Greater Dublin Drainage Project Addendum

Environmental Impact Assessment Report Addendum: Volume 3A Part A of 6

Chapter 11A Biodiversity (Terrestrial and Freshwater Aquatic)

Uisce Éireann

October 2023

Contents

11. Biodiversity (Terrestrial and Freshwater Aquatic)

11.1 Introduction

As detailed in Chapter 1A (Introduction) in Volume 2A Part A of this Environmental Impact Assessment Report (EIAR) Addendum, we have reviewed Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application, in the light of:

- Changes to the baseline environment;
- The requirement for updated surveys; and
- Any changes to the law, policy, or industry standards and guidance in the intervening period.

Table 11.1 includes a summary of the Greater Dublin Drainage Project (hereafter referred to as the Proposed Project) elements which were incorporated into the planning design for the Proposed Project following direction at the Oral Hearing in 2019 and the subsequent planning conditions applied to the 2018 planning application submission. A full description is included in Chapter 4A (Description of the Proposed Project) in Volume 2A Part A of the EIAR Addendum. The remaining elements of the Proposed Project included in the 2018 planning application remain unchanged.

Table 11.1: Updated Proposed Project Elements

Updated Element	Outline Description of Updated Element
Ultraviolet (UV) Treatment	• UV Treatment is to be included in the treatment process at the proposed wastewater treatment plant (WwTP) in the northern section of the WwTP site. • The UV treatment system will be designed for the expected flows at the plant and will be installed on the final effluent line. UV treatment will be in operation 24 hours a day, 365 days a year. • The UV system will consist of a minimum of three and a maximum of four treatment units located below or partially below ground level with an above-ground Motor Control Centre (MCC) (in a kiosk) along with minor maintenance and control equipment (e.g. shut-off button, frame for supporting, retracting and cleaning of UV lamps etc.).
River Mayne Culvert Extension	• Extension of the River Mayne Culvert on the proposed access road to the WwTP by 4m (from 21m to 25m) to cater for the full width of the future north south link road.

The updated biodiversity assessments contained in this Chapter are informed by Chapter 4A (Description of the Proposed Project) in Volume 2A Part A of the EIAR Addendum and the Addendum to the Outline Construction and Environmental Management Plan (CEMP) which is included as a standalone document, in addition to those corresponding elements of the EIAR submitted with the original 2018 planning application. The biodiversity assessments are supported, as necessary, by other updated specialist assessments of the EIAR Addendum, including for example, Chapter 8A (Marine Water Quality), Chapter 15A (Noise and Vibration) and Chapter 17A (Hydrology and Hydrogeology), in addition to those corresponding elements of the EIAR submitted with the original 2018 planning application.

This Chapter should be read in conjunction with Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application, in addition to the following:

- Appendix A11.1 Biodiversity (Terrestrial and Freshwater Aquatic) Baseline Survey Report which contains the results of updated surveys, as follows:
  - Appendix A Invasive Alien Plant Species Results 2019-2023;
  - Appendix B Badger Evidence along the Proposed Project Boundary 2020;
  - Appendix C Badger Evidence along the Proposed Project Boundary 2023;
  - Appendix D Badger Evidence along the Proposed Project Boundary 2023 Tabulated;
  - Appendix E Bat Activity Transects 2020;
  - Appendix F Bat Activity Transects 2021;
  - Appendix G Listening Points for Bat Activity Survey 2021;
  - Appendix H Bat Static Detector Locations 2021;
  - Appendix I Bat static detector data 2021;

- Appendix J Trees with potential bat roosts along the Proposed Project Boundary 2022;
- Appendix K Potential bat roost features in trees surveyed along the Proposed Project Boundary 2022;
- Appendix L Tree Climbing PRF Inspection Survey 2022;
- Appendix M Smooth Newt survey locations 2021;
- Appendix N Smooth Newt survey 2023;
- Appendix O Aquatic survey locations 2021;
- Appendix P Aquatic survey of the Proposed Project Boundary 2021;
- Appendix Q Aquatic survey of the Proposed Project Boundary 2023;
- Appendix R Proposed Construction Corridor, Access Routes, Compounds & Crossing;

- Appendix A11.2 Terrestrial Ornithology Technical Report 2023;
- Appendix A11.3 Precis of Evidence and Written Responses to Queries at the 2019 Oral Hearing; and
- Natura Impact Statement (NIS) Addendum (standalone report).

Note that figures illustrating mammal survey results indicate the location of badger setts, and these figures have been supplied to An Bord Pleanála (ABP) as a confidential appendix.

Please refer to Section 6A of Volume 4A Part A of the EIAR Addendum for the updated assessment of terrestrial biodiversity for the proposed Regional Biosolids Storage Facility element of the Proposed Project.

11.1.1 Chapter Structure

This Chapter of the EIAR Addendum presents any changes or updates to Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application, where appropriate. The same chapter structure has been applied here as was used in Chapter 11 in the 2018 planning application, and changes or updates are set out in each section or sub-section, as applicable. Where no change or update is required, that is confirmed within the relevant section or sub-section of this Addendum Chapter.

11.1.2 Zone of Influence

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application. The zones of influence (ZoI) set out in this Section of the EIAR in the 2018 planning application remain appropriate, as the planning boundary remains unchanged from that submitted in 2018. The nature and scale of development remains as outlined in the 2018 planning application, and the methods to be used to construct and operate the Proposed Project also remain as proposed in the 2018 planning application. As such, the ZoIs identified in the EIAR in the 2018 planning application for terrestrial biodiversity and freshwater aquatic biodiversity remain appropriate.

11.2 Methodology – Terrestrial and Freshwater Aquatic

The methodology employed for the purpose of this Addendum was to review the terrestrial and freshwater aquatic biodiversity baseline context relative to that which existed in 2018 when the original Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR was submitted as part of the 2018 planning application. This includes reference to both the physical environment and the up-to-date legislative / policy context. The original assessment was then reviewed to determine whether or not any changes in the originally predicted magnitude, scale, duration or significance of effect on any group of receptors had changed in light of the updated terrestrial and freshwater aquatic biodiversity baseline.

11.2.1 Desktop Data Sources and Consultation

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to desktop data sources. As noted therein, other than establishing the occurrence or otherwise of biodiversity features within the ZoI of the Proposed Project, the results of desktop data gathered were used to

inform and direct the scope of detailed field surveys associated with the Ecological Impact Assessment (EcIA) presented in the EIAR in the 2018 planning application.

Non-Statutory Consultation

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application, in relation to the consultation undertaken, prior to the submission of the 2018 planning application. Following the submission of the application for planning approval for the Proposed Project to ABP on 20 June 2018, the application documentation was placed on display during the period 28 June 2018 to 17 August 2018 (a seven week period). Additionally, the application documentation was made available to view and download on a dedicated website (www.gddapplication.ie). Prescribed bodies, the general public, landowners and other interested parties were invited to make submissions on:

- The likely effects on the environment of the Proposed Project; and
- The implications of the Proposed Project for proper planning and sustainable development in the area concerned.

Following this consultation period, it came to the attention of the Applicant on 19 July 2018 that in relation to the documents which were lodged with the planning application, some documentation forming part of the EIAR were inadvertently omitted. By agreement with ABP, these documents were placed on display during the period 13 September 2018 to 18 October 2018 (a five-week period) and prescribed bodies, the general public, landowners and other interested parties were invited to make further submissions on the entirety of the planning application until 18 October 2018. A total of 174 submissions / observations were received; comprising 145 from the first consultation period and 29 from the second consultation period.

All submissions were reviewed by Uisce Éireann and the Project Team, and responses were provided in a Response to Submissions Report (Uisce Éireann 2019), including those which specifically relate to terrestrial and freshwater aquatic biodiversity, which was published in January 2019.

Following an Oral Hearing process, ABP previously made a decision to grant this planning application by Order dated 11 November 2019 under reference number ABP-301908-18 for the Proposed Project. That decision was quashed by Order of the High Court and the case was remitted by that Court to ABP for a fresh determination. Following the remittal Order, ABP decided that, given the passage of time since the submission of the original planning application, and in accordance with Section 37F(1)(c) of the Planning and Development Act 2000 (as amended), Uisce Éireann should have the opportunity to update, where appropriate, the EIAR and NIS, and any other information submitted.

In light of this, ABP contacted those who had made a submission as part of the original consultation process in 2018 advising that the case had been reactivated under a new reference number (ABP-312131-21) and invited those interested parties to make any further general submissions / observations on the planning application. A total of 16 submissions were received and have been considered in the updates to the EIAR as part of this Addendum Report. Where a submission that relates to terrestrial and freshwater aquatic biodiversity does not require an update to this Addendum Chapter, but does require further clarification based on the information provided either in the original EIAR submitted as part of the 2018 planning application or the information in this Addendum Report, responses will be provided in a new Response to Submissions Report which will be submitted to ABP as a separate report (in line with the process followed for the original 2019 Response to Submissions Report), following the submission of the Addendum.

11.2.2 Local Planning Policy

This Section of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application was reviewed to determine if there have been any updates to local planning policy governing the assessment of terrestrial and freshwater aquatic biodiversity in the intervening period. The following sections outline these updates.

Dublin City Development Plan

Dublin City Council's (DCC's) Dublin City Development Plan 2022 - 2028 (hereafter referred to as the DCDP) (DCC 2022) was adopted at a special Council meeting in November 2022 and came into effect in December 2022. Policies and objectives of the DCDP in force at the time of the EcIA presented in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application were not listed in Table 11.2 of that Chapter. We have taken the opportunity to now list relevant policies and objectives of the DCDP in revised Table 11.2 below.

Fingal Development Plan

Fingal County Council's (FCC's) Fingal Development Plan 2017 - 2023 (hereafter referred to as the previous FDP) (FCC 2017) was the County Development Plan (CDP) in force at the time of the submission of the 2018 planning application for development consent to ABP, and also at the time of the 2019 planning permission granted by ABP. Since then, the FCC has prepared a new CDP. The new Fingal Development Plan 2023 - 2029 (hereafter referred to as the new FDP) (FCC 2023) came into effect in April 2023.

Policies and objectives of the previous FDP in force at the time of the EcIA presented in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application were listed in Table 11.2 of that Chapter. That table has now been updated to also list relevant policies and objectives of the new FDP and is presented below as Table 11.2.

Fingal Biodiversity Action Plan

The Fingal Biodiversity Action Plan 2010 - 2015 (hereafter referred to as the Fingal BAP) (FCC 2010) was the most up-to-date Biodiversity Action Plan (BAP) in place at the time of the 2018 planning application submission and is described in Section 11.2.2 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application. The Fingal BAP remains in effect at the time of writing this Chapter.

The Draft Fingal Biodiversity Action Plan 2022 - 2030 (hereafter referred to as the Draft Fingal BAP) (FCC 2022) was published and put out to public consultation in May 2022. Actions in the Draft Fingal BAP are stated by FCC as being focused on six topics:

- Delivery of the Ecological Network across Fingal;
- Building for Biodiversity;
- Climate change adaption and mitigation;
- Agri environment schemes and rewilding;
- Research and monitoring; and
- Raising awareness.

The 'Ecological Network' identified in the Fingal BAP extends to 13,120ha (hectares) and is re-stated in the Draft Fingal BAP as remaining at 13,120ha. The 'Ecological Network' of core sites, buffer zones, Nature Development Areas (NDAs) and ecological corridors remain the same in 2023, as assessed in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR submitted in the 2018 planning application.

Table 11.2: Selected Objectives of the Previous FDP (FCC 2017) and the Adopted New FDP (FCC 2023) and DCDP (DCC 2022) Relevant to Terrestrial and Freshwater Aquatic Biodiversity

Previous FDP (FCC 2017)		New FDP (FCC 2023) and DCDP (DCC 2023)		Where this is Addressed in the 2018 EIAR or 2023 EIAR Addendum
Objective	**Text**	**Policy / Objective**	**Text**	
GI04	Seek a net gain in green infrastructure through the protection and enhancement of existing assets, through the provision of new green infrastructure as an integral part of the planning process, and by taking forward priority projects including those indicated on the Development Plan green infrastructure maps during the lifetime of the Development Plan.	New FDP GINHO30: Infrastructure and Net Biodiversity Gain	All greenway and infrastructure projects are to have a net biodiversity gain and this principle shall be incorporated from the start of the project.	Section 12.7 of Chapter 12 (Landscape and Visual) in Volume 3 Part A of the EIAR in the 2018 planning application, and as supplemented by Chapter 12A (Landscape and Visual) in Volume 3A Part A of the EIAR Addendum, outlines enhancement measures for the Proposed Project, including the planting of a series of flowing organic embankments with dense bands (approx. 15m to 20m wide) of hedgerow tree species and additional tree lines and grids at the proposed WwTP site. In relation to the EIAR Addendum, a Biodiversity Assessment has been included as Appendix 2 in the Planning Report Addendum which outlines the green infrastructure / biodiversity net gain resulting from the Proposed Project in line with the new FDP, Fingal BAP and Uisce Éireann BAP. The Biodiversity Assessment quantitative assessment calculations indicate that the Proposed Project is capable of delivering a positive green infrastructure/ biodiversity outcome with respect to both area and length of habitat compared to the pre-developed scenario, secured by way of measures included within the CEMP Addendum. In addition, further qualitative measures including artificial bat roosting and bird nesting structures and an enhanced specification for the restoration / planting of hedgerows have been included within the CEMP Addendum. Implementation of the measures to preserve and enhance habitats along the route of the Proposed Project in the CEMP Addendum and EIAR Addendum will result in a post-development biodiversity net gain of 329,398 biodiversity units of habitat area, and 6,225 biodiversity units of linear habitats. While the additional qualitative measures won't increase these values for this particular metric, they will
		DCDP GI16: Habitat Creation and New Development	That new developments (as appropriate) will be required to support local biodiversity and incorporate biodiversity improvements through urban greening and the use of nature-based infrastructural solutions that are of particular relevance and benefit in an urban context. Opportunities should be taken as part of new development to provide a net gain in biodiversity and provide links to the wider Green Infrastructure network. All suitable new buildings will be required to incorporate swift nesting blocks into the building fabric.	
		New FDP GINHP2: Protection of Green Infrastructure	Ensure that areas and networks of green infrastructure are identified, protected, enhanced, managed and created to provide a wide range of environmental, social and economic benefits to communities.	
		DCDP GI1: Green Infrastructure Assets	To identify and protect the integrity of the city's Green Infrastructure assets, as appropriate, and to enhance and expand the connectivity, multi-functionality, and accessibility of the city's green infrastructure network, while addressing gaps in the network.	
GI22	Require all proposals for large scale development, such as road or drainage schemes, wind farms, housing estates, industrial parks or shopping centres, to submit a Green Infrastructure Plan as an integral part of a planning application.	New FDP GINHP10: Green Infrastructure and Development	Seek a net gain in Green Infrastructure through the protection and enhancement of existing assets, through the provision of new Green Infrastructure as an integral part of the planning process, and by taking forward priority projects including those indicated on the Development Plan Green Infrastructure maps during the lifetime of the Development Plan.	
		New FDP GINHP15: Biodiversity in Buildings Guidance	Promote the inclusion of swift, swallow, house martin, house sparrow, starling, bat and insect boxes and structures in and on building facades and develop a guidance document on how to incorporate these structures into buildings.	

Previous FDP (FCC 2017)		New FDP (FCC 2023) and DCDP (DCC 2023)		Where this is Addressed in the 2018 EIAR or 2023 EIAR Addendum
Objective	**Text**	**Policy / Objective**	**Text**	
		(and DCDP GI16 as above)		result in real world increases in biodiversity where applied.
GI24	Ensure biodiversity conservation and/or enhancement measures, as appropriate, are included in all proposals for large scale development such as road or drainage schemes, wind farms, housing estates, industrial parks or shopping centres.	New FDP GINHP5: Green Infrastructure Network (and DCDP GI16 as above)	Develop the Green Infrastructure network to ensure the conservation and enhancement of biodiversity, including the protection of European Sites, the provision of accessible parks, open spaces and recreational facilities (including allotments and community gardens), the sustainable management of water, the maintenance of landscape character including historic landscape character and the protection and enhancement of archaeological and heritage landscapes.	
		New FDP GINHP14: Biodiversity Net Gain Guidance	Promote biodiversity net gain in new developments and develop a planning guidance document on Biodiversity Net Gain.	
NH15	Strictly protect areas designated or proposed to be designated as Natura 2000 sites (i.e. SACs and SPAs, also known as European Sites) including any areas that may be proposed for designation or designated during the period of this Plan.	New FDP GINHP12: Protected Sites	Protect areas designated or proposed to be designated as Natura 2000 sites (i.e. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, and Refuges for Fauna.	Chapter 9 (Biodiversity (Marine)), Chapter 10 (Biodiversity (Marine Ornithology)) and Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, and as supplemented by 9A, 10A and 11A of the EIAR Addendum, the NIS (in the 2018 planning application and as supplemented by the Revised NIS for the EIAR Addendum) describe how the Proposed Project adheres with these policies and objectives by avoiding footprints within designated sites, their buffer zones and locations where protected species occur, where this can be achieved; and describing the predicted impacts upon designated sites, their buffer zones and protected species, and mitigation measures proposed to reduce impacts on designated sites, their buffer zones and protected species.
		New FDP GINHP17: Protection of European and National Sites	Strictly protect areas designated or proposed to be designated as Natura 2000 sites (i.e. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); also known as European sites) including any areas that may be proposed for designation or designated during the lifetime of this Plan.	
		DCDP GI9: European Union Natura 2000 Sites	To conserve, manage, protect and restore the favourable conservation condition of all qualifying interest/special conservation interests of all European sites designated, or proposed to be designated, under the EU Birds and Habitats Directives, as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) (European / Natura 2000 sites).	
NH16	Protect the ecological integrity of proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas	New FDP GINHO28: Protection of	Ensure that development does not have a significant adverse impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Habitat	

Previous FDP (FCC 2017)		New FDP (FCC 2023) and DCDP (DCC 2023)		Where this is Addressed in the 2018 EIAR or 2023 EIAR Addendum
Objective	**Text**	**Policy / Objective**	**Text**	
	(NHAs), Statutory Nature Reserves, Refuges for Fauna, and Habitat Directive Annex I sites.	Natural Heritage Areas	Directive Annex I sites and Annex II species contained therein, and on rare and threatened species including those protected by law and their habitats.	
		DCDP GI11: Proposed Natural Heritage Areas	To protect and enhance the ecological functions and connectivity of habitats and species of proposed Natural Heritage Areas (pNHAs) to be designated by the National Parks and Wildlife Service (NPWS).	
NH17	Ensure that development does not have a significant adverse impact on pNHAs, NHAs, Statutory Nature Reserves, Refuges for Fauna, Habitat Directive Annex I sites and Annex II species contained therein, and on rare and threatened species including those protected by law and their habitats.	New FDP GINHO33: Annex I and Annex II	Ensure that development does not have a significant adverse impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Habitat Directive Annex I sites and Annex II species contained therein, and on rare and threatened species including those protected by law and their habitats.	
		New FDP GINHP18: Species Protection	The Council will seek to protect rare and threatened species, including species protected by law and their habitats by requiring planning applicants to demonstrate that proposals will not have a significant adverse impact on such species and their habitats	
		DCDP GI10: Flora and Fauna Protected under National and European Legislation Located Outside Designated Areas	To adequately protect flora and fauna (under the EU Habitats and Birds Directives), the Wildlife Acts 1976 (as amended), the Fisheries Acts 1959 (as amended) and the Flora (Protection) Order 2022 S.I No. 235 of 2022, wherever they occur within Dublin City, or have been identified as supporting the favourable conservation condition of any European sites.	
NH18	Protect the functions of the ecological buffer zones and ensure proposals for development have no significant adverse impact on the habitats and species of interest located therein.	New FDP GINHP19: Ecological Buffer Zones	Protect the functions of the ecological buffer zones and ensure proposals for development have no significant adverse impact on the habitats and species of interest located therein.	
NH19	Develop Ecological Masterplans for the Rogerstown, Malahide and Baldoyle Estuaries focusing on their ecological protection and that of their surrounding buffer zones.	New FDP GINHO34: Ecological Management Plans	Develop Ecological Management Plans for the Rogerstown, Malahide and Baldoyle Estuaries focusing on their ecological protection and that of their surrounding buffer zones	Section 11.4 and Section 11.5 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, and as supplemented by this Addendum Chapter describe the predicted impacts upon NDAs, and Section 11.8 of that same Chapter
NH20	Maintain and/or enhance the biodiversity of the NDAs indicated on the Green Infrastructure Maps.	New FDP GINHO37: Nature	Maintain and/or enhance the biodiversity of the NDAs indicated on the Green Infrastructure maps	

Previous FDP (FCC 2017)		New FDP (FCC 2023) and DCDP (DCC 2023)		Where this is Addressed in the 2018 EIAR or 2023 EIAR Addendum
Objective	**Text**	**Policy / Objective**	**Text**	
		Development Areas		concludes that likely significant impacts are not predicted upon NDAs.
NH23	Protect the ecological functions and integrity of the corridors indicated on the Development Plan Green Infrastructure Maps.	New FDP GINHO40: Ecological Assessments	Protect the ecological functions and integrity of the corridors indicated on the Plan Green Infrastructure maps. An ecological assessment may be required for any proposed development likely to have a significant impact on habitats and species of interest in an ecological corridor or stepping stone.	Section 11.9 and Section 11.10 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, and as supplemented by this Addendum Chapter describe the predicted impacts upon these corridors and watercourses, and Section 11.15 of that same Chapter and as supplemented by this Addendum Chapter concludes that likely significant impacts are not predicted upon these corridors and watercourses.
NH24	Protect rivers, streams and other watercourses and maintain them in an open state capable of providing suitable habitat for fauna and flora, including fish.	New FDP GINHO41: Protection of Rivers	Protect rivers, streams and other watercourses and maintain them in an open state capable of providing suitable habitat for fauna and flora, including fish.	
		DCDP GI15: Inland and Sea Fisheries	To protect inland and sea fisheries and take full account of Inland Fisheries Ireland Guidelines 'Planning for Watercourses in the Urban Environment' 2020, when undertaking, approving or authorising development or works which may impact on rivers, streams, watercourses, estuaries, shorelines and their associated habitats. To protect sea angling sites designated by Inland Fisheries Ireland at the North and South Bull Walls and at Dollymount and Sandymount Strands.	
NH25	Provide for public understanding of and public access to rivers, waterway corridors and wetlands, where feasible and appropriate, in partnership with the NPWS, Waterways Ireland and other relevant stakeholders, while maintaining them free from inappropriate development and subject to EcIA and screening for Appropriate Assessment as appropriate.	N/A	N/A	
NH27	Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management.	New FDP GINHP21: Protection of Trees and Hedgerows	Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/ or contribute to landscape character and ensure that proper provision is made for their protection and management	Chapter 4 (Description of the Proposed Project) and Section 11.7 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 2 Part A and Volume 3 Part A of the EIAR in the 2018 planning application, and as supplemented by Chapter 4A and this Chapter of the EIAR Addendum, describe how vegetation to be retained will be protected, and how vegetation to be lost will be replaced.
NH50	Protect and enhance the special landscape character and exceptional landscape value of the	New FDP GINHP33:	Protect and enhance the special landscape character and exceptional landscape value of the islands,	Chapter 9 (Biodiversity (Marine)), Chapter 10 (Biodiversity (Marine Ornithology)) and Chapter

Previous FDP (FCC 2017)		New FDP (FCC 2023) and DCDP (DCC 2023)		Where this is Addressed in the 2018 EIAR or 2023 EIAR Addendum
Objective	**Text**	**Policy / Objective**	**Text**	
	islands, including their biodiversity, archaeological and architectural heritage.	Protection of the Islands	including their biodiversity, archaeological and architectural heritage.	11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, supplemented by the Addendum Chapter and the NIS (standalone document included in the 2018 planning application and as supplemented in the revised NIS for the Addendum) describe how the Proposed Project adheres with this policy.
NH60	Strictly control the nature and pattern of development within coastal areas and ensure that it is designed and landscaped to the highest standards, and sited appropriately so as not to detract from the visual amenity of the area. Development shall be prohibited where the development poses a significant or potential threat to coastal habitats or features, and/or where the development is likely to result in altered patterns of erosion or deposition elsewhere along the coast.	New FDP GINHO70 – Pattern of Coastal Development	Strictly control the nature and pattern of development within coastal areas and ensure that it is designed and landscaped to the highest standards and sited appropriately so as not to detract from the visual amenity of the area. Development shall be prohibited where the development poses a significant or potential threat to coastal habitats or features, and/or where the development is likely to result in altered patterns of erosion or deposition elsewhere along the coast.	Chapter 8 (Marine Water Quality), Chapter 9 (Biodiversity (Marine)), Chapter 10 (Biodiversity (Marine Ornithology)), Chapter 12 (Landscape and Visual) and Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, and as supplemented by Chapter 8A, 9A, 12A and this Chapter of the EIAR Addendum, describe how the Proposed Project adheres with this Policy as it does not give rise to significant environmental impacts, including visual impacts upon coastal habitats or features, and does not result in altered patterns of erosion or deposition elsewhere along the coast.

Other Biodiversity Plans

Uisce Éireann's Biodiversity Action Plan

Uisce Éireann's Biodiversity Action Plan (hereafter referred to as the Uisce Éireann BAP) was launched and published in 2021 (Uisce Éireann 2021a), and contains objectives and actions centred around the following overarching objectives:

- Ensuring no net loss of biodiversity as a result of Uisce Éireann activities, projects or plans. Follow the mitigation hierarchy by avoiding impacts in the first instance, before seeking to reduce, improve or compensate. Actively seek opportunities for biodiversity net gain by identifying opportunities for biodiversity enhancement at both existing and proposed Uisce Éireann sites;
- Developing a community of staff / personnel who are informed and can easily access the appropriate information in relation to biodiversity and the expertise they require to support them; and
- Collaborating with external stakeholders to deliver biodiversity benefits at local, regional and national scales. Work collaboratively with relevant public / private organisations and local communities to support healthy ecosystems that can deliver ecosystem services.

To achieve these goals, the Uisce Éireann BAP sets out seven key objectives:

- Objective 1: Issue all Uisce Éireann sites with a clear set of measures that will enhance and protect biodiversity;
- Objective 2: Raise awareness and provide educational supports on biodiversity to Uisce Éireann staff and its partners;
- Objective 3: Ensure 'no net loss' of biodiversity in carrying out our activities, plans or project;
- Objective 4: Implement actions arising from the All-Ireland Pollinator Plan across all Uisce Éireann sites;
- Objective 5: Promote the use of nature-based solutions for water protection and wastewater treatment;
- Objective 6: Manage invasive alien species at Uisce Éireann sites; and
- Objective 7: Collaborate and work with key internal and external stakeholders, and the wider community, to protect and enhance biodiversity.

In addressing this goal at the project level, a Biodiversity Assessment is included as Appendix 2 of the Addendum Planning Report which is included as a standalone document in this remittal. The Biodiversity Assessment outlines the biodiversity net gain resulting from the Proposed Project in line with the new FDP (FCC 2023), the Fingal BAP, the Draft Fingal BAP (FCC 2022) and the Uisce Éireann BAP.

The Biodiversity Assessment quantitative assessment calculations indicate that the Proposed Project is capable of delivering a positive green infrastructure and biodiversity outcome with respect to both area and length of habitat compared to the pre-developed scenario, secured by way of measures included within the CEMP Addendum. In addition, further qualitative measures including artificial bat roosting and bird nesting structures and an enhanced specification for the restoration / planting of hedgerows have been included within the CEMP Addendum.

Implementation of the measures to preserve and enhance habitats along the route of the Proposed Project in the CEMP Addendum and the EIAR Addendum will result in a post-development biodiversity net gain of 329,398 biodiversity units of habitat area, and 6,225 biodiversity units of linear habitats. While the additional qualitative measures are not accounted for in the metric, they will result in real world increases in biodiversity, where applied.

Ireland's Eye Management Plan

The Ireland's Eye Management Plan 2018 - 2022 (Nairn R. 2017) was prepared by FCC in consultation with the then owner, Julian Gaisford St. Laurence, the National Parks and Wildlife Service (NPWS), local interest groups, non-governmental organisations (NGOs) and other interested parties. The Ireland's Eye Management

Plan 2018 - 2022 is intended to guide the future management of the island by FCC and others and brings together all of the existing knowledge on the site and a list of detailed actions that address the key concerns over a five-year period. Overall, the objectives of the Ireland's Eye Management Plan 2018 - 2022 are:

- To protect and enhance the natural and cultural heritage of Ireland's Eye for the long-term future;
- To ensure the favourable conservation status of those habitats and species which are qualifying interests (QIs) of the Special Area of Conservation (SAC) and Special Protection Area (SPA);
- To facilitate the managed use of the island by visitors in a safe environment; and
- To provide adequate information for visitors to enhance their enjoyment of the island.

Ownership of the island changed in 2019. However, the island remains:

- An important natural heritage feature within Fingal;
- Designated as a proposed Natural Heritage Area (pNHA), SAC and SPA; and
- Privately owned and accessible by the public.

Ballymun Biodiversity Action Plan

The Ballymun Biodiversity Action Plan 2022 (hereafter referred to as the Ballymun BAP) was prepared in March 2022 (Ballymun Biodiversity Focus Group 2022). It notes that the priority of the Ballymun BAP is to collaborate with the local authorities to ensure that the last remaining semi-natural areas in Ballymun are developed as local nature reserves. The Ballymun BAP study area is illustrated in Image 11.1.

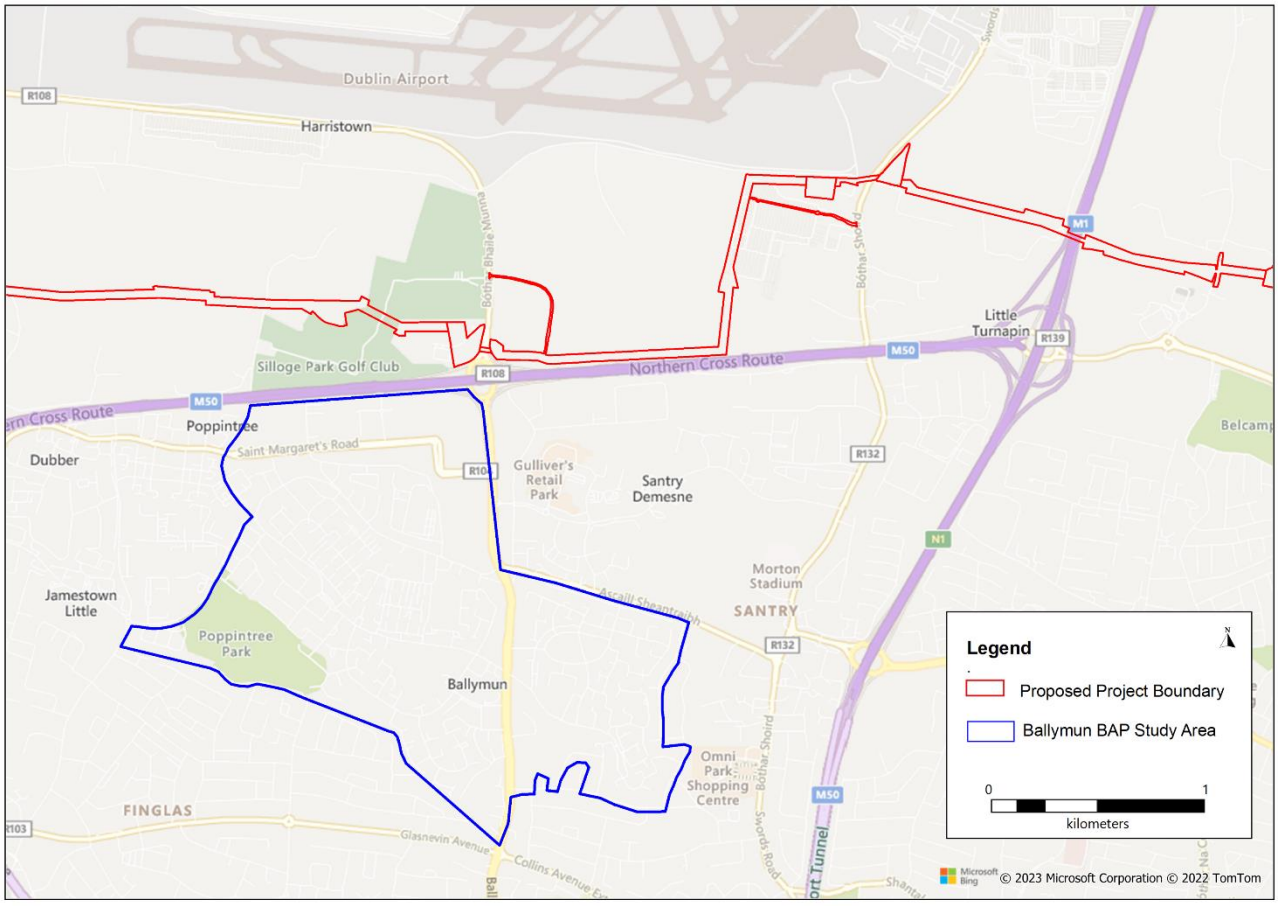

Image 11.1: Ballymun BAP Study Area in Relation to the Proposed Project Boundary

The principal objectives contained within the Ballymun BAP are as follows:

- Objective 1: Making Ballymun more biodiversity friendly;
- Objective 2: Raising awareness of local biodiversity and how to protect it;
- Objective 3: Collecting evidence to track change and measure success; and

- Objective 4: Build local capacity to manage and record biodiversity.

The Ballymun BAP contains records of many species of flora and fauna, collected through a review of previous work undertaken by the Ballymun Biodiversity Focus Group, desk research, consultations with representatives of the community and fieldwork (both by efforts of citizen science initiatives and professional ecologists).

11.2.3 Field Survey

Update field surveys were undertaken as part of the preparation of this EIAR Addendum. The update surveys were completed between 2019 and 2023 and survey methodologies and timings are described in Section 11.2.3. Results are described in Section 11.3, and full details are provided in Appendix A11.1 and Appendix A11.2 in Volume 3A Part B of the EIAR Addendum.

The following update surveys were completed between 2019 and 2023.

Terrestrial Habitats

In October and November 2022, a walkover survey was conducted during daylight hours along and extending 50m around each component of the Proposed Project boundary. The aim of the survey was to identify any material changes to the distribution or description of the habitats within and immediately adjacent to the Proposed Project boundary since the original surveys associated with Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application were completed. The mapping and description of the habitats were completed with reference to A Guide to Habitats in Ireland (hereafter referred to as Fossitt 2000) (The Heritage Council 2000). This is consistent with the habitat classification system used in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application. The results of the survey were digitally mapped in a Geographical Information System (GIS). The weather conditions during the survey were mild (approximately 10°C to 15°C (degrees Celsius)) and mostly dry with occasional showers.

An Invasive Alien Plant Species (IAPS) survey was undertaken to determine the presence / likely absence of IAPS, particularly those listed on the Third Schedule of S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) (hereafter referred to as the Birds and Natural Habitats Regulations). The survey was conducted within all lands within the redline boundary of the Proposed Project on 9 and 10 September 2019. The survey was completed at an optimal time of year for detecting the presence / likely absence of such species. The weather conditions during the survey were cloudy with some light rain with ambient air temperatures ranging from 9°C to 16°C. The survey comprised a walkover undertaken by experienced RPS ecologists. The locations of the IAPS recorded during 2019 were re-confirmed during a follow-up survey completed on 5 May 2023.

In addition, incidental records of IAPS were also recorded during the completion of the estuarine survey of Baldoyle Estuary in 2022 (as detailed in Appendix A9.1 in Volume 3A Part B of this EIAR Addendum).

In 2023, during the badger surveys (17 to 19 April) and freshwater aquatic surveys (12 and 13 June), all incidental records of IAPS were also recorded, providing a full update within the Proposed Project redline boundary and 100m buffer.

Bats

Four types of bat survey were undertaken for the Addendum assessment:

- Walked Transect Survey (September 2020, and May to September 2021);
- Static Bat Detector Surveys (April to August 2021);
- Preliminary Bat Roost Assessment (PBRA) of Trees (from ground level) (October to November 2022); and
- Aerial Bat Roost Feature Inspections of Trees (November to December 2022).

The bat activity survey consisted of two separate but complimentary methodologies, namely walked transect surveys and fixed static detector surveys. The aim of both surveys was to characterise the bat activity present

along the Proposed Project boundary in relation to the species and levels of activity by each species. The surveys were completed with reference to the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins 2016) and the Bat Mitigation Guidelines for Ireland – V2 (NPWS 2022). All bat detector data from the surveys was processed with Kaleidoscope software using AutoID to identify bat species and was then subject to manual checks of the data by bat ecologists experienced in interrogating this type of data.

A PBRA of all trees within the Proposed Project boundary was completed between 18 October and 2 November 2022. The PBRA was completed during daylight hours and consisted of a visual assessment of the trees from ground level, using binoculars, as necessary. The suitability assessment of trees was completed with reference to the Bat Surveys for Professional Ecologists: Good Practice Guidelines. Any potential roost feature (PRF) found was graded as low, moderate, or high roost suitability (as per the method used in this Chapter of the EIAR in the 2018 planning application). The survey was completed within an optimal season for the completion of such surveys.

Following on from the PBRA survey, a tree climbing inspection survey of all trees considered to have medium or high potential was completed under NPWS licence DER/BAT 2022-77. The survey was carried out on 24 and 25 November 2022 and repeated on 1 and 2 December 2022. The survey was aided through the use of tree-climbing rope equipment, ladders, a torch and a Rigid CA-350 endoscope inspection camera. The aim of the survey was to allow closer inspection of PRFs identified during the PBRA, in order to look for evidence of bats including live or dead bats, droppings, staining, odour and / or other physical characteristics, and where necessary, to reclassify PRFs. The surveys were completed with reference to the Bat Surveys for Professional Ecologists: Good Practice Guidelines. Survey results were compared with information and records from Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals (Andrews 2018) to aid in the classification and identification of PRFs.

Mammals (Other than Bats)

A badger survey was conducted along an area 50m each side of the Proposed Project boundary on 28 and 29 October 2020. The surveys were undertaken during daylight hours commencing at approximately 09.00hrs and finishing at approximately 16.30hrs (or as darkness precluded viable searching) and were completed over the course of two days. The weather conditions during the survey were cloudy, with light to moderate rain, ranging from 9°C to 13°C.

A further survey of badgers was completed using the same methodology between 17 to 19 April 2023. For this survey, the buffer referred to for the 2020 survey was increased from 50m to 100m, in line with those surveys undertaken and reported within Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, to allow a more comprehensive comparison. The 2023 survey was undertaken during daylight hours, commencing at approximately 09.00hrs and finishing at approximately 17.00hrs, over the course of three days. The weather conditions during the surveys were sunny with ambient air temperatures ranging from 11°C to 13°C.

The survey focused on the Proposed Project boundary extending approximately between the M50 Motorway / N3 National Road intersection at Connolly Hospital Blanchardstown and heading in an easterly direction to the proposed intersection with the proposed outfall pipeline route at Portmarnock Strand. It included the construction access routes shown along the corridor in Figure R1 to Figure R3 of Appendix R to Appendix A11.1 in Volume 3A Part B of this EIAR Addendum.

The surveys were conducted with reference to Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (National Roads Authority (NRA) 2009). Broadly, the survey involved mapping and describing any actual or potential signs of activity by badger (e.g. setts, footprints, hairs, latrines). No wildlife disturbance licences were required for the surveys.

Farmland Birds

Two types of bird survey were undertaken for the Addendum assessment:

- Breeding Bird Survey (April to May 2021 and April to June 2023); and
- Winter Bird Survey (October to November 2022 and February to March 2023).

The aim was to confirm the presence of birds along the Proposed Project boundary, and its surrounding 250m buffer, which is the same buffer applied for the assessment for the EIAR in the 2018 planning application. This was in order to identify any material changes to the range of species in and adjacent to the Proposed Project boundary since the original surveys associated with the EIAR in the 2018 planning application were completed.

The species considered here are farmland birds, raptors and inland riverine species such as kingfisher. The waders, wildfowl and seabirds associated with estuarine and nearshore habitats of Baldoyle Bay are reported in Chapter 10A (Biodiversity (Marine Ornithology)) in Volume 3A Part A and Appendix A10.1 (Marine – Estuarine Ornithology Technical Report) in Volume 3A Part B of this EIAR Addendum, respectively.

The bird surveys were completed with reference to the British Trust for Ornithology (BTO) Common Bird Census (CBC) technique, as detailed within Bird Census Techniques (Bibby *et al.* 2000) and Bird Monitoring Methods: A Manual of Techniques for Key UK Species (Gilbert *et al.* 1998). All birds seen or heard within the survey area were recorded on appropriate field maps, with results then digitised using GIS to facilitate figure production. The resulting distribution maps form part of Appendix A11.2 in Volume 3A Part B of this EIAR Addendum. The full methodologies for the breeding and wintering bird surveys are set out in Section 2.1 and Section 3.1 of Appendix A11.2 in Volume 3A Part B of the EIAR Addendum, respectively.

Other Species Groups

Newt Survey

Presence / absence surveys, completed under NPWS licence C 124/2021, were carried out at three locations in April and May 2021, and again in April and May 2023. These locations were previously surveyed in 2015 and 2017, the results of which were presented in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application. These locations contained potential smooth newt breeding habitat during the newt breeding season in 2021. The full methodology is set out in Section 2.2.3 of Appendix A11.1 in Volume 3A Part B of this EIAR Addendum.

For Site 1 (Coldwinters), 18 water bodies were assessed. For Site 2 (Ballymun), eight water bodies were assessed. For Site 3 (Toberbunny), four water bodies were assessed.

Dip-netting was attempted at Site 1 and Site 2. However, for the most part, the water bodies were too silty or full of weeds to perform this survey method successfully. Therefore, torching was the favoured survey method. Torching involved moving around the water body perimeter and stopping every 2m to torch. Torching was carried out by shining a high-powered torch into the water from the bank outward and examining the water for newts, paying particular attention to examine amongst the vegetation and on the water body floor, as newts are more difficult to see there. The sites were surveyed at night shortly after sunset as this is when smooth newts are most active.

Freshwater Habitat Assessment, Protected Freshwater Species, Other Freshwater Taxa and Freshwater Flora Assessment

This is a summary Section which covers the sections previously outlined in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application under the headings ‘Freshwater Habitat Assessment’, ‘Protected Freshwater Species’, ‘Other Freshwater Taxa’ and ‘Freshwater Flora Assessment’.

Freshwater aquatic surveys were completed over two days on 1 and 2 September 2021 and repeated on 12 and 13 June 2023. The locations that were surveyed where water bodies crossed the Proposed Project boundary are shown in Figure O1 to Figure O4 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum. The aquatic survey consisted of sampling at each location and included identification of key ecological features such as fisheries habitat potential (salmonid / lamprey / crayfish), an assessment for otter (150m upstream and downstream to identify any evidence) and the presence / likely absence of invasive species. The general physical characteristics and hydromorphological features of each site were recorded including substrate, flow types, and aquatic vegetation during surveys. The following methodology was applied:

- The surveyors carried out a two-minute kick sample by placing the flat bottom of the kick net on the riverbed, against the flowing water. The surveyors kicked the bottom of the stream within

suitable riffle habitat to dislodge the substrate and disturb any macroinvertebrates into the direction of the net. A stone wash was also completed to ensure collection of species which cling to rock surfaces;

- The contents of the kick net were inverted into the sorting tray with some added water from the stream. Once the contents settled, the different groups of macroinvertebrates were identified using a macroinvertebrate identification key;
- The macroinvertebrate data (structure of the community) was then interpreted and a Q value for the stream calculated using the Quality Value Index (Environmental Protection Agency (EPA) 2023), in order to ascertain the biological quality of the river;
- Water chemistry was also recorded in-situ using a hand-held calibrated meter (Oxyguard Handy Polaris). This measured conductivity, dissolved oxygen (% and milligrams per litre (mg/l)), temperature (°C), total dissolved solids (parts per million (ppm)) and pH of the water sample; and
- An in-field visual assessment at each sample location was also conducted, to include:
    - % Substrate, % sedimentation, % macrophyte (and composition), % macroalgae, fisheries habitat suitability assessment (e.g. signs of redds, flow velocity, barriers to passage, organic detritus, areas of soft sediment deposition and clean spawning gravels) plus recording of land use and bankside vegetation; and
    - An assessment for the presence of otter was also completed (150m upstream and downstream) to identify any evidence such as prints, holts, slides and droppings.

The rating of habitat for salmonids, crayfish and lamprey is on a scale of None / Poor / Fair / Good / Very Good / Excellent. This rating assesses the physical suitability of the habitat. The presence / absence / density of the species in question will also depend on present and historical water quality and accessibility of the section to these species.

11.2.4 Valuation and Impact Assessment

The following guidelines have been updated since the submission of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application:

- The Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine (hereafter referred to as the Guidelines for Ecological Impact Assessment) [version 1.2] (CIEEM 2018); and
- The Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the updated EPA Guidelines) (EPA 2022).

The Guidelines for Ecological Impact Assessment were published by CIEEM in 2018, and subsequently modified in 2019 and 2022. The current version is the 2018 version (noted within the Guidelines for Ecological Impact Assessment to be republished in April 2022 as Version 1.2). The principal purpose of and material change in the 2018 Guidelines for Ecological Impact Assessment is that they combine the 2016 Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition and the Guidelines for Ecological Impact Assessment in Britain and Ireland: Marine and Coastal (CIEEM 2010) to have only one set of EcIA guidelines in the UK and Ireland.

The EcIA presented in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application remains valid and robust today, subject to any changes or modifications set out subsequently in this Chapter of the EIAR Addendum.

Since the 2018 planning application, the updated EPA Guidelines were published by the EPA in 2022. The Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Draft EPA Guidelines) (EPA 2017) informed the assessment carried out in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application. The Draft EPA Guidelines were made available in 2017 following the transposition deadline set down in Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (hereafter referred to as the EIA Directive). The Draft EPA Guidelines have been updated following extensive consultation and the introduction of transposing legislation and were formally adopted and published by the

EPA in 2022, having been drafted with the primary objective of improving the quality of EIARs with a view to facilitating compliance with the EIA Directive.

Insofar as the updated EPA Guidelines relate to the EcIA presented in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, in terms of describing the nature of effects on biodiversity features (extent, magnitude, duration, frequency and reversibility) and the significance of those effects, those same terms are used in both the Draft EPA Guidelines and the adopted updated EPA Guidelines (e.g. Table 3.3 of the Draft EPA Guidelines on the description of effects has been brought through to the adopted updated EPA Guidelines as Table 3.4).

The updated EPA Guidelines note that '*when more specific definitions exist within a specialised factor or topic, e.g. biodiversity, these should be used in preference to these generalised definitions*', which is the case for Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application. The 2016 Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition was the principal guidance document used in preparing the EcIA. As outlined previously, the EcIA prepared in accordance with the 2016 Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition and presented in the EIAR in the 2018 planning application remains valid and robust today, subject to any changes or modifications set out subsequently in this Chapter of the EIAR Addendum.

11.2.5 Compliance with the Water Framework Directive

Environmental objectives for the water bodies considered in this Section of the EIAR in the 2018 planning application have been updated by reference to the Draft River Basin Management Plan for Ireland 2022–2027 (Government of Ireland 2022). The environmental objective for these water bodies remains as 'good status', just as was the case in the EIAR in the 2018 planning application, with reference to the previous Draft River Basin Management Plan for Ireland 2018–2021 (Government of Ireland 2018) .

There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.3 Baseline Environment – Terrestrial Flora and Fauna

A desk based review and field surveys have been undertaken to assess any changes to the baseline environment with regards to terrestrial and freshwater aquatic biodiversity, since the submission of the EIAR in the 2018 planning application.

11.3.1 Designated Sites

European Sites

Since the submission of the 2018 planning application, the NPWS has published site-specific conservation objectives for a number of European sites considered in the EIAR and the NIS associated with the 2018 planning application. These site-specific conservation objectives replace the generic conservation objectives that had been published previously. The date of publication of the conservation objectives used in assessing the effects of the Proposed Project in the EIAR in the 2018 planning application are listed in Appendix E of the NIS which was included as a standalone document in the 2018 planning application. European sites that have subsequently had their generic conservation objectives re-published as site-specific conservation objectives are listed in Table 11.3. Those sites not listed below have not had conservation objectives re-published since the EIAR and NIS were submitted with the 2018 planning application.

Table 11.3: European Sites with Revised Conservation Objectives

European Site	Date of Publication of Revised Conservation Objectives
Dalkey Islands SPA	12/10/2022
Glenasmole Valley SAC	10/12/2021
Howth Head Coast SPA	12/10/2022
Ireland's Eye SPA	12/10/2022
Lambay Island SPA	12/10/2022
Rye Water Valley/Carton SAC	22/12/2021
Skerries Islands SPA	12/10/2022

In addition, the following updates to legislation have also occurred since the submission of the 2018 planning application:

- In March 2019, S.I. No. 91/2019 - European Union Habitats (Malahide Estuary Special Area Of Conservation 000205) Regulations 2019 were published;
- In March 2019, S.I. No. 94/2019 - European Union Habitats (Rockabill To Dalkey Island Special Area Of Conservation 003000) Regulations 2019 were published;
- In July 2019, S.I. No. 294/2019 - European Union Habitats (Lambay Island Special Area Of Conservation 000204) Regulations 2019 were published;
- In October 2019, S.I. No. 524/2019 - European Union Habitats (North Dublin Bay Special Area of Conservation 000206) Regulations 2019 were published;
- In October 2019, S.I. No. 525/2019 - European Union Habitats (South Dublin Bay Special Area of Conservation 000210) Regulations 2019 were published;
- In September 2021, S.I. No. 472/2021 - European Union Habitats (Baldoyle Bay Special Area of Conservation 000199) Regulations 2021 were published; and
- In October 2021, S.I. No. 524/2021 - European Union Habitats (Howth Head Special Area of Conservation 000202) Regulations 2021 were published.

All other relevant European Union Habitats Regulations had been published prior to the decision to grant planning permission by An Bord Pleanála, dated 11 November 2019 under reference number ABP-301908-18 for the Proposed Project. The function of the European Union Habitats Regulations are to formally designate European sites in accordance with the obligations arising under Article 4(4) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitat and of wild fauna and flora (hereafter referred to as the Habitats Directive) to formally designate Sites of Community Importance as SACs.

Insofar as an EcIA or an appraisal for appropriate assessment by a professional ecological consultant is concerned, there is no material difference between an assessment completed prior to the publication of the above European Union Habitats Regulations and an assessment completed following the publication of these European Union Habitats Regulations, as national legislation under the Planning Code in Ireland affords the same level of protection to European sites, both before and after the publication of European Union Habitats Regulations in relation to any such site, and the requirements of Article 6(3) of the Habitats Directive applies with full force to European sites in Ireland, even in the absence of the publication of site-specific European Union Habitats Regulations.

As such, the publication of the above European Union Habitats Regulations have no impact on the outcomes of the previous assessment carried out as part of the EIAR in the 2018 planning application. For this reason, these regulations are not considered further as part of this Addendum Chapter.

In addition to a number of European Union Habitats Regulations noted above, the North-West Irish Sea candidate SPA (cSPA) (site code IE004236) was notified to the public by the Department of Housing, Local Government and Heritage in July 2023 following selection by the Minister under Regulation 15 of the Birds and Natural Habitats Regulations, as amended, as a site to be considered for classification as a SPA.

The Regulation 15 notification is the first stage in the designation of the North-West Irish Sea cSPA under the Birds and Natural Habitats Regulations and allows for a three-month period during which observations may be submitted in relation to the proposed designation. A second public notification, known as a Regulation 16

notification, will be issued once the statutory three-month period for the Regulation 15 notification has elapsed. A further three-month period will then begin, during which observations and objections to the proposed designation, on scientific and ornithological grounds, may be submitted by interested parties. The earliest possible date for the publication of the Regulation 16 notification is October 2023. In the interim, a site synopsis has been published by the NPWS, noting inter alia that:

- The North-West Irish Sea cSPA constitutes an important resource for marine birds;
- The estuaries and bays that open into it, along with connecting coastal stretches of intertidal and shallow subtidal habitats, provide safe feeding and roosting habitats for waterbirds throughout the winter and migration periods;
- These areas, along with more pelagic marine waters further offshore, provide additional supporting habitats (for foraging and other maintenance behaviours) for those seabirds that breed at colonies on the north-west Irish Sea's islands and coastal headlands;
- These marine areas are also important for seabirds outside the breeding period;
- This cSPA extends offshore along the coasts of County Louth, Meath and Dublin, and is approximately 2,333km^2 (kilometres squared) in area;
- This cSPA is ecologically connected to and adjoins 12 existing SPAs already designated for the protection of birds along the coast;
- The site is a SPA under Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (hereafter referred to as the Birds Directive), of special conservation interest for the following species:
    - Common Scoter;
    - Red-throated Diver;
    - Great Northern Diver;
    - Fulmar;
    - Manx Shearwater;
    - Shag, Cormorant;
    - Little Gull;
    - Kittiwake;
    - Black-headed Gull;
    - Common Gull;
    - Lesser Black-backed Gull;
    - Herring Gull;
    - Great Black-backed Gull;
    - Little Tern;
    - Roseate Tern;
    - Common Tern;
    - Arctic Tern;
    - Puffin;
    - Razorbill; and
    - Guillemot.
- The breeding seabird species listed for those SPAs, which abut the North-West Irish Sea cSPA are:
    - Fulmar (Lambay Island SPA);
    - Cormorant (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA);
    - Shag (Skerries Island SPA; Lambay Island SPA);
    - Lesser Black-backed Gull (Lambay Island SPA);
    - Herring Gull (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA);
    - Kittiwake (Lambay Island SPA; Ireland's Eye SPA; Howth Head SPA);
    - Roseate Tern (Rockabill SPA);
    - Common Tern (Rockabill SPA;);

  - Arctic Tern (Rockabill SPA);
  - Little Tern (Boyne Estuary SPA);
  - Guillemot (Lambay Island SPA, Ireland's Eye SPA);
  - Razorbill (Lambay Island SPA, Ireland's Eye SPA); and
  - Puffin (Lambay Island SPA).
- The Common Tern population that is listed for the nearby South Dublin Bay and River Tolka Estuary SPA is also likely to use this cSPA as a foraging resource.

The NPWS advise that the Department has been informed by two surveys of the western Irish Sea region in 2016, showing that an estimated 120,232 and 34,626 individual marine birds occurred in this cSPA during autumn and winter, respectively. Those marine bird species whose estimated abundances equalled or exceeded 1% of the total estimated size of the winter assemblage are:

- Red-throated Diver (538);
- Fulmar (506);
- Little Gull (391);
- Kittiwake (944);
- Black-headed Gull (508);
- Common Gull (2,866);
- Herring Gull (6,893);
- Great Black-backed Gull (2,096);
- Razorbill (4,638); and
- Guillemot (13,914).

The estimated 2016 summer abundance of Manx Shearwater in the North West Irish Sea cSPA is 13,010 and is of International importance. The estimated 2016 autumn and winter abundance of Great Northern Diver in the North West Irish Sea cSPA is 248 and 230, respectively and is of International importance. The estimated abundances of Common Scoter over parts of this cSPA can reach significant numbers (e.g. 14,567 in December 2018) which is also of International importance.

The length of the proposed outfall pipeline route (marine section) beyond Velvet Strand to the terminal marine diffuser (4,800m) will be located within the North-West Irish Sea cSPA. This comprises 108.5 hectares (ha) of the red line boundary of the Proposed Project.

The NPWS published detailed Site Specific Conservation Objectives for the North-West Irish Sea cSPA in September 2023. Details of the site, including a Natura 2000 Standard Data Form, will be transmitted to the European Commission when the above statutory processes have been completed. At the time of writing, this has not yet occurred.

In compliance with its legal obligations, Uisce Éireann has treated the cSPA as a fully designated SPA in this assessment.

Other Designated Areas

There have been no other sites designated or proposed as a Ramsar site, Natural Heritage Area or local site of nature conservation value in the Fingal Development Plan 2023-2029 (FCC 2023) contributing to the Ecological Network across Fingal in the period since the 2018 planning application.

11.3.2 Terrestrial Habitats

Summary of Habitats

When comparing the results of the most recent habitat survey in 2022 with the previous habitat survey campaigns presented in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, some changes in habitat type were noted along the Proposed

Project boundary. These changes occurred in the following habitats (refer to Figure 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum for full details):

- Areas of amenity grassland replaced by development or allowed to go unmanaged;
- Areas of arable crops that are now improved agricultural grassland or tilled land;
- Horticultural land that is now arable crops or improved agricultural grassland;
- Immature woodland areas that are now mixed broadleaved woodland; and
- Areas of improved agricultural grassland that have been left unmanaged and have subsequently become rank, meaning that the vegetation has grown without being cut or grazed for some time, and as a result has become tall and tussocky.

Figure 3.1 of Appendix A11.1 in Volume 3A Part B of this EIAR Addendum illustrates, spatially, any changes to terrestrial habitats (in accordance with Fossitt 2000 (The Heritage Council 2000)) along the Proposed Project boundary in the intervening years. Habitat changes within each element of the Proposed Project are as follows:

Proposed Wastewater Treatment Plant

The key habitat changes to the footprint of the proposed WwTP, ancillary Proposed Project elements and proposed temporary construction compounds associated with the proposed WwTP are outlined in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum and described below. The following notable changes to the habitats present in 2017 were recorded:

- The large field of arable crops (BC1) to the south of the proposed WwTP location is now improved agricultural grassland (GA1) (**30** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- A small area of horticultural land (BC2) present in 2017 to the north of the north-east corner of the proposed WwTP is now also improved agricultural grassland (GA1) (**32** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum); and
- A field to the south of the south-east corner of the proposed WwTP which was previously arable crops (BC1), is now currently tilled land (BC3) (**31** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum).

Proposed Abbotstown Pumping Station

The key changes to the proposed Abbotstown pumping station, ancillary Proposed Project elements and proposed temporary construction compounds associated with the proposed Abbotstown pumping station are outlined in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum and described below. The following notable changes to the habitats present in 2017 were recorded:

- This area was previously recorded as arable crops (BC1) in 2017 and now comprises a public park with mown grass paths between unmanaged areas allowed to go rank (GA1) (**5** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum); and
- The immature woodland present in 2017 within the Proposed Project boundary occurring within a Nature Development Area which included a southward extension of woodland beyond the Tolka Valley Regional Park has now matured enough to be classed as mixed broadleaved woodland (WD1) (**6 and 7** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum).

Proposed Orbital Sewer Route – Blanchardstown to Clonshagh

The key changes to the proposed orbital sewer route, ancillary Proposed Project elements and proposed temporary construction compounds associated with the proposed orbital sewer route are outlined in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum and described below. The following notable changes to the habitats present in 2017 were recorded:

- A small section of the western most end of the Proposed Project boundary close to the wooded area, which was previously amenity grassland (GA2), is now buildings / artificial surfaces (**1** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);

- An area of neutral grassland (GS1) occurring within the Connolly Hospital grounds with an unmanaged appearance in 2017 is now half scrub (WS1) (**3** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- As the proposed orbital sewer route will pass through the National Sports Campus towards Cappoge, it will pass through improved grassland fields (GA1). In the 2022 survey it was noted that these fields are now unmanaged and allowed to go rank (**10 and 11** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum), or partially scrub (**9** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum); and
- Intensively farmed enclosures (tillage, horticulture and pasture) and amenity grassland were the dominant habitats approaching Ballymun in 2017. In 2022, this was also the case, with the exception of horticultural land (BC2) which was absent. Other changes here included:
    - Fields of arable crops (BC1) were tilled land (BC3) in 2022 (**15,18,19,20,21** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
    - Tilled land (BC3) is now arable crops (BC1) (**14** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
    - Improved agricultural grassland (GA1) is now allowed to go rank (**16,17** and **22** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
    - There is also an area to the south of Dublin Airport, just after Ballymun, which is now a construction site (**23** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum); and
    - At the section of the Proposed Project boundary along the M1 Motorway, north of the junction with the M50 Motorway, immature woodland (WS2) that was recorded there in 2017 is now (mixed) broadleaved woodland (WD1) (**24** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum), and amenity grassland (GA2) is now dry meadows and grassy verges (GS2) (**25** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum).

Proposed Temporary Construction Compound No. 2

The key changes to the proposed temporary construction compound no.2 are outlined in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum and described below.

- The northern half of proposed temporary construction compound no. 2 was previously recorded as improved grassland (GA1) and horticultural land (BC2) in 2017. This site was recorded in 2022 as tilled land (BC3) and the southern half again recorded as improved agricultural grassland (GA1) (refer to Figure 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum). At the south-west corner of proposed temporary construction compound no. 2, immature woodland (WS2) was previously recorded here in 2017 and was (mixed) broadleaved woodland in 2022 (**13** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum).

Proposed Temporary Construction Compound No. 3

The 2022 survey at proposed temporary construction compound no. 3 recorded no notable changes to the habitats present in 2017. Therefore, this Section of the EIAR in the 2018 planning application remains unchanged.

Proposed Temporary Construction Compound No. 4

The 2022 survey at proposed temporary construction compound no. 4 recorded no notable changes to the habitats present in 2017. Therefore, this Section of the EIAR in the 2018 planning application remains unchanged.

Proposed Outfall Pipeline Route (Land Based Section) (Clonshagh to Baldoyle)

The key changes to the proposed outfall pipeline route (land based section) which runs from the proposed WwTP to the R106 Coast Road are outlined in Table 3.1 of Appendix A11.1 in Volume 3A Part B of this EIAR Addendum and described below. The following notable changes to the habitats present in 2017 were recorded:

- Fields with arable crops (BC1) in 2017, were recorded as tilled land (BC3) in 2022 (**26,27,28** and **31** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of this EIAR Addendum);
- Other fields with arable crops (BC1) in 2017, were now recorded as improved agricultural grassland (GA1) (**30,36,51** and **52** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- Areas of horticultural land (BC2) in 2017, were now recorded as improved agricultural grassland (GA1) (**32,48** and **49** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- Improved agricultural grassland (GA1) in 2017, is unmanaged and allowed to go rank in some areas (**33,34,38** and **50** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- A field of improved agricultural Grassland (GA1) is now tilled land (BC3) (**37** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- An area of amenity grassland (GA2) is now improved agricultural grassland (GA1) that is unmanaged (**40** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- A field of improved agricultural grassland (GA1) now contains a small area of horticultural land (BC2) in the centre (**39** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- Areas of horticultural land (BC2) are now arable crops (BC1) (**41,42** and **43** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- An area of wet grassland (GS4) is now overgrown to scrub (WS1) (**44** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum);
- A field of arable crops (BC1) is now improved agricultural grassland (GA1) / bare ground (ED2) (**46** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum); and
- Another field of arable crops (BC1) is now improved agricultural grassland (GA1) unmanaged (**47** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum).

Proposed Outfall Pipeline Route (Marine Section)

It is still proposed to tunnel the proposed outfall pipeline route (marine section) from the R106 Coast Road, beneath the European sites at Baldoyle Bay, Portmarnock Golf Club and Velvet Strand, to emerge on the seabed approximately 600m offshore, where it will then be dredged to its termination point approximately 1km north-east of Ireland's Eye. The key changes to this area are outlined in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum and described below. The following notable changes to the habitats present in 2017 were recorded:

- The area after the car park on either side of where the pedestrian trails lead onto the boardwalk and focuses the walkers through a narrow access section between the two golf courses was recorded in 2017 as fixed dunes (CD2). This was noted as marram dunes (CD2) in 2022 (**53** in Table 3.1 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum).

In relation to estuarine habitats, Section 9.3.6 of Chapter 9 (Biodiversity (Marine)) in Volume 3 Part A of the EIAR in the 2018 planning application reports a wider extent of Atlantic salt meadow directly above the proposed outfall pipeline route (marine section). Updated baseline surveys show this area to be dominated by *Spartina* swards and only extends into Atlantic salt meadow at the uppermost section of the marsh. There is also a distinct cluster of sea buckthorn (*Hippophae rhamnoidesi*), associated with Dune Scrub and Woodland habitat (CD4), to the south of the golf course which was not previously recorded in the EIAR in the 2018 planning application. Surveys undertaken to support the EIAR in the 2018 planning application documented *Spartina* swards at the lowermost sections of the estuary. The extent of these swards has now increased.

Protected Plant Species

Since the submission of the 2018 planning application, S.I. No. 235/2022 – Flora (Protection) Order 2022 was signed into law in May 2022 and has superseded S.I. No. 356/2015 – Flora (Protection) Order, 2015, which was in force at the time of the 2018 planning application. However, no protected habitats annexed to the Habitats Directive or species of flora protected by Section 21 of Number 39 of 1976 – Wildlife Act, 1976 (as amended) or scheduled to S.I. No. 235/2022 – Flora (Protection) Order 2022 were recorded during the update

surveys within the Proposed Project boundary. As such, there are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

Non-Native Invasive Species

In this Section of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, Giant rhubarb (*Gunnera tinctoria M*.) was noted as being present along the River Tolka, downstream of the proposed orbital sewer route and the proposed Abbotstown pumping station site. However, no IAPS listed on the Third Schedule of the Birds and Natural Habitats Regulations were observed within the Proposed Project boundary.

The surveys undertaken for this Addendum Chapter confirmed the presence of several IAPS, although, in most cases, they largely comprised medium impact species such as sycamore (*Acer pseudoplatanus*), butterfly bush (*Buddliea davidii*) as well as the high impact cherry laurel (*Prunus laurocerasus*). These species which were occasionally noted in hedgerows or on derelict land are not included on the Third Schedule and are therefore not further discussed.

During the 2019 survey, two species of Third Schedule IAPS were recorded as occurring within the vicinity of the Proposed Project (refer to Table 11.4 below, and Figure 3.5 of Appendix A11.1 in Volume 3A Part B in the EIAR Addendum), namely Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzanim*). Only the Giant hogweed was noted from within the redline boundary of the Proposed Project (refer to Table 11.4 and Figure 3.5 of Appendix A11.1 in Volume 3A Part B in the EIAR Addendum), with the Japanese knotweed noted in an offline location.

Invasive species recorded during the updated 2019 surveys are as follows:

- A single clump of Giant hogweed, a phytotoxic plant, was identified from within the Proposed Project Boundary, near the National Car Test (NCT) centre at the western end of derelict land along a Poplar treeline. This species is directly on the Proposed Project centreline and is actively being managed annually under a treatment regime commissioned by Uisce Éireann in 2020;
- Two areas of Japanese knotweed were noted from the surveys, both towards the eastern end of the Proposed Project boundary near Baldoyle. The first is located on the seaward side of the R106 Road. It is believed that the patch is being managed, as evidenced by the presence of signage;
- A second treated patch was recorded on the Moyne Road (R123 Road), on the opposite side of the road from a halting site, west of the proposed access route to proposed temporary construction compound no. 9. The vegetation has previously been subject to chemical treatment as evidenced by dead canes. However, fresh growth was noted in the area. Although offline, this IAPS is adjacent to the access point to proposed temporary construction compound no. 9; and
- The coastal common cordgrass *Spartina* sp. which is well established along both sides of Baldoyle Estuary on intertidal mudflats and extending into saltmarsh vegetation.

In the follow-on survey in 2023, the Japanese knotweed recorded in 2019 was not recorded at the two locations. The treatment for the Japanese knotweed must have been effective. However, the Giant hogweed was still present at the location where it was noted in 2019. During the aquatic surveys in 2023, a stand of Japanese knotweed was recorded near the proposed WwTP site, along the left bank of the River Mayne (refer to Table 11.4 below, and Figure 3-5 of Appendix A11.1 in Volume 3A Part B in the EIAR Addendum**)**. Additionally, during the 2023 badger survey, a large stand of Bohemian knotweed was recorded along the proposed orbital sewer route at approximately Chainage 10,300m (refer to Table 11.4 below, and Figure 3-5 of Appendix A11.1 in Volume 3A Part B in the EIAR Addendum). This is regarded as a hybrid of a third schedule species.

Table 11.4: IAPS Survey Results 2019-2023

Scientific Name	Common Name	Grid Ref.	Within Proposed Project Corridor	Designation	Comment
*Heracleum mantegazzianum**	Giant Hogweed	0715206 0741438	Online	Third schedule IAPS	Derelict ground
Reynoutria japonica	Japanese Knotweed	0723570 0741495	Offline	Third schedule IAPS	Moyne Road (R123 Road), near the proposed access route to proposed temporary construction compound no. 9. Currently being treated. (Not present in 2023).
Reynoutria japonica	Japanese Knotweed	0723653 0742292	Offline	Third schedule IAPS	On seaward side of R106 Road. Currently being treated. (Not present in 2023).
Reynoutria japonica	Japanese Knotweed	0719736 0741220	Offline	Third schedule IAPS	Left bank of River Mayne (discovered in 2023 only).
Spartina sp.	Common Cordgrass	N/A	Online, but unaffected	Third schedule IAPS	Intertidal mudflats.
Fallopia × *bohemica*	Bohemian Knotweed	0704592 0771565	Offline	Third schedule IAPS	Eastern edge of field 185m east of Chainage 10,300m (discovered in 2023 only).

11.3.3 Bats

In the previous survey campaigns presented in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, the ecology team found a number of trees with bat roosting suitability within the hedgerows of improved grassland and arable land with potential roosting opportunities.

A 2022 preliminary roost assessment of trees within the redline boundary of the Proposed Project recorded 102 trees from ground level with low to high roost potential. Of these, 13 were recorded as moderate suitability and two as high suitability (refer to Appendix A11.1 in Volume 3A Part B of this EIAR Addendum). The majority of these trees were located in the wooded areas west and east of Connolly Hospital Blanchardstown. Others were recorded in hedgerows or treelines along the route of the Proposed Project heading east.

A subsequent tree climbing survey in November and December 2022 confirmed that five trees were of low bat roosting suitability, eight of moderate bat roosting suitability and two of high bat roosting suitability.

For bat activity surveys, Nathusius' pipistrelle was recorded in the 2022 surveys and this species was not recorded in the previous survey campaigns. Brown long-eared bat was recorded at Blanchardstown, Abbotstown and Kinsealy in the surveys that informed the EIAR in the 2018 planning application. Whiskered / Brandt's bat was recorded at Blanchardstown also. These species were not recorded in the update surveys.

No roosting bats were found in any tree in the 2022 surveys (refer to Appendix C through to Appendix J of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum for details of the bat surveys undertaken between 2020 and 2022).

There is no significant change in the general assemblage of bats active along the route of the Proposed Project, and overall, there is generally low quality habitat for bat activity, considering the urban features of the landscape including lighting, major infrastructure (M50 Motorway etc.) and generally low quality of habitat (e.g. arable and improved grassland). It therefore remains the conclusion of the appraisal on roosting bats that no confirmed bat roosts are known to occur along the route of the Proposed Project (refer to Appendix A11.1 in Volume 3A Part B of the EIAR Addendum for full details).

11.3.4 Mammals (Other than Bats)

Badger

Due to the high level of persecution of badger and legal protection afforded to this species (badger is listed in the Fifth Schedule of the Wildlife Act, 1976 (as amended) and protected under Section 23), information pertaining to the location of setts is treated as confidential. For this reason, figures illustrating and identifying the location of badger setts are not provided with this Addendum Chapter. This information is contained within a separate confidential report which has been provided to ABP and the DAU of the Department of Housing, Local Government and Heritage.

Eight badger setts (BS1, BS2, BS3, BS4, BS5, BS6, BS9 and BS10) were recorded within 50m of the Proposed Project boundary in 2020. Two more (BS7 and BS8) were recorded between 50m and 100m from the Proposed Project boundary in 2020. Therefore, six additional setts were recorded in 2020 and are new setts and represent a material change. Ten setts were recorded in the EIAR in the 2018 planning application, of which six were not re-recorded in 2020. It is not considered that such fluctuations in sett activity, particularly for setts which are not main setts, is unusual, given that badgers are mobile with sett activity able to change during and between years.

In 2023, 18 badger setts were identified. Two setts (S5 and S17) were identified within the redline boundary of the Proposed Project. Thirteen badger setts (S2, S3, S4, S6, S7, S8, S9, S11, S12, S13, S14, S16, S18) were identified outside of the redline boundary but within 50m of the redline boundary of the Proposed Project. Another three setts (S1, S10 and S15) were identified outside of the redline boundary but within the 50m to 100m buffer of the redline boundary of the Proposed Project. The location of these setts and further details are provided in the Confidential Badger Report and their locations are not cross referenced here.

Four of the 18 setts recorded in 2023 [(S3 (BS1), S6 (BS2), S8 (BS3), and S9 (BS4)] were also recorded in the 2020 survey. Therefore, 14 new setts recorded in 2023 are a material change. Eleven of the setts recorded in 2017 and 2020 were not recorded in 2023. Again, it is not considered that such fluctuations in sett activity, particularly for setts which are not main setts, is unusual given that badgers are mobile with sett activity able to change during and between years.

In summary, 20 badger setts have been identified through survey in 2020 and 2023 that were not previously recorded in the EIAR in the 2018 planning application. Of these, two setts are located within the redline boundary of the Proposed Project.

In 2020, other badger evidence such as snuffle holes, excavations, trails, prints, and latrines were recorded either close to or within the redline boundary of Proposed Project (refer to Table 3 3 of Appendix A11.1 in Volume 3A Part B of this EIAR Addendum). The badger evidence is also mapped in GIS and shown in Figure B-1 to Figure B-7 of Appendix B to Appendix A11.1 in Volume 3A Part B of this EIAR Addendum. The majority of this evidence was recorded in the eastern section of the Proposed Project route.

In 2023, other badger evidence such as snuffle holes, hair, trails, prints, and latrines were recorded either close to or within the footprint of the Proposed Project Boundary (refer to Table D1 of Appendix D to Appendix A11.1 in Volume 3A Part B of this EIAR Addendum). The badger evidence is also mapped in GIS and shown in Figure C-1 to Figure C-8 of Appendix C to Appendix A11.1 in Volume 3A Part B of this EIAR Addendum. The majority of this evidence was recorded in the western section of the Proposed Project route.

Table 11.5: Badger Setts Occurring Within the Proposed Project Study Area

Sett	Distance to Proposed Project	Status
S1 (2023)	67m east of construction corridor	Eleven entrances. Main sett in use.
S2 (2023)	21m south-west of construction corridor	Four entrance sett, disused subsidiary sett
BS1 (2020) S3 (2023)	26m south-west of proposed construction corridor of proposed wayleave.	Three entrance sett, disused subsidiary sett
S4 (2023)	8m south of construction corridor	Two entrance sett, partially used outlier sett
S5 (2023)	Within proposed construction corridor	Single entrance sett, disused outlier sett
BS2 (2020) S6 (2023)	30m south of proposed construction corridor	Single entrance partially used outlier sett
S7 (2023)	37m south of proposed construction corridor	Two entrance sett, disused outlier sett
BS3 (2020) S8 (2023)	25m south of proposed construction corridor	Thirteen entrance sett, with one active entrance. Possible previous main sett but field evidence not currently indicative of use as a main sett
BS4 (2020) S9 (2023)	20m south-east of proposed construction corridor	Three entrance sett, well used subsidiary sett
BS5 (2020)	15m north of proposed construction corridor.	Partially used outlier, single entrance sett. Not recorded in 2023.
BS6 (2020)	3m north-west of the proposed construction corridor.	Disused outlier, two entrances. Not recorded in 2023.
BS7 (2020)	90m north-west of the proposed construction corridor.	Disused outlier, single entrance.
BS8 (2020)	70m north-west of the proposed construction corridor.	Disused outlier, single entrance.
BS9 (2020)	38m west-north-west of the proposed construction corridor.	Disused outlier, single entrance.
BS10 (2020)	6m east of the proposed construction corridor.	Disused outlier, single entrance.
S10 (2023)	55m south of proposed construction corridor	Disused outlier, single entrance.
S11 (2023)	10m north of construction corridor	Two entrance sett, partially used outlier sett.
S12 (2023)	13m west of construction corridor	Two entrance sett, partially used outlier sett.
S13 (2023)	53m west of proposed construction corridor	Four entrance sett, partially used outlier sett.
S14 (2023)	68m north of proposed construction corridor	Six entrance main sett
S15 (2023)	51m west of proposed construction corridor	Single entrance, disused outlier sett
S16 (2023)	2m from proposed construction corridor	Two entrance, used outlier sett
S17 (2023)	Within proposed construction corridor	Single entrance, partially used outlier sett.
S18 (2023)	6m from proposed construction corridor	Two entrance, partially used outlier sett.

Other Mammal Structures and Evidence of Other Mammals

No field signs of otter or other small mammals were recorded in the update surveys.

11.3.5 Farmland Birds

The bird species present within the 250m buffer of the Proposed Project boundary during the update surveys remain typical common birds associated with highly modified agricultural landscapes, with open fields, hedgerows, treelines, pockets of woodland, drainage ditches, ponds and watercourses. The species recorded therefore continue to be entirely in keeping with what would be anticipated given the land uses and habitats (including the habitat updates referred to in Section 11.3.2).

In terms of breeding birds, the surveys for this EIAR Addendum recorded two occurrences of little egret (a Birds Directive Annex 1 species) in 2023. One sighting was of an individual on the western bank of Baldoyle Estuary in April, and another sighting of a bird flying south over the estuary in May. A single occurrence of an Annex 1 species (kingfisher) was recorded on the River Tolka, to the west of Abbotstown in the 2018 planning application. Kingfisher were not recorded during the update surveys.

Other breeding species of note, in conservation terms, are those listed as Red or Amber Birds of Conservation Concern in Ireland (BOCCIs). Since the submission of the EIAR in the 2018 planning application, an updated BOCC assessment has been published (Gilbert *et al.* 2021) and it has therefore been used for the assessment in this EIAR Addendum. In the EIAR in the 2018 planning application, seven species were recorded that were Red-listed at the time (grey wagtail, yellowhammer, lapwing and meadow pipit as confirmed, probable or possible breeding species, and black-headed gull, herring gull and curlew as over-flying, loafing or foraging).

The surveys undertaken between 2021 and 2023 also recorded eight species that are Red-listed (Gilbert *et al.* 2021), namely grey wagtail, yellowhammer, meadow pipit (as confirmed, probable or possible breeding species) and stock dove, kestrel, razorbill, snipe and oystercatcher (as over-flying, loafing of foraging). Two curlew were heard calling (but not seen) in an area to the east of the Baldoyle Estuary in May 2023. Small numbers of redshank were recorded along the eastern shore of the estuary in April 2023. Black-headed gull and herring gull were both recorded in the surveys undertaken between 2021 and 2023, but these species are now categorised as Amber-listed, rather than Red-listed (as they previously were at the time of the submission of the EIAR in the 2018 planning application). Lapwing, which were recorded as part of the baseline in the EIAR in the 2018 planning application, were not present during the surveys undertaken between 2021 and 2023.

Twenty-two Amber-listed species were recorded in the EIAR in the 2018 planning application during the breeding season. The Amber-listed farmland, raptor and wildfowl species recorded between 2021 and 2023 are comparable, as would be expected, given the relative consistency of habitats between these periods. The breeding bird assemblage present therefore remains an ecological feature of site level importance and remains unchanged from that reported in the EIAR in the 2018 planning application.

As was reported in the EIAR in the 2018 planning application, there were no significant agglomerations of winter birds, such as geese or other wildfowl, or species reliant on farmland. The Proposed Project study area is therefore of no more than local importance for wintering birds.

The proposed WwTP site will have the largest permanent footprint of all elements of the Proposed Project, and it is considered helpful to provide a more detailed breakdown of the Red and Amber-listed breeding birds recorded for this part of the Proposed Project, using the 2021 breeding, 2023 breeding and 2022 / 2023 winter data (refer to Appendix A11.2 in Volume 3A Part B of the EIAR Addendum for full details).

11.3.6 Other Species Groups

Smooth Newt

At Coldwinters, smooth newts were found in water bodies 1, 7, 11 and 16 in both 2017 and 2021. Newts were found in water body 15 in 2017 but not in 2021. However, two water bodies (4 and 8) had newts in them in 2021 which did not in 2017. In 2023, at Site 1, smooth newts were found in water bodies 1, 3, 4, 6, 7, 8, 9, 11, 12, 14a, 14c and 15. Full survey results are presented in Section 3.2.3 of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum. Survey locations are illustrated in Appendix K of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum.

11.3.7 Summary Valuation of Terrestrial Biodiversity Features

Table 11.6 summarises the terrestrial biodiversity features recorded along the Proposed Project and their value at a geographic scale, as presented in this Section of the EIAR in the 2018 planning application, and as evaluated now in the EIAR Addendum, following the completion of up-to-date baseline surveys. The value of features previously assigned remains the same, as set out in Table 11.6. For the avoidance of doubt, this evaluation takes into account the additional trees with PRFs, badger setts, newt survey results and IAPS survey results.

Table 11.6: Terrestrial Biodiversity Features

Feature	Value (2018 EIAR)	Value (2023 EIAR Addendum)
Baldoyle Bay SAC, SPA	International importance	International importance ** No change*
Dublin Bay UNESCO Biosphere Reserve	International importance	International importance ** No change*
Baldoyle Bay proposed NHA	National importance	National importance ** No change*
Abbotstown NDA	County importance	County importance ** No change*
Silloge Park Golf Club NDA	County importance	County importance ** No change*
Baldoyle Bay Ecological Buffer Zone (EBZ)	County importance	County importance ** No change*
Habitats	Of varying local importance, from lower to higher value	Of varying local importance, from lower to higher value ** No change in overall value of habitats under the footprint of development of the Proposed Project*
Terrestrial non-native invasive species	Do not occur	Local importance (lower value) ** Change in value as the feature is now present but was not before*
Mammals (other than bats)	Local importance (higher value)	Local importance (higher value) ** Only disused and outlier setts within the construction corridor (as before)*
Bats	Local importance (higher value)	Local importance (higher value) ** Similar foraging assemblage, and no confirmed roosts (as before)*
Farmland birds (proposed pipeline corridor)	Local importance (lower value)	Local importance (lower value) ** No change. Similar assemblage of species recorded throughout the Proposed Project*
Farmland birds (proposed WwTP)	Local importance (higher value)	Local importance (higher value) ** No change. Similar assemblage of species recorded throughout the proposed WwTP site*
Smooth newts	Local importance (higher value)	Local importance (higher value) ** No change. Same overall outcome as previous surveys in that newts were recorded at multiple ponds in one site only*

11.4 Impact of the Proposed Project on Terrestrial Biodiversity – Construction Phase

The updated Proposed Project elements, as outlined in Section 11.1, and the changes to the baseline environment outlined in Section 11.3, have been considered against the previous assessment of potential Construction Phase impacts in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application.

Due to the passage of time since the submission of the 2018 planning application, the proposed construction programme was reviewed and revised. An updated timeline including individual activities is provided in Chapter 4A (Description of the Proposed Project) in Volume 2A Part A of the EIAR Addendum. The total Construction Phase will remain as approximately 48 months, including 12 months of commissioning. While there are two new elements to the Proposed Project, they are both within the existing planning application boundary and there are no changes to the construction methodologies previously outlined in the 2018 planning application.

The Construction Phase impacts of the Proposed Project on terrestrial biodiversity features remain largely the same as reported Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, with some exceptions, as outlined in the following sections.

11.4.1 Designated Sites

European Sites

The length of the proposed outfall pipeline route (marine section) beyond Velvet Strand to the terminal marine diffuser (4,800m) will be located within the North-West Irish Sea cSPA. This comprises 108.5ha of the red line boundary of the Proposed Project. Chapter 10A (Biodiversity (Marine Ornithology)) in Volume 3A Part A of this EIAR Addendum sets out an impact assessment of the Construction Phase of the Proposed Project on this candidate European site, as its special conservation interests correspond to ecological features falling under the remit of Chapter 10A (Biodiversity (Marine Ornithology)) in Volume 3A Part A of this EIAR Addendum.

There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

Other Designated Areas

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.4.2 Terrestrial Habitats

A Third Schedule IAPS (Giant hogweed) was noted as a single clump growing within the proposed orbital sewer route boundary, near the Northpoint NCT Centre at the western end of derelict land. Uisce Éireann is proactively managing this IAPS annually under a treatment regime commissioned in 2020 and ongoing annually. If not managed appropriately at the Construction Phase, spread of this plant species could result in an offence under domestic legislation being committed. In accordance with Table 11.7 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, such an outcome could result in a moderate adverse effect. The mitigation and monitoring measures proposed in the EIAR in the 2018 planning application will also be required here.

There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application, as supplemented by the Response to a Request for Further Information submitted to ABP in 2019 and the responses to submissions delivered at the Oral Hearing convened by ABP in 2019.

11.4.3 Bats

More trees have now been identified along the proposed orbital sewer route at Blanchardstown, Dubber and Clonshagh, as potentially accommodating bat roosting features within them. Eighty-seven trees were categorised as having low potential. Thirteen trees were categorised as having moderate potential and two trees were categorised as having high potential. The locations of these trees are listed in Table 3-5 of the Terrestrial Baseline Survey Report and discussed in more detail in Appendix K '*Potential Bat Roost Features in Trees surveyed along the Proposed Project Boundary*' and Appendix L '*Tree Climbing PRF Inspection Survey*' of Appendix A11.1 in Volume 3A Part B of the EIAR Addendum. Following a tree climbing survey of the 15 moderate and high potential trees, two were considered unsuitable and five were downgraded to low potential. This results in eight trees now categorised as having moderate potential and one tree now categorised as having high potential.

The possibility of bat roosts being present in trees to be felled was also identified in the EIAR in the 2018 planning application. It was stated in Section 11.3.3 that '*a number of mature trees were identified within the Proposed Project study area that are of low-moderate potential for use by bats as roosting or resting places*' and Section 11.4.3 that '*there is potential for significant direct adverse impacts to individual bats as a result of the clearance of mature broadleaf trees during the Construction Phase. This would be significant at the local level*'. This magnitude of effect and level of significance previously stated remains the same.

There are therefore no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.4.4 Mammals (other than Bats)

Eighteen badger setts have now been identified within 100m of the Proposed Project boundary. In the EIAR in the 2018 planning application, five badger setts required closure (two temporarily and three permanently). All were outlier setts and none were main breeding setts. Following update surveys, six badger setts now require closure (four temporarily [BS6, BS10, S16 and S18] and two permanently [S5 and S17]). All are outlier setts and none of these setts have been characterised as a main breeding sett or an annex sett to a main breeding sett. A further eight badger setts [S2, S3, S4, S8, S9, S11, S12 and BS5] require protection and monitoring during construction as they are sufficiently close to the proposed construction corridor to require exclusion fencing to be erected to protect them throughout Construction Phase.

As was outlined in the EIAR in the 2018 planning application, the affected badger territories are enclosed on the south-east by the M50 Motorway. As the Proposed Project skirts the M50 Motorway, only a fraction of their territory will be affected by construction of the Proposed Project.

All other potential effects described in the EIAR in the 2018 planning application remain as described therein. A Moderate Adverse and Significant impact is predicted on badger. There are no further changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.4.5 Farmland Birds

The magnitudes of impact on breeding and wintering birds previously stated in this Section of the EIAR in the 2018 planning application remain the same.

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application, as supplemented by the Response to a Request for Further Information submitted to ABP in 2019 and the responses to submissions delivered at the Oral Hearing convened by ABP in 2019.

11.4.6 Other Species Groups

Smooth Newt

Smooth newt remains a protected species present at the Coldwinters site. Newts were recorded in 12 water bodies. As a result of findings of the 2021 and 2023 surveys, newts have been recorded in more water bodies at the Coldwinters site than that reported in the 2018 EIAR, but four of these water bodies (2, 3, 10 and 13) had dried up during the latter part of the most recent survey campaign of 2023.

The core breeding water bodies (including the largest water body (1) noted to retain water year-round) will be avoided. No significant impact is predicted upon the local population of this protected species as a result of the Proposed Project. However, in the absence of any special measures taken to avoid mortality of any individuals of a protected species, these ponds used by smooth newt (ascribed a local value) would be disturbed or destroyed. This was reported in the EIAR in the 2018 planning application as a Moderate Adverse and Significant impact. Magnitudes and significance of impact previously stated in the EIAR in the 2018 planning application remain the same.

There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.5 Impact of the Proposed Project on Terrestrial Biodiversity – Operational Phase

The updated Proposed Project elements, as outlined in Section 11.1, and the changes to the baseline environment outlined in Section 11.3, have been considered against the previous assessment of potential Operational Phase impacts on terrestrial biodiversity in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application.

The impacts of the Operational Phase of the Proposed Project on terrestrial biodiversity features remain the same as reported Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application.

The proposed River Mayne Culvert Extension will not result in any new or additional Operational Phase effects on terrestrial biodiversity to those already captured in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application.

The proposed Ultraviolet (UV) Treatment will also not result in any new or additional Operational Phase effects on terrestrial biodiversity to those already captured in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application.

11.5.1 Designated Sites

European Sites

The length of the proposed outfall pipeline route (marine section) beyond Velvet Strand to the terminal marine diffuser (4,800m) will be located within the North-West Irish Sea cSPA. This comprises 108.5ha of the red line boundary of the Proposed Project. Chapter 10A (Biodiversity (Marine Ornithology)) in Volume 3A Part A of the EIAR Addendum sets out an impact assessment of the Operational Phase of the Proposed Project on this candidate European site, as its special conservation interests correspond to ecological features falling under the remit of Chapter 10A (Biodiversity (Marine Ornithology)) in Volume 3A Part A of the EIAR Addendum.

There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

Other Designated Areas

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.5.2 Terrestrial Habitats

All Elements of the Proposed Project

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.5.3 Bats

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.5.4 Mammals (other than Bats)

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.5.5 Farmland Birds

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.5.6 Other Species Groups

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.6 ‘Do Nothing’ Impact on Terrestrial Biodiversity

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application, as in the absence of the Proposed Project, terrestrial flora and fauna would persist under its current land use and management regimes.

11.7 Mitigation Measures – Terrestrial Biodiversity

Based on the comparative assessment of impacts on terrestrial biodiversity identified in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application and the present day, the previously proposed mitigation measures still remain valid and applicable. Additional measures are now proposed following this Addendum assessment, as outlined in the following sections.

11.7.1 Overarching Measures

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.7.2 Designated Sites

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.7.3 Terrestrial Habitats

As discussed under Section 11.2.2, a Biodiversity Assessment (Appendix 2 of the Addendum Planning Report (included as a standalone document in the Addendum pack)) was completed. The Biodiversity Assessment includes both a quantitative and qualitative assessment of the Proposed Project with respect to the green infrastructure and biodiversity that the Proposed Project will deliver and has identified, as necessary, the mechanisms to secure this through the planning process for the Proposed Project. The following measures will be implemented in full by the appointed contractor and Uisce Éireann, as applicable, to secure the outcome of the quantitative assessment:

- All habitats that are within the redline boundary and are to be retained during the Construction Phase (including hedgerows, drainage ditches and other water features at the edge of the redline boundary) will be protected in advance of, and during construction, to avoid any incursion into them by personnel, construction plant or materials and to avoid and minimise any changes to the quality of those habitats (e.g., through changes in water quality such as with respect to silts, hydrocarbons or other pollutants). A specification for these measures will be prepared, implemented and maintained during the Construction Phase by the appointed contractor and the appointed Ecological Clerk of Works (EcCoW), and will include the specific areas for the proposed orbital sewer route, proposed North Fringe Sewer (NFS) diversion sewer and the proposed outfall pipeline route from the proposed WwTP to proposed temporary construction compound no. 10 at Portmarnock (collectively referred to as the proposed pipeline route in the Biodiversity Assessment) that have been identified in the Biodiversity Assessment to be protected to limit clearance of existing habitats;
- A Biodiversity Implementation and Monitoring Plan will be prepared by the appointed contractor and the EcCoW, in consultation with Uisce Éireann, prior to the commencement of construction and implemented thereafter. The Biodiversity Implementation and Monitoring Plan will be required to include the following:
    - Measures to secure the delivery of the area and linear measurements of habitats identified to be delivered post-development;
    - Measures, within areas retained in Uisce Éireann's control, to ensure the post-development habitat values attributed to each habitat are at least achieved within five to 10 years post habitat creation / restoration following completion of the Construction Phase. This will include the use of nutrient poor soil (subsoils) in the creation of dry meadow grasslands. Reference should be made to Uisce Éireann's Biodiversity Guidance for Irish Water Developments (IW-AMT-GL-021) (Uisce Éireann 2021b);
    - Operational Phase habitat management measures within areas retained in Uisce Éireann's control following completion of the Construction Phase, which will include a schedule of requirements for the management of woodland, hedgerow and grasslands consistent with Uisce Éireann's BAP (Uisce Éireann 2021a); and
    - Operational Phase habitat monitoring measures within areas retained in Uisce Éireann's control to ensure that the Operational Phase management is delivering, as a minimum, the post-development five to 10 year habitat values assigned in this assessment. This will involve

habitat surveys of all created, reinstated and enhanced habitats within Uisce Éireann's control in Year 1, 3, 5, 8 and 10 of the Operational Phase.

All measures will include specifications for the creation and restoration of all habitats identified, cross-referencing, as appropriate, to the relevant Landscape Management Plans which will be prepared and implemented by the appointed contractor and will align with the Landscape Mitigation Plans included in the EIAR Addendum (refer to Figure 12.1 and Figure 12.2 in Volume 5A of the EIAR Addendum for the proposed WwTP and proposed Abbotstown pumping station plans, respectively). The landscaping will include:

- Immature woodland and dry meadows, and the creation of hedgerows along the access road boundaries within the proposed Abbotstown pumping station site; and
- The creation of immature woodland, dry meadows and scrub within the site, the creation of a drainage ditch along the south boundary of the site, and the creation / protection of hedgerows along the access / egress roads at the proposed WwTP site.

In addition to the mitigation measures identified within the original EIAR in the 2018 planning application, the EIAR Addendum, and those listed above, the Proposed Project will deliver the following qualitative measures to ensure that positive green infrastructure and biodiversity gains are delivered alongside the measures outlined above:

- Prior to construction / removal of hedgerows, the appointed EcCoW will be required to identify hedgerows of greater value that are suitable for transplanting or use in restoration, and / or any salvageable biodiversity materials which could improve the quality of any restored hedgerows (in accordance with relevant methodology to be identified and defined by the EcCoW); and
- A specification for the restoration / re-planting of all hedgerows to be temporarily removed or affected will be prepared by the appointed EcCoW to ensure that any restoration or new planting of hedgerows seeks to increase species diversity of shrubby / woody species and also increase structural width and height. The new planting will, as a minimum, seek to use staggered double-row planting using at least five woody species of native origin and provenance. At least one standard tree (rather than whips) of native origin and provenance will be planted for every 250m of hedgerows restored / planted. Reference should be made to Uisce Éireann's Biodiversity Guidance for Irish Water Developments (IW-AMT-GL-021) (Uisce Éireann 2021b).

At the 2019 Oral Hearing, Uisce Éireann made an additional commitment to implement habitat management measures at proposed temporary construction compound no. 10 during reinstatement of the site for the purpose of biodiversity gain. The amenity grassland at proposed temporary construction compound no. 10 will be removed during the Construction Phase, and rather than restoring amenity grassland, which is of little biodiversity value, measures will be put in place to reinstate the site so that it can be managed positively by FCC for dune habitat in the long term. The appointed contractor will implement and maintain the dune habitat during construction and testing phases in line with the Construction Phase Biodiversity and Implementation and Monitoring Plan that will be prepared by the appointed contractor and the EcCoW, in consultation with Uisce Éireann, prior to the commencement of construction. The site will then be handed back to FCC to maintain following the completion of the Construction Phase. As the entity with responsibility for future management of the site, it will be a matter for FCC to identify its long term objective(s) for the site, how it will function and what role it will perform in light of the policies and objectives contained in the Draft Fingal BAP (once adopted) (FCC 2022) and the FDP (FCC 2023) for the Fingal administrative area and any relevant Local Area Plan relating to it.

For the presence of a Third Schedule IAPS within the construction corridor of the Proposed Project at the Northpoint NCT Centre, an Invasive Species Management Plan (ISMP) will be required to prevent their spread during the Construction Phase. The ISMP can be secured by way of an amendment to wording of Condition 10 of the (now quashed) 2019 planning permission.

11.7.4 Bats

The Biodiversity Assessment (Appendix 2 of the Addendum Planning Report) outlines enhancement measures that will be implemented. The measures relating to bats are as follows:

- Artificial bat roosting structures will be erected at the end of the Construction Phase and in suitable locations to be determined by the appointed Ecological Clerk of Works (EcCoW).

Suitable locations will be determined based on locations available to erect the structures safely, and in the long-term, proximity to artificial lighting (no or little artificial light spillage areas to be favoured) and connectivity to optimal bat foraging and commuting habitats. Suitable locations could include existing mature trees or built-in to the fabric of new built structures. In the absence of suitable locations, the bat roosting structures will be pole-mounted; and

- A minimum of eight bat boxes will be erected at each of the proposed WwTP and Abbotstown pumping station sites, respectively. The bat boxes will be Schwegler-type (woodcrete) boxes (or similar) and a range of different type boxes (e.g. 2F, 1FF, 3FF, 1FW, 1FE and 1FTH) will be provided. The use of a range of boxes will provide additional roosting opportunities for a range of bat species.

There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.7.5 Mammals (Other than Bats)

The EIAR in the 2018 planning application required a wildlife disturbance licence to be obtained from the NPWS for the exclusion and closure of five badger setts (two temporarily and three permanently). Up-to-date surveys now require a wildlife disturbance licence to be obtained from the NPWS for the exclusion and closure of six badger setts (four temporarily [BS6, BS10, S16 and S18] and two permanently [S5 and S17] (refer to Table 11.7).

The four setts to be closed temporarily during the Construction Phase will require an Ecological Exclusion Zone to ensure their protection during the Construction Phase. A further eight setts in close proximity to the proposed construction corridor (S2, S3, S4, S8, S9, S11, S12 and BS5) will also require an Ecological Exclusion Zone to ensure their protection during the Construction Phase. All setts to be closed or fenced for their protection, as identified in Table 11.7, will be monitored by the ecological clerk of works appointed during the Construction Phase.

Table 11.7: Badger Setts Requiring Mitigation Measures Within the Proposed Project Study Area

Sett	Distance to Proposed Project	Status	Requires Mitigation?
S2 (2023)	21m south-west of construction corridor	Four entrance, disused subsidiary sett	Protection and monitoring
BS1 (2020) S3 (2023)	26m south-west of proposed construction corridor of proposed wayleave.	Three entrance, disused subsidiary sett	Protection and monitoring
S4 (2023)	8m south of construction corridor	Two entrance, partially used outlier sett.	Protection and monitoring
S5 (2023)	Within proposed construction corridor	Single entrance, disused outlier sett.	Closure
BS3 (2020) S8 (2023)	25m south of proposed construction corridor	Thirteen entrance sett with one active entrance. Possible previous main sett but field evidence not currently indicative of use as a main sett.	Protection and monitoring
BS4 (2020) S9 (2023)	20m south-east of proposed construction corridor	Three entrance, well used subsidiary sett.	Protection and monitoring
BS5 (2020)	15m north of proposed construction corridor.	Partially used outlier, single entrance. Not recorded in 2023.	Protection and monitoring
BS6 (2020)	3m north-west of the proposed construction corridor.	Disused outlier, two entrances. Not recorded in 2023.	Temporary closure
BS10 (2020)	6m east of the proposed construction corridor.	Disused outlier, single entrance.	Temporary closure
S11 (2023)	10m north of construction corridor	Two entrance, partially used outlier sett	Protection and monitoring
S12 (2023)	13m west of construction corridor	Two entrance, partially used outlier sett	Protection and monitoring
S16 (2023)	2m from proposed construction corridor	Two entrance, used outlier sett	Temporary closure
S17 (2023)	Within proposed construction corridor	Single entrance, partially used outlier sett	Closure
S18 (2023)	6m from proposed construction corridor	Two entrance, partially used outlier sett	Temporary closure

All other measures for badger proposed in the EIAR in the 2018 planning application still remain valid and applicable.

11.7.6 Farmland Birds

The Biodiversity Assessment (Appendix 2 of the Addendum Planning Report) outlines enhancement measures that will be implemented. The measures relating to birds are as follows:

- Artificial bird nesting structures will be erected at the end of the Construction Phase in suitable locations, as determined by the appointed EcCoW. Suitable locations will be determined based on locations available to erect the structures safely, and in the long-term, proximity to artificial lighting (no or little artificial light spillage areas to be favoured) and connectivity to optimal nesting and foraging habitats. Suitable locations could include existing mature trees or built-in to the fabric of new built structures. In the absence of suitable locations, the bird nesting structures will be pole-mounted; and
- A minimum of eight bird boxes will be erected at each of the proposed WwTP and Abbotstown pumping station sites, respectively. The bird boxes will be Schwegler-type (woodcrete) boxes (or similar) and a range of different type boxes (e.g. 1B, 2H, 17C) will be provided. The use of a range of boxes will provide additional nesting opportunities for a range of bird species.

There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.7.7 Other Species Groups

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.8 Residual Impacts – Terrestrial Biodiversity

The terrestrial biodiversity baseline has been brought up-to-date, and the previously predicted magnitude and significance of impacts have been reviewed. A new Biodiversity Assessment included as Appendix 2 to the Addendum Planning Report (included as a standalone document in the Addendum) includes both quantitative and qualitative measures to achieve biodiversity gain.

There have been no new adverse effect pathways identified in the EIAR Addendum assessment or effects of a greater magnitude or greater adverse significance identified in the EIAR Addendum assessment, in relation to terrestrial biodiversity, when compared to the findings of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic) in Volume 3 Part A of the EIAR in the 2018 planning application.

The mitigation measures originally proposed remain valid and appropriate, and when the additional mitigation measures outlined in Section 11.7 above are implemented, the residual impact on the following categories will be improved compared to those presented in this Section of the EIAR in the 2018 planning application:

- The ‘(Mixed) broadleaved woodland, scrub, hedgerows and treelines’ category, in terms of habitat loss, deterioration and fragmentation during the Operational Phase, will be improved from ‘no impact’ (as reported in Table 11.16 in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application) to ‘minor beneficial’ (in accordance with the classification of magnitudes of effect outlined in Table 11.7 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application);
- The 'fixed dune habitat at Portmarnock’ category, in terms of habitat loss, deterioration and fragmentation during the Construction Phase, will be improved from ‘no impact’ (as reported in Table 11.16 in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application) to ‘minor beneficial’ (in accordance with the classification of magnitudes of effect outlined in Table 11.7 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application); and
- The 'fixed dune habitat at Portmarnock’ category, in terms of habitat loss, deterioration and fragmentation during the Operational Phase, will be improved from ‘no impact’ (as reported in

Table 11.16 in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application) to 'minor beneficial' (in accordance with the classification of magnitudes of effect outlined in Table 11.7 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application).

The remaining residual impacts outlined in this Section of the EIAR in the 2018 planning application remain unchanged.

11.8.1 Difficulties Encountered in Compiling Required Information

Baseline habitat surveys can be completed at any time of year, however, optimally during the Spring and Summer. There have been no difficulties encountered in completing the update survey campaigns that have informed this Chapter of the EIAR Addendum.

11.9 Baseline Environment – Freshwater Aquatic Biodiversity

Updated freshwater aquatic survey locations are illustrated in Appendix O (Aquatic Survey Locations 2021), and results of updated freshwater aquatic surveys are provided in Appendix P (Aquatic Survey of the Proposed Project Boundary 2021) and Appendix Q (Aquatic Survey of the Proposed Project Boundary 2023) to Appendix A11.1 in Volume 3A Part B of this EIAR Addendum. Five of the seven locations surveyed in 2021 and 2023 for freshwater aquatic biodiversity had minor changes to their baseline characterisation, and surface watercourses were no longer present at two locations.

Catchment Description

The Proposed Project will pass through the same catchments as presented in the EIAR in the 2018 planning application. There are no changes to the footprint of the Proposed Project that affect the description of the catchments through which it will pass. Therefore, there are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

Water Quality

Table 11.17 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic) in Volume 3 Part A of the EIAR in the 2018 planning application has been represented below as Table 11.8 to reflect the most recent EPA water quality status (EPA 2023) assigned to the watercourses previously presented, and give an indication as to whether or not the assigned status has changed with respect to the information presented in the 2018 EIAR.

Table 11.8: Condition of Rivers Crossed by the Proposed Project

River	Overall Status*	Overall Risk	Q-Value	Fisheries Status**	Heavily Modified***
Tolka	Poor (no change)	At risk (no change)	Q3 (no change)	Poor (2017) (no change)	No
Santry	Poor (no change)	At risk (no change)	Q3 (no change)	Not surveyed by Inland Fisheries Ireland (IFI)	Yes
Mayne	Poor (no change)	At risk (no change)	Q3 (no change)	Poor (2016) - No more recent data available	No
Cuckoo Stream	Poor (no change)	At risk (no change)	Not surveyed by EPA	Bad (2016) - No more recent data available	No

*Data sourced from www.catchments.ie, based on data from 2016-2021 (latest available and published survey data by the EPA)

** Data sourced from www.wfdfish.ie, based on surveys undertaken in 2017 by Inland Fisheries Ireland

***Heavily modified waterbodies have been substantially altered from their natural condition by human activity and cannot therefore attain Good ecological status.

There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

Designated Areas and Protected Species (Existing Records)

The length of the proposed outfall pipeline route (marine section) beyond Velvet Strand to the terminal marine diffuser (4,800m) will be located within the North-West Irish Sea cSPA. This comprises 108.5ha of the red line boundary of the Proposed Project. Chapter 10A (Biodiversity (Marine Ornithology)) in Volume 3A Part A of the EIAR Addendum sets out an impact assessment of the Operational Phase of the Proposed Project on this candidate European site, as its special conservation interests correspond to ecological features falling under the remit of Chapter 10A (Biodiversity (Marine Ornithology)).

There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

Protected Freshwater Species

In this Section of the EIAR in the 2018 planning application, it was noted that:

- A review of the National Biodiversity Data Centre (NBDC) website at that time revealed no records for white-clawed crayfish, salmon or lamprey in any of the watercourses potentially impacted by the Proposed Project;
- IFI confirmed that the River Tolka is an important salmonid river, and supports eel (*Anguilla anguilla*) and river lamprey;
- A review of the NPWS website at that time revealed no records of rare and protected freshwater species in the area of the Proposed Project; and
- During macroinvertebrate surveys of the watercourses, no salmonids, lamprey or white-clawed crayfish were identified at any of the sampling locations.

Desktop data records remain the same in 2023 as they did in the EIAR in the 2018 planning application, and IFI remains of the view that the River Tolka is an important salmonid river and supports eel and river lamprey. During surveys, large adult brown trout were observed only within the River Tolka at Location 1(c). No lamprey or white-clawed crayfish were identified at any of the sampling locations. Spawning and adult habitat suitability for salmonids, lampreys and crayfish is discussed in Section 11.9.1, under the heading for ‘Fish’.

Fishery Value

The most recent data available for the fisheries status of the River Tolka has been included in Table 11.8. There is no more recent data available for any of the other watercourses beyond that presented in the EIAR in the 2018 planning application. As such, there are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

Invasive Species

Updates to the baseline environment with respect to invasive species are presented at the end of Section 11.3.2. There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

Drainage Ditches Near the Proposed Project

Several drainage ditches, in addition to the above watercourses, will be crossed by the proposed orbital sewer route and the proposed outfall pipeline route (land based section) and within the proposed WwTP site. During the most recent habitat survey campaigns in October and November 2022, and April, May and June 2023, the drainage ditches continue to contain low levels of water. There are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.9.1 Field Survey Results

The field surveys were undertaken over two days on 1 and 2 September 2021 and repeated on 12 and 13 June 2023.

Sampling locations on the River Tolka were selected as described in Appendix O of Appendix A11.1 in Volume 3A Part A of the EIAR Addendum, and results of updated freshwater aquatic surveys are provided in Appendix P and Appendix Q to Appendix A11.1 in Volume 3A Part B of this EIAR Addendum.

In relation to Location No.1, surveys in 2021 and 2023 were proposed to be undertaken at 3 No. locations - Location 1(a), 1(b) and 1(c). Location 1(a) was visited in 2021/2023 but was deemed not suitable due to culverting of the stream. Location 1(b) was reviewed for the 2018 EIAR but no suitable areas were available to conduct the survey due to significant morphological alternations to the channel. In updated surveys it was possible to survey a small part of this stream however the limitations of this are noted in relevant sections hereunder. Location 1(c) was surveyed during all survey campaigns for the 2018 EIAR and this EIAR Addendum.

Habitats

No significant changes in the baseline were noted between the 2021 and 2023 surveys when compared to the information presented in this Section of the EIAR in the 2018 planning application.

Location 1 – River Tolka

Location 1(a) is located within the National Sports Campus. The proposed orbital sewer route will cross the Abbotstown Stream (IE_EA_09T011000) at this location. Aquatic ecology surveys were not undertaken at this site in both 2021 and 2023 as the stream could not be found and is assumed to be culverted at this location.

Location 1(b) is located to the south-east of Connolly Hospital on the Abbotstown Stream. The stream is channelised, with high banks (approximately 1.6m). The stream flows into a man-made pool and over a waterfall before discharging into the mainstem of the River Tolka. The left bank comprises a concrete wall. The stream was approximately 1m wide and shallow (4cm (centimetres) deep) on the day of survey. Siltation at the site was moderate, and a high silt plume was noted when the bed was disturbed. Flow discharge was low with slow velocity. No colour and low turbidity were noted. The substrate was dominated by fine gravel. The river habitat comprised riffles (30%) and pools (70%). The substrate within the riffle habitat was embedded as a result of calcification. Shading was heavy, with ivy, sycamore, beech, hart's tongue fern and hogweed recorded adjacent to the stream.

During the 2021 surveys at Location 1(c), river width was estimated at being 8m wide and approximately 10cm to 30cm in depth, with heavy siltation. Moderate flow was recorded. The substrate was dominated by coarse substrate with cobble comprising approximately 50% of the grain size fraction. The river was bordered by broadleaved woodland with abundant scrub habitat, mostly to the north and north-west. River habitat comprised riffle (75%), glide (20%) and pool (5%). Filamentous green algae covered approximately 30% of the substrate. The river habitat recorded during the 2023 surveys was similar to the 2021 surveys. The width and depth were similar to those recorded in 2021. Siltation was moderate, and a high silt plume was noted when the bed was disturbed. Flow discharge was normal with moderate velocity. No colour and low turbidity were noted. The substrate was dominated by cobble (50%), with bedrock, boulder and coarse gravel making up the remaining substrate grain sizes. The river habitat comprised riffle (50%) and run (50%) habitat. The substrate was slightly compacted. Filamentous green algae covered approximately 70% of the substrate.

The prevailing habitat conditions along the River Tolka within the general area of Abbotstown were similar between the surveys carried out to inform the EIAR in the 2018 planning application, and those carried out in 2021 and 2023, with siltation, filamentous algae, well vegetated riverbanks and coarse substrate noted during each survey campaign.

Location 2 – River Santry

Location 2 is located on the River Santry (Santry_010), immediately north of Sillogue Golf Course. In 2021, the river was 2m wide and approximately 5cm in depth, with heavy siltation recorded. The stream was very slow flowing to stagnant in places. It was bordered by arable land to the west and improved agricultural grassland to the east. The substrate consisted of a mixture of coarse and fine material with 45% of the grain size fraction comprising cobble and 20% comprising silt. River habitat was 80% glide, 10% riffle and 10% pool.

The riparian vegetation was unmanaged. The western bank was considerably steeper (4m to 5m in height) than the eastern bank (1m) and was dominated by trees.

The general river habitat recorded in 2023 was largely similar to that recorded in 2021. In 2023, the stream was approximately 1.2m in width at the survey location, with water depth measured at approximately 5cm. The stream appears to have been straightened and deepened in the past. The right bank was very steep and approximately 3m in height whereas the left bank was approximately 0.5m in height. Calcareous deposits were noted on some of the cobbles in-stream. Siltation at the site was heavy, and a high silt plume was noted when the bed was disturbed. The substrate was dominated by fine sediment grain sizes, namely sand (35%), silt (35%), fine gravel (15%), coarse gravel (10%) and cobble (5%). The river habitat comprised riffle (20%), glide (40%) and pool (40%) habitat. Shading was heavy, with ash, nettles, dog rose, bramble, elder, hart's tongue fern, meadow buttercup, bush vetch, cleavers and ivy recorded adjacent to the stream.

The previous surveys completed to inform the EIAR in the 2018 planning application describe Location 2 as being shaded, with a glide / riffle type habitat and a substratum of bedrock, sand and silt deposition, with well vegetated river banks. Riverbanks were described as well-vegetated, forming a near-continuous riparian corridor comprising a dense mix of bramble, beech, willow, ivy, nettle, thistles, rumex, hazel, hogweed, cow parsley and grasses. In-stream vegetation consisted of rooted bulrush along the central channel.

As evident from the descriptions above from each of the surveys undertaken, slight discrepancies between river habitat descriptions are noted. This may be linked to slight differences in survey location (due to access, dense vegetation growth etc. in the intervening period), potential differences in surveyor judgement and natural temporal variation in local conditions and river habitat. These discrepancies are not of concern and are not considered to affect the overall conclusions of the assessment.

Location 3 – River Mayne

Location 3 is located in the upper reaches of the River Mayne in a field south of the L2015 Local Road. The site was not surveyed in 2021 as the stream was dry and resembled a dry drainage ditch.

Physical habitat surveys at this site were undertaken in 2023. The stream at this location has been straightened and resembles a ditch with low flow discharge and stagnant velocity. The substrate comprised 100% silt and in-stream habitat was best described as 100% pool. Dissolved oxygen was low at 44.7% and 4.46mg/l. Wetted and bankfull width was approximately 1m and water depth was 10cm. Siltation was heavy, and some light bank erosion was noted. Shading was heavy, with ivy, hawthorn, cleavers, bramble, meadow thistle, dog rose, hogweed, dock and ash recorded in the riparian buffer. The bank height was 1.6m to 1.2m.

The previous surveys completed to inform the EIAR in the 2018 planning application describe the river habitat at Location 3 as slow-flow habitat over a compacted substratum comprising predominantly cobble and some coarse gravel with overlying silt. No in-stream vegetation was noted, and river banks were recorded as being very steep. Riverbanks were described as well-vegetated, forming a near-continuous riparian corridor comprising a dense mix of bramble, beech, willow, ivy, nettle, thistles, rumex, hazel, hogweed, cow parsley and grasses.

It appears that conditions at this site, in terms of habitat, have deteriorated since the completion of the surveys that informed the EIAR in the 2018 planning application. As evident from the descriptions above from each of the surveys undertaken, slight discrepancies between river habitat descriptions are noted particularly related to excessive siltation recorded in 2023. These discrepancies may be linked to slight differences in survey location and temporal variation in local conditions and river habitat. These discrepancies are not considered to affect the overall conclusions of the assessment.

Location 4 – Cuckoo Stream

Location 4 is on the Cuckoo Stream (Mayne_010), a tributary of the River Mayne. During the 2021 surveys, this stretch of the Cuckoo Stream was 3.5m wide and approximately 5cm in depth, with heavy siltation recorded. River habitat was mostly glide. However, stagnant flow was noted in places. A mixture of river substrate was noted with cobble and coarse gravel and silt dominating. It was bordered by tilled land to the south and north.

During the 2023 surveys, the stream was approximately 1.8m wide and 10cm deep. It was noted that the stream appears to have been straightened in the past. Bank height was approximately 1.4m. Siltation at the site was low. However, a high silt plume was noted when the bed was disturbed, and turbidity was high. The substrate was dominated by coarse gravel (50%), with cobble (30%), fine gravel (10%) and sand (10%) also recorded. Filamentous algae was noted to cover approximately 20% of the substrate. Rain that occurred on the previous night resulted in elevated water levels at this site. However, the river was not in flood and the increased water levels observed were not deemed to have affected the survey undertaken. River habitat comprised riffle (70%) and glide (30%). Riverine habitat recorded during previous surveys completed to inform the EIAR in the 2018 planning application was generally similar to that recorded in 2021 and 2023.

The EIAR in the 2018 planning application describes the river habitat at Location 4 as moderate to fast flowing with compacted substratum comprising predominantly cobble and boulder. Silt deposition was recorded along undercut banks. Filamentous algal coverage was recorded as extensive in the downstream channel and proliferated along extraneous material recorded on the river bed.

Location 5 – River Mayne

Location 5 is located on the River Mayne (Mayne_010). During surveys undertaken in 2021, this stretch of the River Mayne was 2m wide and approximately 5cm to 10cm in depth, with heavy siltation. Velocity was slow, with the river habitat comprising 70% glide and 30% riffle. It was bordered by scrub to the east and an access road to the west with scrubland after that. The access road runs to the north and south-east.

During 2023, the stream was recorded as being approximately 1.5m wide and 10cm deep. The channel was noted to have been straightened and valley sides reprofiled. The stream was surveyed downstream of a culverted section of the stream. As recorded in 2021, siltation was heavy, and a high plume was noted when the bed was disturbed. A slight hydrocarbon sheen was noted. The substrate was dominated by fine material (small cobbles, gravel and sand). The river habitat comprised 50% riffle and 50% glide habitat. Flow discharge was normal and velocity slow. Shading was heavy throughout the majority of the surveyed reach. Fool's watercress and dense *Vaucheria* growth was observed in the less heavily shaded sections of the stream immediately downstream of the culvert and dense bramble scrub is causing a tunnelling effect within the stream. Butterfly bush (*Buddleia davidii*) was noted within the surveyed reach and Japanese knotweed (*Reynoutria japonica*) was noted downstream of the surveyed reach.

Riverine habitat recorded during previous surveys completed to inform the EIAR in the 2018 planning application was similar to that recorded in 2021 and 2023. Substrate recorded during previous surveys completed to inform the EIAR in the 2018 planning application was similar (cobble with covering layer of silt) as was the degree of shading. A key difference was the presence of pool dominated habitat recorded during the previous surveys completed to inform the EIAR in the 2018 planning application. This incongruence may be linked to slight differences in survey location and temporal variation in local conditions and river habitat. The slight discrepancy is not of concern and is not considered to affect the overall conclusions of the assessment.

Macroinvertebrate Biodiversity

No significant changes in the baseline were noted between the 2021 and 2023 surveys when compared to the information presented in this Section of the EIAR in the 2018 planning application.

Location 1 – River Tolka

During the 2021 surveys, 10 macroinvertebrate taxa were recorded at Location 1(b). The species recorded typically comprised pollution tolerant species such as *Asellus* sp. and Chironomidae. No crayfish were present within the kick sample. However, with in-stream boulders and cobbles, over hanging banks, aquatic vegetation and detritus, there is suitable crayfish habitat available. A habitat rating of 'Fair' was assigned.

During the 2023 surveys of Location 1(b) (on the Abbotstown Stream), a total of 14 macroinvertebrate taxa were recorded. Again, the community typically comprised pollution tolerant species such as veliidae, *Asellus aquaticus* and *Serratella ignita*. No crayfish habitat was available due to shallow water levels and general lack of coarse substrates. The left bank comprised a concrete wall, whereas the right bank comprised earth.

However, the right bank was not soft and is unlikely to be suitable for burrowing. No submerged tree roots which could provide cover for crayfish were noted. A rating of 'None' was assigned.

During the 2021 surveys at Location 1(c), 14 macroinvertebrate taxa were recorded. No crayfish were present within the kick sample. However, with in-stream boulders and cobbles, over hanging banks, aquatic vegetation and detritus, there is suitable crayfish habitat available. A habitat rating of 'Fair' was assigned.

During the 2023 surveys at Location 1(c), a total of 18 macroinvertebrate taxa were recorded. These mostly comprised pollution tolerant species such as *Serratella ignita*. However, some more sensitive species were observed including two cased caddisfly species and the mayfly (*Alanities muticus*). Crayfish habitat was assigned a rating of 'Good'. The coarse substrate (boulders and cobbles) within the river could provide refuge habitat. Furthermore, exposed tree roots were noted on the left bank. Some areas of deeper water were noted. Water quality and siltation is likely to be an issue for this species. No crayfish were observed during the survey.

Macroinvertebrate samples were not collected from the River Tolka during the surveys undertaken to inform the EIAR in the 2018 planning application due to access difficulties at the time of survey. However 'Good' habitat for white-clawed crayfish was noted with abundant refugia and foraging potential. Whereas there was no change in the habitat appraisal for white-clawed crayfish in 2017 and 2023 (within the mainstem of the River Tolka (i.e. Location 1(c) in 2023)) with the habitat described as 'Good'. There was a slight change in habitat potential for crayfish in 2021. During the 2021 survey, the habitat was described as 'Fair' at Location 1(b) and 1(c).

Location 2 – River Santry

Macroinvertebrate diversity at Location 2 during the 2021 survey was relatively low. A total of seven taxa were recorded, the majority of which were tolerant to pollution. No crayfish were present within the kick sample. With over hanging banks, aquatic vegetation and leaf litter, there was some suitable crayfish habitat available. However, due to cobbles dominating the substrate and water depth being 0.1cm to 0.5cm, a habitat rating of 'Poor-Fair' was assigned.

Macroinvertebrate diversity was also low during the 2023 surveys where a total of eight macroinvertebrate taxa were recorded within the stream. Again, the community was dominated by pollution tolerant species. The stream was very shallow with no large coarse substrates which could provide habitat for the white-clawed crayfish. There is a small chance that the banks could be burrowed into by crayfish, and overhanging vegetation was noted along the margins. Water quality and siltation is likely to be an issue for this species at this site, however, and no crayfish were observed during the survey. A habitat rating of 'None-Poor' was assigned.

Macroinvertebrate diversity was lowest during previous surveys undertaken to inform the EIAR in the 2018 planning application, where a total of four taxa were recorded. Similar to the surveys undertaken in 2021 and 2023, 'Poor' white-clawed crayfish habitat was noted due to low quality aquatic habitat and reduced foraging potential.

Location 3 – River Mayne

It was not possible to collect a macroinvertebrate sample at Location 3 in 2021 as the watercourse was dry. A habitat rating of 'None' was assigned for white-clawed crayfish. Due to the drain-like nature of the watercourse in 2023, it was also not suitable for kick-sampling. However, a sweep of the margins and substrate identified a number of pollution tolerant species including *Asellus aquaticus, Gammarus* sp., Gerridae, *Chironomus* sp., Planorbidae and excessive numbers of pea/orb mussels (Sphaeridae). A total of six taxa were recorded. Given the ditch-like nature of the stream with stagnant flow conditions and high levels of siltation, it was deemed unlikely to support crayfish. A habitat rating of 'None' was assigned.

Similar to 2023, macroinvertebrate diversity was low during previous surveys undertaken to inform the EIAR in the 2018 planning application, with only three taxa recorded. Furthermore, 'Poor' habitat for white-clawed crayfish was noted here during previous surveys undertaken to inform the EIAR in the 2018 planning application, due to a lack of overhanging banks, poor invertebrate assemblages and degraded water quality.

Location 4 – Cuckoo Stream

Macroinvertebrate diversity was low at Location 4 in 2021. A total of six macroinvertebrate taxa were recorded, which were all pollution tolerant. No crayfish were present within the kick sample. However, with some in-stream boulders and cobbles, little over hanging banks, and flooded tree roots at heavy rainfall events, there was some suitable crayfish habitat available. A habitat rating of 'Poor-Fair' was assigned.

Macroinvertebrate diversity was notably higher in 2023, with a total of 15 taxa recorded. Pollution tolerant as well as pollution sensitive species were recorded. Crayfish habitat was assigned a rating of 'Fair'. No large boulders were noted in the stream, with some siltation and high turbidity noted. However, soft banks for burrowing, undercut banks and overhanging vegetation and submerged tree roots were noted. No crayfish were observed during the survey.

Low macroinvertebrate diversity was recorded during previous surveys undertaken to inform the EIAR in the 2018 planning application, with a total of six taxa recorded, all of which are pollution tolerant. This is in keeping with the results obtained in 2021. 'Good' habitat for white clawed crayfish was observed during previous surveys undertaken to inform the EIAR in the 2018 planning application, as silty marginal sections and undercut banks provide good habitat.

Location 5 – River Mayne

Macroinvertebrate diversity was low at Location 5 in 2021, with a total of five taxa recorded, all of which were pollution tolerant. No crayfish were present within the kick sample. With some in-stream boulders and many cobbles, siltation gathering along banksides, aquatic vegetation and detritus, there is some suitable crayfish habitat available. A habitat rating of 'Fair' was assigned.

Macroinvertebrate diversity was notably higher in 2023, with a total of 13 taxa recorded. All macroinvertebrates recorded were pollution tolerant species. Crayfish habitat was assigned a rating of 'None-Poor'. No large boulders and cobbles which could provide cover were noted in the stream, with heavy siltation observed. Some in-stream vegetation was noted in the less shaded part of the stream immediately downstream of the culvert. No crayfish were observed during the survey.

Low macroinvertebrate diversity was recorded during previous surveys undertaken to inform the EIAR in the 2018 planning application, with a total of four taxa recorded, all of which were pollution tolerant. This is in keeping with the results obtained in 2021. 'Good' habitat for white clawed crayfish was observed during previous surveys of the EIAR in the 2018 planning application, as silty marginal sections and undercut banks provide good habitat.

Biological Water Quality Assessment

No significant changes in the baseline were noted between the 2021 and 2023 surveys when compared to the information presented in this Section of the EIAR in the 2018 planning application.

Location 1 – River Tolka

During the 2021 surveys, 10 macroinvertebrate taxa were recorded at Location 1(b) with Class C taxa (moderately pollution tolerant) forming most of the sample (five taxa). Three Class D taxa were recorded, one in low numbers (Lymnaeidae), one common throughout the sample (Hirudinea), and one numerous (*Asellus* sp.). One Class E taxon was recorded in low numbers (Tubificidae), and one Class B taxon was recorded in low numbers (Leptoceridae). No single taxon was dominant. No Class A taxa were recorded. A Q2-3 was inferred (corresponds with 'Poor' Water Framework Directive (WFD) status).

During the 2023 surveys of Location 1(b) (on the Abbotstown Stream), a total of 14 macroinvertebrate taxa were recorded. Group A and B taxa were absent. Group C taxa were dominant, Group D taxa were numerous and Group E taxa few. A Q-value of Q2-3 (corresponds with 'Poor' WFD status) was inferred. As the riffles were small in size and difficult to kick, it was necessary to collect the kick sample within the pool habitat as well as riffle habitat. It should be noted that the Q-value could be affected by the calcareous nature of the substrate in addition to the fact that some of the kick sample had to be collected from pool habitat (for Q-value

assessments, macroinvertebrates are preferably collected from the faster flowing riffle habitats). It is possible that the observed Q-value is lower than expected value due to these factors. Nevertheless, the score is in keeping with the 'Poor' status assigned to the water body by the EPA. The mainstem of the River Tolka, downstream of Abbotstown Bridge, was assigned a Q-Value of Q3 (corresponds with 'Poor' WFD status) in 2022 by the EPA (station number RS09T011000).

During the 2021 surveys at Location 1(c), 14 macroinvertebrate taxa were recorded, with Class C taxa (moderately pollution tolerant) forming most of the sample. Three Class B taxa were recorded in low numbers (Baetidae sp. (*Alanities muticus*), Ephemerellidae (*Seratella ignita*), and Leptoceridae). Two Class D taxa were recorded, one in low numbers (Hirudinea), and one common throughout the sample (*Asellus* sp.). One Class E taxon was recorded in low numbers (Tubificidae sp.). No single taxon was dominant. No Class A taxa were recorded. A Q-value of Q2-3 was assigned (corresponds with 'Poor' WFD status).

During the 2023 surveys at Location 1(c), a total of 18 macroinvertebrate taxa were recorded. Group A taxa were absent, Group B taxa were few, Group C taxa were excessive, Group D taxa were common and Group E taxa were absent. *Serratella ignita* was numerous, whereas *Baetis rhodani / atlanticus*, Chironomidae, Simuliidae and *Hydropsyche* sp. were common. Based on the relative abundance of the various macroinvertebrate groups recorded, a Q-value of Q3 (corresponds with 'Poor' WFD status) was inferred. The presence of silt, excessive filamentous green algae and low dissolved oxygen concentration (75.1%) within the river support this assessment. This Q-value is in-keeping with the Q-value assigned to the river by the EPA in 2022 (Q3), at a monitoring point located immediately downstream of the M50 motorway (station number RS09T011000).

Macroinvertebrate samples were not collected from the River Tolka during surveys completed to inform the EIAR in the 2018 planning application due to access difficulties at the time of survey.

Location 2 – River Santry

During the 2021 surveys, the macroinvertebrate sample recorded seven taxa altogether, with Class C taxa (moderately pollution tolerant) forming most of the sample. One Class B taxon was recorded in low numbers namely the cased caddisfly of the family Hydroptilidae. An empty cased caddisfly case was recorded, as was a single Polycentropodidae individual. These were not included in the Q-value assessment. One Class D taxon was recorded in low numbers (Hirudinea) and no Class A or E taxa were recorded. No single taxon was dominant. A Q-value of Q2-3 was inferred (corresponds with 'Poor' WFD status).

During the 2023 surveys, a total of eight macroinvertebrate taxa were recorded within the stream. Group A, B and E macroinvertebrate taxa were absent. Group C taxa were dominant, and Group D were numerous. *Asellus aquaticus* and *Potamopyrgus antipodarum* were numerous and Simuliidae and Hirudinea were common. Based on the relative abundance of the macroinvertebrate groups recorded within the stream, a Q-value of Q2-3 (corresponds with 'Poor' WFD status) was inferred. This is consistent with the Q-value assigned to the River Santry by the EPA (Q2-3) in 2022 at a monitoring location downstream of the site near North Side Shopping Centre (station number RS09S010300), as well as the Q-value inferred at the site in 2021.

There was no change in the Q-value score between the surveys completed to inform the EIAR in the 2018 planning application and more recent surveys of 2021 and 2023. A Q-value of Q2-3 was inferred each year (corresponds with 'Poor' WFD status).

Location 3 – River Mayne

It was not possible to collect a macroinvertebrate sample at Location 3 in 2021 as the watercourse was dry. Due to the drain-like nature of the watercourse in 2023, it was also not suitable for kick-sampling or Q-value assessment. However, a sweep of the margins and substrate identified a number of pollution tolerant species including *Asellus aquaticus, Gammarus* sp., Gerridae, *Chironomus* sp., Planorbidae and excessive numbers of pea/orb mussels (Sphaeridae).

Q-values at Location 3 in the surveys were completed to inform the EIAR in the 2018 planning application, where a Q-value of Q2 (corresponds with 'Bad' WFD status) was inferred.

Location 4 – Cuckoo Stream

A total of four macroinvertebrate taxa were recorded at Location 4 in 2021. Class C taxa (moderately pollution tolerant) formed most of the sample. Two Class D taxa were also recorded, one in low numbers (Hirudinea sp.), and one in numerous numbers (Asellus sp.). No Class A, B or E taxa were recorded. No single taxon was dominant. A Q-value of Q2-3 was assigned (corresponds with 'Poor' WFD status).

In 2023, a total of 15 macroinvertebrate taxa were recorded at Location 4. Group A macroinvertebrate taxa were absent, Group B, Group C and Group D numerous, and Group E absent. *Hydroptilia* sp. (Group B) and *Asellus aquaticus* (Group D) were numerous and Chironomidae (Group C) were common. Based on the relative abundance of the various macroinvertebrate groups recorded, a Q-value of Q3 (corresponds with 'Poor' WFD status) was inferred. This Q-value is in-keeping with the Q-value assigned to the river by the EPA in 2022 (Q3), at a monitoring point located downstream of the site at Hole-in-the-Wall Road Bridge (station number RS09M030500).

A Q-value of Q2-3 (corresponds with 'Poor' WFD status) was inferred at Location 4 in the surveys completed to inform the EIAR in the 2018 planning application. This is in keeping with the results obtained in 2021. However, the Q-value calculated at Location 4 improved in 2023. Despite the increase in the Q-value score from Q2-3 to Q3, the inferred ecological status remains 'Poor' across all years.

Location 5 – River Mayne

A total of five macroinvertebrate taxa were recorded at Location 5 in 2021. Class C taxa (moderately pollution tolerant) formed most of the sample. Two Class D taxa were also recorded in low numbers (*Hirudinea* sp.), and one numerous (*Asellus* sp.). One Class E taxon was recorded in low numbers (*Tubificidae* sp.) and no Class A or B taxa were recorded. No single taxon was dominant. A Q-value of Q3 was inferred (corresponds with 'Poor' WFD status).

A total of 13 macroinvertebrate taxa were recorded in the stream in 2023. Group A and Group B taxa were absent from the sample, whereas Group C taxa were excessive, Group D taxa common and Group E taxa few. The relative abundance of the Group C species *Potamopygrus antipodarum* was excessive and *Asellus aquaticus* (Group D) was common. Based on the relative abundance of the macroinvertebrate groups recorded within the stream, a Q-value of Q2-3 ('Poor' WFD status) was inferred. This is slightly lower than the Q-value assigned to the River Mayne by the EPA in 2022 (Q3), at a monitoring point located downstream of the site at Hole-in-the-Wall Road Bridge (station number RS09M030500). It is possible that the heavy shading at this site influenced the Q-value score. Nevertheless, the score is in keeping with the 'Poor' status assigned to the river by the EPA.

During previous surveys undertaken to inform the EIAR in the 2018 planning application, a Q-value of Q2 (corresponds with 'Bad' WFD status) was inferred at location 5. Therefore, water quality appears to have improved slightly since.

Freshwater Flora

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

Across all sites, in-stream plant diversity was low in both 2021 and 2023. In 2021, aquatic flora recorded typically included filamentous algae (in the River Tolka at Location 1 (Location1(b) and 1(c)), at Location 2 in the River Santry, and at Location 4 in the Cuckoo Stream). Bulrush was recorded in the River Santry at Location 2.

In 2023, *Vaucheria* and filamentous algae were noted at Location 1 (Location 1(c)), Location 4 and Location 5. Filamentous algae was also recorded at Location 2. The moss Fontinalis sp. was recorded at Location 1 (Location 1(c) and Location 4. Fool's watercress was recorded in unshaded sections of Location 5 (River Mayne).

In-stream plant diversity was low across all sites surveyed to inform the EIAR in the 2018 planning application. Bulrush was recorded in the River Santry, and lesser water-parsnip (*Berula erecta*) and fool's watercress were

recorded in the River Mayne. These species are common throughout Ireland and are often found in shallow water in nutrient rich sites.

Fish

No significant changes in the baseline were noted between the 2021 and 2023 surveys when compared to the information presented in this Section of the EIAR in the 2018 planning application.

Location 1 – River Tolka

The 2021 surveys identified 'Fair' fish habitat at Location 1(b). For juvenile salmonids, some overhanging and in-stream vegetation was present along with some large rocks and coarse substrates. Dissolved oxygen levels could not be measured at the time due to a faulty probe, but is not considered to a limitation to determining a rating. The heavy siltation conditions are not representative of juvenile salmonid habitat. However, a number of juvenile salmonids were observed. Therefore, the location was assigned a rating of 'Fair'. For lamprey, the site may provide suitable habitat for a lamprey nursery as there was slow flow, silt in the river margins and good water depth (60cm). It was assigned a rating of 'Fair'. The site may provide suitable habitat for adult lamprey as even though the flow was slow, there were no barriers to migration, and there was in-stream vegetation and undercut banks with sand and silt present. It was assigned a rating of 'Fair'.

During the surveys undertaken in 2023 at Location 1(b), salmonid and lamprey spawning, and adult habitat was assigned a rating of 'None'. No spawning habitat was available due to the presence of calcareous deposits which were binding the gravel substrate. The stream was too shallow and slow flowing to support adult fish, with little cover or hiding places noted. The waterfall located downstream of the survey location would act as a barrier to upstream migration. Juvenile salmonid habitat was assigned a rating of 'None-Poor' as in-stream habitat was shallow, slow flowing with the substrate dominated by fine gravel. There was a lack of cover from riparian vegetation. Some small areas of deposited silty sand which could support lamprey ammocetes were noted. However, a rating of 'None-Poor' was assigned due to shallow water depth and limited extent of this habitat in the survey area.

The 2021 surveys identified 'Fair' fish habitat at Location 1(c). For juvenile salmonids, some overhanging and in-stream vegetation was present along with some large rocks and coarse substrates. The heavy siltation conditions were not representative of juvenile salmonid habitat. However, due to suitable cover, moderate flowing water and coarse substrate, the location was assigned a rating of 'Fair'. The site may be suitable habitat for a lamprey nursery as although the flow is moderate, silt was present in the river margins, and there was good water depth (10cm to 30cm). Therefore, this location was assigned a rating of 'Fair'. The site may provide suitable habitat for adult lamprey as the flow was moderate, there were no barriers to migration, and there was in-stream vegetation and undercut banks with sand and silt present.

During the surveys undertaken in 2023, salmonid spawning and adult habitat at Location 1(c) was assigned a rating of 'Fair'. Riffle / run habitat which could be utilised as spawning habitat was present. However, it was silted and comprised a considerable amount of coarse substrate (cobbles) which may limit spawning activity. Holding pools were present downstream for adult salmonids. Adult brown trout were observed within the river. Juvenile salmonid habitat was assigned a rating of 'Fair'. The physical habitat available is generally good with overhanging vegetation present along with shallow, fast flowing water over large rocks and coarse substrates which could provide cover for this life stage. However, water quality is likely to be an issue for salmonids in this river with siltation, low dissolved oxygen and a low Q-value recorded. Lamprey spawning and adult habitat was assigned a rating of 'Fair'. Suitable hiding places are available within the river channel for adults. Some spawning habitat is available. However, the substrate is quite coarse, silted and water quality is unsatisfactory. Lamprey nursery habitat was assigned a rating of 'None-Poor'. Some sandy / silt deposits were noted on the margins of the river. However, these were small relative to the size of the surveyed reach, and it should be noted that silty / sand deposits were noted upstream of the bedrock waterfall / cascade, upstream of the survey reach, which could provide juvenile lamprey nursery habitat.

Similar to the surveys undertaken in 2021 and 2023, the surveys completed to inform the EIAR in the 2018 planning application recorded 'Fair' spawning habitat for salmonids and lamprey in the River Tolka. 'Good' nursery habitat for salmonids and 'Good' habitat for lamprey ammocoetes utilising marginal soft sediments

was also noted. Therefore, the suitability of nursery habitat has reduced since the previous surveys undertaken to inform the EIAR in the 2018 planning application.

Location 2 – River Santry

The 2021 surveys identified 'Poor' to 'Poor-Fair' fish habitat at Location 2. The site may provide suitable habitat for salmon and lamprey spawning as there is a mixture of suitable substrate (coarse/gravel/cobble) with in-stream habitats of riffle/glide/pool present, although most was glide (80%). However, due to heavy siltation, extremely low flow, and barriers such as concrete blocks and debris, it was assigned a rating of 'Poor-Fair' for salmonids and 'Poor' for lamprey. For juvenile salmonids, some overhanging vegetation was present along with cobbles. Dissolved oxygen levels could not be measured at the time due to a faulty probe but is not considered to be a limitation to determining a rating. The heavy siltation conditions were not representative of juvenile salmonid habitat, and, although there was some suitable cover, slow to stagnant flowing water meant the location was assigned a rating of 'Poor'. No suitable habitat for a lamprey nursery was recorded due to the stagnant nature of the flow over the silty deposits within the stream and low water depth (5cm to 10cm). Therefore, this location was given a rating of 'Poor'. The stream was not suited to adult lamprey as there was low flow, and a barrier to migration with the presence of concrete blocks and debris. Additionally, there are no suitable hiding places. The channel was straightened but not recently. Therefore, this location was given a rating of 'Poor'.

In 2023, salmonid spawning and adult habitat was assigned a rating of 'None'. The substrate was dominated by fine sediment (sand, fine gravel, silt), and therefore, did not provide suitable spawning conditions. Only very small areas of riffle habitat were present within the stream. Juvenile salmonid habitat was assigned a rating of 'None-Poor'. The substrate was dominated by fine sediment, the flow was slow and had limited cobbles and boulders. Some overhanging vegetation was present. Unsatisfactory water quality is likely to be an issue for salmonids in this stream. Lamprey spawning and adult habitat was assigned a rating of 'None-Poor'. There is a small possibility that brook lamprey could spawn in the small riffles within this stream. Some limited hiding places were available within the river channel for adults. Siltation is likely to be an issue, however. Lamprey nursery habitat was assigned a rating of 'Fair', as some sandy / silt deposits were noted on the margins of the river.

Similar to the surveys undertaken in 2021 and 2023, 'Poor' spawning habitat for salmonids and lamprey was identified at Location 2 for the surveys undertaken to inform the EIAR in the 2018 planning application. 'Poor' nursery habitat for salmonids and lamprey was also noted during the previous surveys undertaken to inform the EIAR in the 2018 planning application.

Location 3 – River Mayne

In 2021, the watercourse at Location 3 was dry on the day of survey and resembled a dry drainage ditch. There was no potential for salmonids or lamprey at any life stage at the site surveyed and a habitat rating of 'None' was assigned.

In 2023, the watercourse at Location 3 was ditch-like with stagnant flow conditions and high levels of siltation. A habitat rating of 'None' was assigned for salmonid spawning, lamprey spawning and salmonid nursery. The silty substrate could potentially support lamprey ammocetes. However, the stagnant conditions and potential lack of upstream spawning habitat (assuming the habitat is similar upstream in this watercourse) makes this very unlikely. A rating of 'None' was also assigned.

The EIAR in the 2018 planning application recorded 'Poor' spawning and nursery for salmon and lamprey at this location.

Location 4 – Cuckoo Stream

In 2021, the watercourse at Location 4 was assessed as having suitable habitat for salmonid and lamprey spawning, as even though there was heavy siltation, a mixture of suitable substrate (coarse/gravel/cobble) was present. However, in-stream habitats were near 100% glide, and the flow was extremely low. It was assigned a rating of 'Poor-Fair'. For juvenile salmonids, some overhanging vegetation was present along with some coarse substrates. Dissolved oxygen levels could not be measured at the time due to a faulty probe but

is not considered to be a limitation to determining a rating. The heavy siltation conditions were not representative of juvenile salmonid habitat, and the extremely low flow meant the location was assigned a rating of 'Poor-Fair'. Suitable lamprey nursery habitat was not recorded due to the absence of areas with slow flow / backwater and shallow water depth (5cm). There were some areas of deposited silt / mud. It was given a rating of 'None-Poor' The habitat was not suited to adult lamprey as there was low flow, and there were no suitable hiding places. The channel was straightened but not recently. Therefore, this location was given a rating of 'None-Poor'.

In 2023, salmonid spawning and adult habitat was assigned a rating of 'Fair'. The physical habitat was suitable for spawning and holding pools were noted within the channel. However, siltation, low dissolved oxygen levels and poor water quality limits the suitability of this site for salmonids. Juvenile salmonid habitat was also assigned a rating of 'Fair'. The physical habitat was suitable with shallow, fast flowing water over coarse substrates. Some overhanging vegetation was present. Unsatisfactory water quality is likely to be an issue, however. Lamprey spawning and adult habitat was assigned a rating of 'Fair'. The physical habitat was suitable for spawning and hiding places for adults were noted within the channel. However, siltation, low dissolved oxygen levels and poor water quality limits the suitability of this site for lamprey spawning. Lamprey nursery habitat was assigned a rating of 'Fair', as some silty / sand accumulations were noted along the stream margins.

The EIAR in the 2018 planning application recorded 'Poor' spawning for salmon and lamprey at Location 4. Similarly, 'Poor' nursery habitat for salmonids and lamprey ammocoetes utilising marginal soft sediments was also noted.

Location 5 – River Mayne

In 2021, the River Mayne at Location 5 was assessed as having suitable habitat for salmon and lamprey spawning as even though there was heavy siltation, a mixture of suitable substrate (coarse / gravel / cobble) with in-stream habitats of riffle / glide noted. It was assigned a rating of 'Fair'. For juvenile salmonids, some overhanging and in-stream vegetation was present along with some large rocks and coarse substrates. Dissolved oxygen levels could not be measured at the time due to a faulty probe but is not considered to be a limitation to determining a rating. The heavy siltation conditions and slow flow were not representative of juvenile salmonid habitat. However, due to suitable cover and coarse substrate, the location was assigned a rating of 'Fair'. The site may provide suitable habitat for a lamprey nursery due to the presence of silt in the margins, and some in-stream debris. However, due to the extremely low flow it was assigned a rating of 'Poor-Fair'. The site may be suitable habitat for adult lamprey as even though the flow is slow, there are no barriers to migration and hiding places for adults were noted. It was assigned a rating of 'Poor-Fair'. The site may be suitable habitat for adult lamprey as even though the flow is slow, there are no barriers to migration and hiding places for adults were noted. It was assigned a rating of 'Poor-Fair'.

In 2023, salmonid spawning and adult habitat was assigned a rating of 'None-Poor'. Gravel / cobble habitat was observed in the channel. However, any potential spawning habitat was heavily silted and poor water quality would be an issue for salmonids in this stream. Juvenile salmonid habitat was assigned a rating of 'None-Poor'. The physical habitat was unsuitable with shallow, slow flowing water over predominantly fine substrates (gravel and sand) noted. Overhanging vegetation was present. Unsatisfactory water quality is likely to be an issue.

Lamprey spawning and adult habitat was assigned a rating of 'None-Poor'. Lamprey nursery habitat was also assigned a rating of 'None-Poor'. The physical habitat was unsuitable with only very small areas of silty sand accumulations noted on the river margins. Unsatisfactory water quality is likely to be an issue.

The EIAR in the 2018 planning application recorded 'Poor' spawning for salmon and lamprey. Similarly, 'Poor' nursery habitat for salmonids and lamprey ammocoetes utilising marginal soft sediments was also noted.

Ecological Importance

The results of updated freshwater aquatic surveys are provided in Appendix P (Aquatic Survey of the Proposed Project Boundary 2021) and Appendix Q (Aquatic Survey of the Proposed Project Boundary 2023) to Appendix A11.1 in Volume 3A Part B of this EIAR Addendum.

The ecological value assigned to each of the aquatic ecological receptors (ERs) in this Section of the EIAR in the 2018 planning application remains the same as that ascribed to them in Table 11.20 of Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application. For the avoidance of doubt, those values are as follows:

- ER1 (Location 1) (River Tolka): County Importance;
- ER2 (Location 2) (River Santry): Local Importance (lower value);
- ER3 (Location 3) (River Mayne): Local Importance (lower value);
- E43 (Location 4) (Cuckoo Stream): Local Importance (lower value); and
- ER3 (Location 5) (River Mayne): Local Importance (lower value).

11.10 Impact of the Proposed Project on Freshwater Aquatic Biodiversity – Construction Phase

Considering the updated proposed project elements outlined in Table 11.1, there are no changes to the information presented in this Section of the EIAR in the 2018 planning application. The nature and scale of development remains as outlined in the 2018 planning application, and the methods to be used to construct the Proposed Project also remain as proposed in the 2018 planning application.

11.11 Impact of the Proposed Project on Freshwater Aquatic Biodiversity – Operational Phase

Considering the updated proposed project elements outlined in Table 11.1, there are no changes to the information presented in this Section of the EIAR in the 2018 planning application. The nature and scale of development remains as outlined in the 2018 planning application, and the methods to be used to operate the Proposed Project also remain as proposed in the 2018 planning application.

11.12 Summary of Potential Impacts in the Absence of Mitigation Measures

Considering the updated proposed project elements outlined in Table 11.1, there are no changes to the information presented in this Section of the EIAR in the 2018 planning application. The nature and scale of development remains as outlined in the 2018 planning application, and the methods to be used to construct and operate the Proposed Project also remain as proposed in the 2018 planning application.

11.13 'Do Nothing' Impact on Freshwater Aquatic Biodiversity

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application, as in the absence of the Proposed Project, freshwater aquatic flora and fauna would persist under its current land use and management regimes.

11.14 Mitigation Measures–- Freshwater Aquatic Biodiversity

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.15 Residual Impacts–- Freshwater Aquatic Biodiversity

The baseline has been updated and the previously predicted magnitude and significance of impacts have been reviewed.

There have been no new residual impacts, or residual impacts of a greater magnitude or greater adverse significance identified when compared to the EIAR in the 2018 planning application. The mitigation measures originally proposed remain valid and appropriate. As such, there are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

11.16 Oral Hearing

During the 2019 Oral Hearing, the Inspector, NPWS, FCC and the Ballymun Wildlife Group requested further information and / or clarity on a number of issues relating to terrestrial biodiversity. Further clarification was provided in the 'GDD Response to Terrestrial Ecology Questions 27 March 2019'. This statement is included as Appendix A11.3 in Volume 3A Part B of this EIAR Addendum.

In relation to biodiversity (terrestrial and freshwater aquatic) features, a summary of the assessment of effects and mitigation measures proposed in relation to those features was provided in a precis of evidence. Further written clarification was also provided in two additional statements, as follows:

- 'GDD Response to Ornithology Questions 27 March 2019' included in Appendix A10.3 in Volume 3A Part B of the EIAR Addendum; and
- 'GDD Response to Inspectors Questions on Ornithology by Dr Simon Zisman' included in Appendix A10.3 in Volume 3A Part B of the EIAR Addendum.

These additional statements are also included in Appendix A11.3 in Volume 3A Part B of this EIAR Addendum, and provided the raw terrestrial bird data collected for the Proposed Project to the Oral Hearing and clarified the following points raised by various parties at the Oral Hearing:

- That Uisce Éireann would implement habitat management measures at proposed temporary construction compound no. 10 during reinstatement of the site for the purpose of biodiversity improvement;
- In relation to the presence of various habitats and species of wildlife at Northpoint NCT Centre, noted by the Ballymun Wildlife Group, that Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application notes the presence of aquatic plants, amphibians, a diverse invertebrate (insect) fauna, stickleback fish, and various bird and bat species;
- In relation to lands identified in the Ballymun Biodiversity Action Plan, that those lands are south of the M50 Motorway and outside of the Proposed Project boundary;
- That ecological effects on Silloge NDA due to construction of the Proposed Project shall be temporary effects of construction and will not undermine the long-term potential of the Silloge NDA to deliver habitat improvement;
- That in agreement with the NPWS, a pre-construction badger survey will be undertaken in advance of a disturbance licence application to take account of any badger constraints that may arise in between the survey conducted to inform the biodiversity appraisal and construction of the Proposed Project, in the event that permission is granted; and
- In relation to ornithology features at the proposed WwTP, that:
    - It is not important for the feature species of Baldoyle Bay SPA; and
    - There is a potential risk of disturbance to nesting birds during the Construction Phase which will be mitigated by pre-commencement nest checks by the EcCoW appointed, and this is a tried and tested standard ornithological mitigation measure, used successfully in similar construction projects.

11.17 Conclusion

This Addendum Chapter has considered all updates to elements of the Proposed Project, updates to the baseline environment and whether there have been any updates to guidance and reference material since the 2018 planning application submission. Following consideration, the implementation of habitat enhancement measures as prescribed in the Biodiversity Assessment (included as Appendix 2 of the Addendum Planning Report), the residual impacts of the Proposed Project will result in beneficial changes to the conclusions of the assessment of biodiversity (terrestrial and freshwater aquatic) when compared with the EIAR in the 2018 planning application.

11.18 References

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Directives and Legislation

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitat and of wild fauna and flora

Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds

Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

Number 39 of 1976 – Wildlife Act, 1976 (as amended)

S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011 (as amended)

S.I. No. 356/2015 – Flora (Protection) Order, 2015

S.I. No. 91/2019 - European Union Habitats (Malahide Estuary Special Area Of Conservation 000205) Regulations 2019

S.I. No. 94/2019 - European Union Habitats (Rockabill To Dalkey Island Special Area Of Conservation 003000) Regulations 2019

S.I. No. 294/2019 - European Union Habitats (Lambay Island Special Area Of Conservation 000204) Regulations 2019

S.I. No. 524/2019 - European Union Habitats (North Dublin Bay Special Area of Conservation 000206) Regulations 2019

S.I. No. 525/2019 - European Union Habitats (South Dublin Bay Special Area of Conservation 000210) Regulations 2019

S.I. No. 472/2021 - European Union Habitats (Baldoyle Bay Special Area of Conservation 000199) Regulations 2021

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