increased floral and micro habitat diversity across the site. Following the management and mitigation measures detailed in section 5, appropriate construction and operational lighting design, invasive species management plan, and buffer zones for freshwater habitats; the potential impacts to the flora and fauna of the existing environment are foreseen to be negligible, and of a temporary duration (i.e., construction phase only). The operational phase will be in keeping with the current function and condition of Corkagh Park in terms of both human pressures and ecological condition. The introduction of additional noise impacts during the operational phase of the sound stage is identified to be a residual impact. However, the species likely to be impacted by this are birds and bats. Given the urban context of the site and the availability of alternate resources in the area – these impacts are not identified to have significant population level effects for birds. Similarly, the sound stage is not likely to be used regularly enough to present consistent impacts to nocturnal species such as bats. The effects from these disturbance events are likely to just alter the nightly movement patterns of these vagile species and not influence the functional use of the space by bat species in a significant manner. The characteristics of the development detailed above indicate that any potential residual impacts will be localised, and due to the magnitude of works being undertaken, and overall positive for the long-term biodiversity and ecological integrity of the site due to the continued use of the site as a park.