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Appropriate Assessment Screening Report and Natura Impact Statement

Hodson Bay Waterfront Park, Co. Roscommon



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1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment of the Proposed Development.

Screening for Appropriate Assessment is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The current project is not directly connected with, or necessary for, the management of any European Site. Consequently, the project has been subject to the Appropriate Assessment Screening process.

This Natura Impact Statement (NIS) has been prepared in accordance with:

- European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites. Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021)
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018)
- Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010)
- Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

1.2 References to Proposed Development

For the purposes of this NIS, where the 'Proposed Development' is referred to, this relates to all the project components described in detail in Chapter 4 of the EIAR which accompanies this NIS (Chapter 4 is provided in Appendix 1 of this NIS). To note, Proposed Development and Proposed Development Site are used interchangeably within this NIS.

Generally, the study area extends beyond the Proposed Development Site depending on the requirements of individual assessments (outlined further within Section 1.4.2).

1.3 Statement of Authority

This report has been prepared by Niamh Rowan (B.Sc. Biological Sciences) and Kieran Sugrue (B.Sc. Zoology). Niamh and Kieran are Ecologists at MKO with over 2 years' experience in ecological consultancy. This report has been reviewed by Aran von der Geest Moroney (B.Sc.) and Corey Cannon (B.Sc., M.Sc.). Aran is a Senior Ecologist at MKO and holds a B.Sc. in Ecology and Environmental Biology from University Cork, with over 5 years' experience in ecological consultancy, ecological management and assessment. Corey is a Project Director (Ecology) at MKO and holds a BSc in Zoology and an MSc in Biodiversity Survey. Corey has over 12 years' consultancy experience. Kieran, Niamh, Aran and Corey have undertaken numerous Ecological Impact Assessment and AA assessments for public and private sector clients.

The baseline ecological surveys for the Proposed Development were conducted by MKO ecologists; Aran von der Geest Moroney (B.Sc.), Kieran Sugrue (B.Sc.), Niamh Rowan (B.Sc.), Timothy O'Ceallaigh (B.Sc.), Matthew Kieran (B.Sc.), Juliane Kohlstruck (B.Sc., M.Sc.), David Culleton (B.Sc.),

and Cuan Feely (B.Sc.). All surveyors have relevant academic qualifications and are competent in undertaking habitat and ecological assessments.

1.4 Methodology

1.4.1 Appropriate Assessment Process

Screening - The purpose of the screening stage is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, either alone or in combination with other plans or projects, is likely to have significant effects on a European site in view of the site's conservation objectives.

There is no necessity to establish such an effect; it is merely necessary for the Competent Authority to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment has been confirmed by the case law of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether Appropriate Assessment of a project is required. Therefore, where significant effects are likely, uncertain or unknown at screening stage, an AA of the project will be required.

Appropriate Assessment - This stage of the process is a focused and detailed examination, analysis and evaluation by the Competent Authority of the implications of the plan or project, either alone or in combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted must:

> (i) identify, in the light of the best scientific knowledge in the field, all aspects of the proposed project which may, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;
>
> (ii) contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and
>
> (iii) may only include a determination that the proposed project will not adversely affect the integrity of any relevant European site where the competent authority decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of potential adverse effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at this stage, so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three (assessment of alternative) and, if necessary, stage four (IROPI[1]).

1.4.2 Ecological Survey Methodologies

1.4.2.1 Ecological Multidisciplinary Walkover Survey

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological baseline conditions are those existing in the absence of proposed activities (CIEEM 2018).

[1] *IROPI - 'imperative reasons of overriding public interest', the test found in Article 6(4) of the Habitats Directive.*

A multidisciplinary walkover survey was conducted on the 29th May 2025 by Kieran Sugrue and Aran von der Geest Moroney of MKO in line with Transport Infrastructure Ireland (TII, 2008) guidance document - *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes, PE-ENV-01113.*

Habitats were identified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (Fossitt, 2000). Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2010), while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide' (British Bryological Society, 2010).

During the surveys, the site was searched for species listed on Invasive Alien Species (IAS) listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) and Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). The assessments have regard to the TII guidance document - *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (GE-ENV-01105)* (TII, 2020).

The Study Area for this survey was the Proposed Development Site.

1.4.2.2 Alluvial forest surveys

1.4.2.2.1 Dedicated Habitat and Vegetation Composition Surveys

Detailed botanical surveys / relevé assessments of the Proposed Development study area were undertaken during the Multi-disciplinary Walkover Surveys carried out in 2025. These surveys provided an understanding of the baseline and informed further survey work following finalisation of the Proposed Development layout.

The habitat assessment surveys described in this report have been undertaken with reference to the following guidelines and interpretation documents:

- Commission of the European Communities (2013) *Interpretation manual of European Union habitats*. Eur 28. European Commission DG Environment.
- *NPWS (2025). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report.* Edited by: Domhnall Finch, Aoife Delaney, Fionnuala O'Neill and Deirdre Lynn.
- O'Neill, F.H. & Barron, S.J. (2013) Results of monitoring survey of old sessile oak woods and alluvial forests. Irish Wildlife Manuals, No. 71. National Parks and Wildlife Service, Department ofArts, Heritage and the Gaeltacht, Dublin, Ireland.
- Plant nomenclature for vascular plants follows '*New Flora of the British Isles*' (Stace, 2010).

1.4.2.2.2 Alluvial forest Condition Assessment

Detailed habitat classification and assessment was undertaken by MKO at targeted locations identified as areas of potential Annex I alluvial forest, both within the Proposed Development site and wider study area, within Lough Ree SAC [Site code: 000440]. Relevés and condition habitat assessment was undertaken at each of the identified survey sites to assess habitat conformity to the 91E0 alluvial forest Annex I habitat.

Botanical assessment was carried out using methods detailed in Ó' Neill and Barron (2013). This included species composition including target species, indicator species (woody, ferns, herbs and bryophytes) and negative indicator species, as well as woodland structure and function, including grazing pressure, tree regeneration, tree size class and the presence of deadwood.

Condition assessment was conducted at 5 no. monitoring plots. Where possible, condition assessment was carried out in 20 m x 20 m plots. Where this was not possible due to insufficient overall area of the

identified woodland habitats, 10 m x 10 m plots, as well as linear 10 m x 2 m (along the lake margins) were carried out. Due to the fragmented, non-continuous nature of alluvial forest habitat within and adjacent to the Proposed Development site, plot sizes were variable. For the individual plot assessment, eight out of ten criteria needed to pass to achieve an overall pass.

The results of these condition assessments are presented in Section 2 of this report. A representative photograph was also taken for each of the areas of this habitat recorded on site.

The Study Area for this survey consisted of the areas of woodland within and adjoining the Proposed Development Site identified during habitat surveys as having the potential to conform to Annex I habitat.

1.4.2.2.3 Macrophyte surveys

Dedicated macrophyte surveys were undertaken by MKO along transects extending from the shore of Lough Ree within the Proposed Development Site. Methodology to conduct both qualitative manual wading surveys and qualitative aquatic drone surveys was based on standard methodology used by the Environmental Protection Agency to assess the status of water bodies in relation to the EU Water Framework Directive (EPA, 2020). Transects were waded or surveyed using a FIFish aquatic drone.

4 no. transects from the shoreline were waded, 1 no. transect was surveyed via grapnel throw, while 9 no. transects were surveyed using an aquatic drone. The length of wading transects were determined by the wadable depth of water at each. While the tether of the drone measures 100 m, the length of drone transects conducted was approx. 90 m from the starting point, taking into account the effect of currents within Lough Ree. Using the robotic arm attachment on the aquatic drone, grab samples were taken along each of the aquatic drone transects.

Plants were viewed using a bathyscope or drone camera along respective wading and drone transects. Along wading transects, plants were sampled periodically using grapnel throw, while samples were obtained via the robotic arm of the aquatic drone periodically throughout deeper water transects. Species were noted along each transect, with an assessment of their abundance on a five-point DAFOR scale (Dominant, Abundant, Frequent, Occasional, Rare).

Initial wading and grapnel trawl surveys conducted on 16th July 2025 provided an understanding of the baseline and informed further aquatic drone survey transects on 28th July 2025.

The habitat assessment surveys described in this report have been undertaken with reference to the following guidelines:

- Commission of the European Communities (2013) *Interpretation manual of European Union habitats*. Eur 28. European Commission DG Environment.
- *NPWS (2025). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report.* Edited by: Domhnall Finch, Aoife Delaney, Fionnuala O'Neill and Deirdre Lynn.
- Aquatic plants in Ireland (Caffrey, Matson & O'Briain, 2023)
- Plant nomenclature for vascular plants follows '*New Flora of the British Isles*' (Stace, 2010).

The Study Area for this survey was the Proposed Development Site and approx. 100m buffer of Lough Ree shoreline within the Proposed Development Site.

1.4.2.2.4 Bird Surveys

An initial site visit was undertaken on the 26th of March 2025, during which the habitats on site were assessed and suitable transects for undertaking surveys were identified. Transects were chosen to have as large as possible a view of identified potential suitable habitat for wintering and breeding bird species. The transects were located along the western and eastern sides of the Site Boundary and ran

parallel to the Proposed Development Site in a north-south direction. Where it was not possible to carry out the transect to the east of the Proposed Development due to the presence of Lough Ree, the shoreline of the lake was walked.

The Study Area, as outlined below covered the Proposed Development Site, as well as areas of potentially suitable supporting habitat in proximity to the Proposed Development site including sections of the shore of Lough Ree located to the north and south of the Site Boundary, and areas of both woodland and agricultural grassland. Surrounding lands were also scanned from elevated vantage points within the site.

The route of the walked transects aimed to provide full coverage over the study area. This follows the adapted Brown and Shepard methodology (1993) and was applied to both wintering and breeding bird surveys. Disturbance to birds was avoided when carrying out the walked transect surveys. During each bird survey, all observations of bird species were recorded, and detailed point data was gathered for each species observation, with all bird species denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. All bird species observed within and adjacent to the Proposed Development site, including all common and widespread passerines, were recorded.

Weather conditions recorded during each of the breeding bird and wintering bird surveys are shown in Table 1-1.

Table 1-1. Survey Conditions for Breeding and Wintering Bird Surveys

Survey type	Date	Temp (°C)	Rain	Cloud Cover (%)	Fog	Wind (Beaufort scale)
Breeding Bird Survey	16/04/2025	6.3	Light drizzle	80	No	Moderate breeze (4)
	02/05/2025	7.5	Light drizzle	0-33	No	Light breeze (2)
	15/05/2025	13.5	None	5	No	Gentle breeze (3)
	27/06/2025	15.8	None	100, overcast	No	Moderate breeze (4)
	25/07/2025	16.1	None	95	No	Gentle breeze (3)
Wintering Bird Survey	07/10/2025	13.1	None	95	No	Gentle breeze (3)
	21/10/2025	10.1	None	80	No	Gentle breeze (3)
	04/11/2025	10.6	Light drizzle	95	Intermittent, passing fog, visibility still good	Light Breeze (2)
	18/11/2025	5.3	None	30	No	Gentle breeze (3)
	05/12/2025	4.9	Moderate rain	100, overcast	Slight in the distance	Fresh breeze (5)
	16/12/2025	3.2	None	2	No	Light breeze (2)
	13/01/2026	3.7	None	10	No	Light breeze (2)
	27/01/2026	5.3	Light rain	85	No	Fresh breeze (5)
	10/02/2026	6.6	Moderate rain	100, overcast	Slight in the distance	Moderate breeze (4)
	24/02/2026	9.8	None	70	No	Gentle breeze (3)

	10/03/2026	8.2	Light drizzle	90	Slight in the distance	Moderate breeze (4)
	24/03/2026	9.3	Light drizzle	70	Moderately	Moderate breeze (4)

Breeding Bird Surveys

Dedicated breeding bird surveys were undertaken on the 16th of April 2025, 2nd May 2025, 15th of May 2025, 27th of June 2025 & 25th of July 2025 by Kieran Sugrue (B.Sc.) and Susan Doyle (B.A., M.Sc., Ph.D.).

For the purposes of breeding bird surveys undertaken for the Proposed Development, target species included waterbirds, which comprised all species of the following taxa: swans, geese, and ducks; cormorant, shag, divers and grebes; auks; seabirds; gulls, terns and skuas; herons, egrets and crane; rails and crakes; waders; and kingfisher.

However, for the purpose of this NIS, target species were those species listed as Special Conservation Interests (SCI)s of Special Protection Areas (SPA)s within the Likely Zone of Influence. All other bird species observed within and adjacent to the study area, including all common and widespread passerines, were recorded as incidentals.

During transect surveys, birds were counted using the 'look-see' method, whereby all birds present within a predefined area are counted (Bibby et al., 2000). Suitable vantage points were selected throughout the transect, at which the surveyor could overlook sections of the study area. Vantage points were chosen to have as large as possible a view of the study area and potential adjacent daytime feeding habitat in the vicinity of the study area. In particular, surveys focused on areas which were deemed to be of likely significance to breeding waterbirds of SPAs within the Likely Zone of Influence.

For each observation, the date, species, number of birds, activity and any other notes of interest were recorded. Birds actively using the study area (i.e. for foraging, roosting and maintenance behaviours) as well as flyovers of target species were recorded.

The Study Area for these surveys was the Proposed Development Site, a 250m buffer of the Proposed Development Site, and a 500m length along the shore of Lough Ree (North and South) from the edges of where the Proposed Development Site meets Lough Ree.

Wintering Bird Surveys

Wintering bird surveys were undertaken on the 7th of October 2025, 21st October 2025, 4th November 2025, 18th November 2025, 5th December 2025, 16th December 2025, 13th January 2026, 27th January 2026, 10th February 2026, 24th February 2026, 10th March 2026 and 24th March 2026 by Niamh Rowan (B.Sc.) and Juliane Kohlstruck (B.Sc., M.Sc.)

Survey methodology followed the Irish Wetland Bird Survey and Lewis and Tierney (2014). For the purposes of the survey, target species included waterbirds, which comprised all species of the following taxa: swans, geese, and ducks; cormorant, shag, divers and grebes; auks; seabirds; gulls, terns and skuas; herons, egrets and crane; rails and crakes; waders; and kingfisher.

However, for the purpose of this NIS, target species were those species listed as Special Conservation Interests (SCI)s of Special Protection Areas (SPA)s within the Likely Zone of Influence. All other bird species observed within and adjacent to the study area, including all common and widespread passerines, were recorded as incidentals.

Wintering birds were counted using the 'look-see' method, whereby all birds present within a predefined area are counted (Bibby *et al.,* 2000). The surveys were carried out at 6 no. suitable vantage points, located overlooking sections of the Proposed Development Site and wider study area. Vantage points were chosen to have as large as possible a view of the study area and potential adjacent daytime feeding habitat in the vicinity of the study area. In particular, vantage points focused on areas which were deemed to be of likely significance to wintering waterbirds of SPAs within the Likely Zone of Influence. Transects through the study area were also used to cover larger areas of ground while recording all birds in sight, including along the L2020 road, which joins the N61 to the south.

For each observation, the date, species, number of birds, activity and any other notes of interest were recorded. Birds actively using the study area (i.e. for foraging, roosting and maintenance behaviours) as well as flyovers of target species were recorded.

The Study Area of these surveys was the Proposed Development Site, a 250m buffer of the Proposed Development Site, a 500m buffer of the Proposed Development Site within the waters of Lough Ree, and a 500m length along the shore of Lough Ree (North and South) from the edges of where the Proposed Development Site meets Lough Ree.

600,000

601,000

747,000

746,000

N

VP 6

VP 5

VP 4

VP 3

VP 1

VP 2

0

250

500 m

Map Legend

- Proposed Development Site
- Wintering Bird Survey Vantage Points
- Breeding Bird Survey Transect Routes
- Wintering Bird Survey Transect Routes

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

N

SITE LOCATION - NOT TO SCALE

Drawing Title
Breeding and Wintering Bird Survey Transects and Vantage Points

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Project No.	Drawing No.	Scale
241220	Figure 1-1	1:8,000
Drawn By	Checked By	Date
TS	AvdGM	10/08/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

1.4.2.2.5 *Otter Surveys*

Mammal surveys, including for dedicated surveys for otter, were conducted on 26th March 2025 by Kieran Sugrue and Aran von der Geest Moroney of MKO.

Otter surveys were conducted adhering to best practice guidance (TII, 2008) and CIEEM best practice competencies for species surveys2. Areas of Lough Ree within the Proposed Development Site were identified as providing potential habitat for otter and were subject to targeted surveys for this species. This involved a search for all otter signs (e.g. spraints, scat, prints, slides, trails, couches and holts) up to 150m up-shore and down-shore of the Proposed Development Boundary. Where otter signs were observed these were mapped.

The Study Area for this survey was the Proposed Development Site and a 150m buffer of the Proposed Development Site including along the shores of Lough Ree and Temple Island.

1.4.3 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with the screened-in European Sites within the Likely Zone of Influence of the Proposed Development. Sources of data included the following:

- Review of NPWS Conservation Objectives supporting documents, site synopsis, standard data forms and supporting documents for European Designated Sites,
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA),
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper,
- Review of NPWS Article 17 metadata and GIS database.

[2] *CIEEM, 2013, Technical Guidance Series – Competencies for Species Survey: Otter, Online, Available at: https://cieem.net/wp-content/uploads/2019/02/CSS-EURASIAN-OTTER-April-2013.pdf*

2. DESCRIPTION OF PROPOSED DEVELOPMENT

2.1 Site Location

The site is situated at Hodson Bay within the townland of Barrymore, Co. Roscommon, extending northwards from the junction of the L2020 Local Road and the N61 National Road. The Proposed Development site is located approximately 4 kilometres (km) north of Athlone. Irish Transverse Mercator (ITM) coordinates for the centre of the site are X 600814, Y 746366.

Figure 2-1 shows the location of the Proposed Development Site.

2.1.1 Site Access

The Proposed Development Site is accessed via the L2020 Local Road from the N61 National Road which runs in a northwest-southeast direction to the southwest of the site. The N61 National Road travels between Athlone town and Roscommon town. There is a railway crossing on the L2020 Local Road approximately 270m from the junction with the N61 National Road in the south of the site; however, there is no rail station in the immediate vicinity of the site.

The existing road infrastructure facilitates vehicular access to the Hodson Bay Hotel, marina facilities, and associated recreational uses. Internal circulation within the site is supported by a network of local roads, parking areas, and service routes.

2.1.2 Existing Site Description

The Proposed Development Site measures approximately 9 ha and currently comprises the existing Waterways Ireland-operated marina facility, the Baysports water sports facility, areas of land currently owned by Athlone Golf Club, Roscommon County Council (RCC) and the Hodson Bay Hotel, car parking, landscaped public realm areas and an Uisce Éireann pumping station. The site is bounded to the east by Lough Ree and to the west by Athlone Golf Club. The grounds of the Hodson Bay Hotel and Athlone Golf Club are located partially within the Proposed Development Site.

The site forms part of an established recreational and tourism hub on the shores of Lough Ree and the immediate surrounding area is characterised by established tourism and recreational uses, with high levels of existing human activity and disturbance within the Proposed Development Site and in the wider vicinity.

Athlone Golf Club and the Hodson Bay Hotel represent key tourism assets adjoining the site, while Hodson Bay also supports a range of water sports and recreational activities, including those operated by Baysports. These existing uses contribute to the area's established role as a recreational and leisure destination. The wider surrounding area of Hodson Bay/Barrymore is predominantly low density residential in nature.

The Proposed Development is located both adjacent to and partially within the Lough Ree Special Area of Conservation (SAC) and the Lough Ree Special Protection Area (SPA). In this regard, an Appropriate Assessment Screening has been undertaken, and a Natura Impact Statement has been prepared (this report) so as to enable An Coimisiún Pleanála (ACP), as competent authority, to carry out a Stage Two Appropriate Assessment.

There are no protected structures located within the application site. There is a Causeway (RO049-005002) listed on the Sites and Monuments Record (SMR) found within the Proposed Development site which has been described as being modernised and raised.

Water Sports Operations

Baysports operates out of an existing Roscommon County Council (RCC) owned water sports building, with surrounding temporary marquee structures and uses an adjacent area for equipment storage. The operations also include an existing jetty structure on the lake.

Marina

The marina area comprises the Waterways Ireland-operated marina facility located within Lough Ree. A hardstanding area and slipway are located beside the marina to allow boat users to enter and exit the water with boats and trailers.

Parking Areas

The site currently provides a total of 353 parking spaces, with the breakdown of parking areas illustrated in Plate 2-1 below. These spaces are shared by visitors to the Hodson Bay Hotel, the marina, Baysports, and other visitors to the area, with no spaces designated specifically for any individual business. The car park surface is macadam.

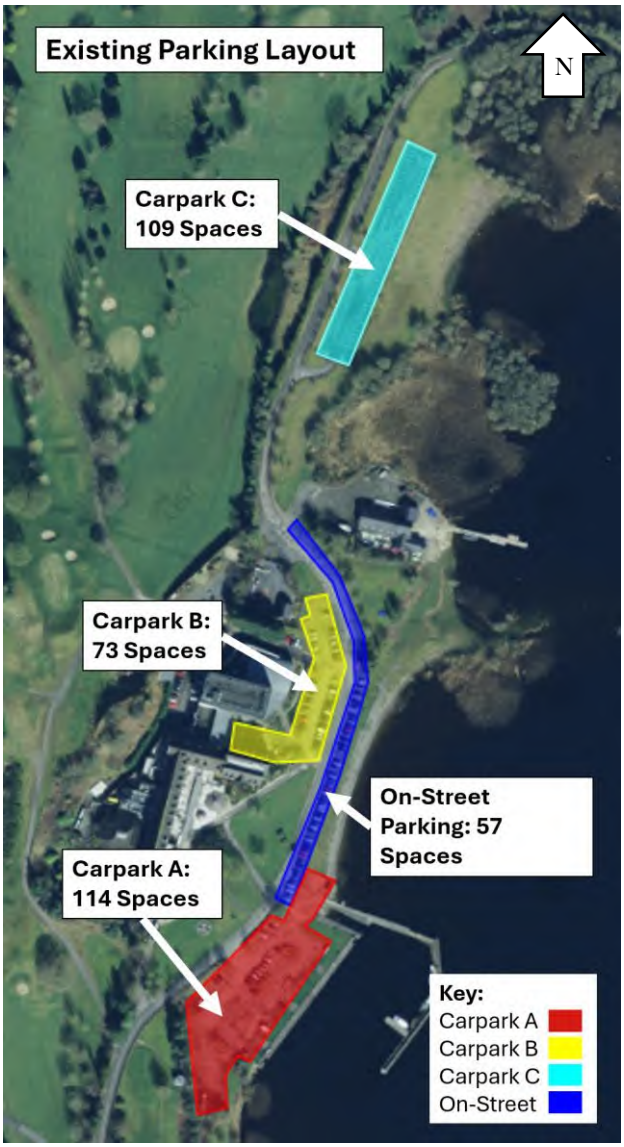


Plate 2-1 Existing Parking Areas at Hodson Bay

2.2 Description of Proposed Development

The proposed development consists of the following elements:

1. **Water Sports Pavilion Development:** This includes:
   - Demolition of the existing water sports building and adjacent public toilet block
   - Temporary relocation of the existing Water Sports Facility during the construction period of the Water Sports Pavilion
   - Construction of a new 'Water Sports Pavilion', which incorporates the following elements:
     - 1 no. 1-storey café
     - 1 no. 1-storey Water Sports Pavilion building consisting of a briefing/mixed use space, staff canteen, office, storage spaces, changing facilities, showers and toilets
     - 1 no permanent Plaza Canopy Structure
     - 10 no. seasonally dismountable marquee structures providing for changing facilities during the peak tourism season, and multifunctional uses as required during shoulder season
     - 1 no. 1-storey maintenance building
     - External showers and bin stores
     - An enclosed plaza space which can be closed off by 3 no. gates or left open to the public.

2. **Marina Redevelopment and Extension:** This includes the redevelopment of the existing Waterways Ireland operated marina at Hodson Bay comprising an extension to the existing breakwater and the creation of a jetty extension for boats to berth. The redevelopment and extension consists of:
   - Expansion of the existing marina providing for a new floating breakwater secured by guided piles and connected to the existing breakwater structure by a gangway
   - Upgrades to the marina utilities to include provision of electricity hook-up, potable water and foul water pump-out for marina users
   - Provision of improved access for non-motorised recreational water activities such as canoeing, kayaking and paddle boarding
   - Provision of c. 29 no. additional berths, resulting in a total capacity of hosting c. 59 berths for cruisers and visiting watercraft
   - Provision of a 1-storey marina pavilion with toilets and showers.

3. **Public Realm Upgrades:** This includes:
   - Construction of a playground, nature observation space, picnic areas, benches, bicycle storage & service areas, sauna pods, wellness meadow, swimming canopy and events spaces
   - Development of a continuous promenade pathway along the lakeshore along with secondary connection path
   - Provision of extensive natural landscaping to ensure the proposed development integrates with the natural environment, including planting of native trees and shrubs throughout the site
   - Provision of a flexible public space to accommodate programmed activities and events while serving a functional amenity for waterfront activities
   - Provision of a waterfront promenade pathway to facilitate public access to the waterfront at key public areas with viewpoints incorporating rest area, secondary pathway and suitable public lighting designed to minimise disturbance to wildlife.

4. **Active Travel and Site Access Improvements:** The proposed development includes:
   - Alterations and upgrades to the L2020 Local Road to provide for a 3m wide shared cycle / pedestrian pathway along the length of the L2020 from the N61 National Road junction to the Hodson Bay Marina. Works will include:

i. Reduction of the existing road carriageway width at locations along a section of the L2020 to facilitate the provision of a shared cycle / pedestrian pathway
ii. Widening & repurposing of the existing footpath along a section of the western side of the L2020 to form the shared cycle / pedestrian pathway
iii. Widening & repurposing of the existing footway along a section of the eastern side of the L2020 to form the shared cycle / pedestrian pathway
iv. Upgrade of existing public lighting scheme along the L2020
v. Provision of new road & pedestrian signage to include regulatory, warning, directional, wayfinding & information signage
vi. Provision of new road marking
vii. Provision of 2 no. bus set down locations adjacent to the Water Sports Pavilion.

- Implementation of traffic calming measures along the L2020 Local Road accessing the site including vertical deflection ramps & raised crossings at key pedestrian crossing locations
- Creation of a pedestrian priority environment resulting in the re-location of 57 no. car parking spaces from the lakefront areas to improve landscape and visual context of the site
- Alterations to existing car parking & provision of new carparking at Hodson Bay to include the following:

i. Provision of 151 no. additional car parking spaces to increase the number of parking spaces to 504 no. spaces.
ii. The provision of 30 no. EV (Electric Vehicle) spaces, 28 no. accessible parking spaces, 3 no. bus parking bays, and 3 no. boat trailer parking bays.
iii. Provision of safe pedestrian connection to & from carpark areas.
iv. Upgrade of existing & provision of new public lighting to carpark areas.
v. Provision of signage & road marking to carparks.

5. **Ancillary works:** The proposed development includes all associated and ancillary development and works including:

- Site clearance, boundary treatments, associated public lighting, bin storage, hard and soft landscaping, site drainage upgrades including SuDS measures, connections to existing utilities to include foul and surface water drainage, water supply, electrical & telecommunications networks.
- Boundary treatments involve upgrades to the existing golf course boundary safety netting (between 3m to 20m in height) and fencing in sections where the boundary is altered to accommodate the proposed development and maintain public safety.

Planning Drawings HB-RKD-ZZ-ZZ-DR-A-1020 to HB-RKD-ZZ-ZZ-DR-A-1023 submitted alongside this report as part of the architectural drawing pack provide an overview of the Proposed Development Site layout. Figure 2-2 also provides an overview of the Proposed Development Site layout.

2.2.1 Water Sports Pavilion Buildings

The Proposed Development will include for the demolition of the existing 500 m^2 water sports building and the adjacent 40 m^2 public toilet facility. The marquees housing the Baysports reception, changing facilities, safety briefing, and café will be dismantled.

The WSP will be designed to incorporate three main buildings and a plaza canopy structure. The WSP will be constructed in the area where the existing water sports building and associated temporary structures are located. In order to mitigate against future flood risk, the new WSP buildings will be constructed at a finished floor level of 38 metres above ordnance datum (mAOD).

- The main WSP building will house the operations for the water sports providers consisting of a briefing/mixed use space, staff canteen, office, changing facilities and toilets with a gross floor area (GFA) of 683 m^2 and will extend to a maximum height of 9.3 m. The building will also contain a basement which will have a finished floor level of 34.5 mAOD.
- The café building will have a GFA of 171 m^2 and will extend to a maximum height of 7.45 m. A Variable Refrigerant Flow system and bin store will be located external to the café building.
- The maintenance building will have a GFA of 185 m^2 and will extend to a maximum height of 6.26 m. The maintenance building will include attic and basement space for storage, maintenance and an engine room. A staff and wash down area will be located external to the maintenance building.
- The plaza area includes a permanent plaza canopy structure and 9 no. temporary marque structures which will be a multifunctional open-air space. The permanent plaza building will cover an area of 323 m^2. The temporary marque structures will cover an area of 636 m^2.

The 3 no. Water Sports Pavilion buildings and the permanent Plaza Canopy Structure will be modular steel frame structures, or similar, with terracotta-coloured concrete tile cladding on concrete foundations. The three primary buildings will sit on a concrete plinth.

The temporary marquees will be constructed with timber-clad walls and tensile canvas roofs, or similar. The demountable marquees will be lightweight steel and fabric. They will be mounted on the concrete plaza to reinforced concrete foundations.

It is also proposed to install 45 no. solar panels on the WSP building and another 9 no. on the cafe building. The proposed panels will be erected at a 30-degree angle and orientated south facing to maximise generation. Maintenance requirement for the panels will be minor; the main requirement for maintaining panels consists of periodic cleaning of the panels.

The layout of the Proposed WSP is shown in Figure 2-3.

2.2.2 Marina Redevelopment and Extension

The Proposed Development will include for the redevelopment of the existing Waterways Ireland-operated marina at Hodson Bay comprising an extension to the existing breakwater and the creation of a new jetty extension for boats to berth.

The existing marina structure will remain in place. A gangway will connect the existing breakwater structure to a new extended breakwater. The breakwater extension will be a floating breakwater of up to 6 m in width and it will be secured in place by guided vertical piles. The new jetty will be comprised of a series of floating pontoons which will also be secured in place by guided vertical piles. A canoe step launch platform will be included in the new jetty design. The marina extension will have a footprint of approximately 130 m x 110 m in the lake. The length of the floating breakwater will total approximately 218 m.

The new floating breakwater will comprise of a series of concrete platforms finished with timber or plastic and connected together by stainless steel wire rope and rubber buffers. The new jetty will be comprised of a series of steel and concrete floating pontoons likely finished in glass fibre reinforced concrete or glass fibre reinforced plastic. The vertical piles which will secure the floating breakwater and jetty in place will be made of steel.

The marina redevelopment and extension will provide approximately 29 no. additional boat berths, ensuring that the extended marina will be capable of hosting approximately 59 no. berths for cruisers and visiting watercraft. The redevelopment will also include for the provision of services for boat users including potable water, electricity and foul water pump-out facilities. A new marina service block

building covering an area of 74 m^2 will be constructed as part of the Proposed Development adjacent to the marina which will provide shower and toilet facilities for marina users. The marina service block building will be constructed with concrete and steel and finished with concrete terracotta tiles similar to the Water Sports Pavilion buildings.

The marina will be an integral part of the public realm and promenade design, and it will have adequate provision for drop off and short-term parking alongside the jetty.

The layout of the Proposed Marina Redevelopment and Extension is shown in Figure 2-4.

2.2.3 Public Realm Upgrades

The Public Realm Upgrades will provide a flexible public space at the centre of the site, providing a space for programmed activity and events while serving as a functional amenity for marina activities. Public picnic areas, play areas, and benches and rest areas at viewpoints will also be incorporated into the design.

The upgrades along the lake shore aim to enhance the visitor experience through the development of a continuous promenade along the lakeshore. This element will also focus on the improvement and redevelopment of the shoreline and providing public access to the River Shannon, creating a pedestrian priority environment.

Amenities

The Public Realm Upgrades will include for the construction of a playground, nature observation space, picnic areas, benches, wellness meadow, changing shelter and events space including the development of a continuous promenade along the lakeshore.

The playground which will measure approximately 400 m^2, will be located adjacent to the WSP and will be constructed largely with wood with surfacing using plastic Ethylene Propylene Diene Monomer (EPDM).

The swimming changing shelter will be a precast concrete structure and will cover an area of approximately 19 m^2. The shelter will be constructed in the north of the Proposed Development site.

Landscaping

A key feature of the Public Realm Upgrades will be the provision of extensive natural landscaping to ensure that the Proposed Development assimilates with the natural environment. The Public Realm Upgrades will incorporate extensive planting of native trees and shrubs throughout the site.

The Proposed Development will result in the removal of approximately 239 no. trees throughout the site. A total of 240 trees will be planted as part of the replanting scheme, with all trees replanted being native species. Details of the tree replanting scheme across the site are found in Planning Drawing HBWP-ZZ-ZZ-DR-OKR-LA-001201 (included as part of the landscape drawing pack). Details of the tree replanting scheme across the site are provided in Appendix 2 of this NIS.

The site landscaping will also include Sustainable Drainage Systems (SuDS) planting zones, integrated planter boxes with public seating, open grassed areas including the wellness meadow in the north of the site and green lake shore areas.

The Public Realm Upgrades will include a variety of finishes for pedestrian areas including promenade areas, steps and ramps finished in high quality concrete. The promenade along the marina quay will be constructed with natural stone paving or similar. Sections of the Public Realm will include resin bound

and self-bound gravel footpaths. Public Realm seating will include high quality concrete benches and timber insert benches.

Lighting

The Public Realm Upgrades will include a lighting scheme which is designed ensure visitor safety and to minimise disturbance to wildlife. Key principles in the lighting design included minimising disturbance to bats and preventing lighting from shining directly on to the lake. The existing lighting infrastructure on the site will be removed and disposed of in appropriate waste facilities.

Site lighting has been designed to the following principles:

- The lighting scheme includes the use of warm white 2700 Kelvin light emitting diode (LED) luminaires, precision optical control, shielding where required, careful luminaire orientation and an intelligent lighting control strategy that progressively reduces light output during periods of reduced site activity. Collectively, these measures seek to minimise obtrusive light, reduce sky glow and limit unnecessary illumination of surrounding habitats.

- The external lighting has been designed around the principle of providing the right level of light, in the right location, for the right duration. Lighting has been designed to ensure a minimum overall uniformity to the areas where illumination is required in principal circulation routes and external public spaces to support safe movement, accessibility and operational requirements, whilst avoiding excessive illumination or ornamental lighting that would increase disturbance through the lighting management system. This operating philosophy contributes to a reduction in operational energy consumption while also reducing the duration and intensity of artificial lighting during periods when ecological activity is generally greatest.

- The proposed lighting design has been prepared using recognised lighting design software together with manufacturer-verified photometric data and has been developed in accordance with the relevant industry standards and guidance applicable to external lighting installations.

The layout of the Proposed Public Realm Upgrades is shown in Figure 2-5.

2.2.4 Active Travel Site Access Improvements

With the Active Travel site access improvements, RCC aims to prioritise sustainability and to enable a safe environment for non-motorised visitors to the area. The Proposed Development includes for a 3m wide shared cycle / pedestrian pathway along the length of the L2020 Local Road from the N61 National Road junction to the Hodson Bay Marina. The upgrades to the L2020 Local Road and pathway will involve two elements.

1. Involves a widening of c. 900m of the existing footpath along the western side of the L2020 Local Road from the junction with the N61 National Road and the pedestrian crossing at the Athlone Golf Club lands. The L2020 Local Road will be narrowed to between 5.5m and 6m to facilitate space for the 3m wide pathway in this section.
2. The Active Travel corridor then crosses the L2020 Local Road and the existing footpath along the eastern side of the L2020 Local Road will be widened along a c. 415m section terminating at the Hodson Bay Marina. The existing carriageway widths in this section will be retained, and land acquisition from Athlone Golf Club is required to widen the pathway to 3m.

The Proposed Development will also see the implementation of traffic calming measures along the L2020 Local Road accessing the site including speed humps at c. 150m spacing and raised crossings at key pedestrian crossing locations. The creation of a pedestrian priority environment will include the re-

location of car parking and creation of a low-speed driving environment around the waterfront area to prioritise safety.

The layout of the Proposed Active Travel Site Access Improvements is shown in Figure 2-6.

2.2.5 Extension of Existing Parking Provision

The Proposed Development will allow for an increase in the overall parking provision from 353 to 504 no. spaces. In addition to increasing capacity, the parking layout has been redesigned to improve the operation and appearance of the waterfront area by relocating existing on-street parking away from the immediate lakeshore, thereby enhancing the visual amenity, landscape setting and pedestrian environment. The layout also seeks to improve the distribution of parking demand across the site through enhanced wayfinding and signage, encouraging greater utilisation of the northern car park, particularly by visitors accessing the water sports facilities and café. This will improve the overall efficiency of the parking provision and reduce vehicle congestion within the central waterfront area.

The parking provision also includes:

- 30 electric vehicle (EV) charging spaces;
- 28 accessible parking spaces;
- Three dedicated bus parking bays within the northern car park;
- Three dedicated boat trailer parking bays adjacent to the marina.

The layout of the Proposed Extension of Existing Parking Provision is shown in Figure 2-7.

2.2.6 Site Drainage Design

This section provides details of the site drainage for the Proposed Development with regard to surface water drainage and foul water management. Further details are also provided in the Drainage Strategy Report prepared by CIVIC Engineers which is included as Appendix 4-4 of Chapter 4 of the accompanying EIAR, which is included as Appendix 1 to this NIS.

Surface Water

The Proposed Development site is located in close proximity to Lough Ree, the surface water drainage strategy has been developed with water quality as a primary consideration alongside Nature Based Solutions (NBS) and SuDS. The surface water drainage network for the site will collect runoff from roofs, roads and other hard standing areas. The drainage strategy will follow a SuDS treatment train approach to manage water quality. This will involve intentional grading of the site, reducing surface water runoff entering any conventional drainage systems and attenuating the runoff in proposed SuDS features, prior to discharge to Lough Ree. There are select areas of Proposed Development that cannot be routed to attenuation. All surface water runoff from car parking and other vehicular areas will be routed through hydrocarbon interceptors combined with a full retention silt/suspended solids trap prior to discharge.

The SuDS strategy has been developed with the Landscape Architect to maximise nature-based drainage solutions including the below:

- Permeable/porous surfacing for car parking and shared surface areas.
- Tree pits with structural cells, providing interception, attenuation storage.
- Rain gardens and bioretention systems/depressions, providing surface ponding storage, filtration and passive treatment prior to discharge. Treatment is provided in the form of engineered media to remove certain urban pollutants.
- Integrated filter strips along boundaries and promenade edge.

The Active Travel corridor within the Proposed Development site will retain its existing network and drainage regime, with no material alteration to runoff behaviour from these areas. Existing gullies along the active travel corridor will be relocated to the carriageway to accommodate proposed footway widening.

Foul Water

A pre-connection inquiry has been submitted to Uisce Éireann on June 5th, 2026, to confirm capacity for the Uisce Éireann infrastructure to accept discharge from the site. The application reference number is CDS26004773.

Uisce Éireann sewer network records show an existing foul water network near the vicinity of the site, but no public sewers within the site boundary. The gravity sewer in the vicinity serves the Hodson Bay area, which drains southward toward the N61 National Road to a wastewater treatment plant. An existing Uisce Éireann Wastewater Pump Station is located within the site boundary. Existing foul water infrastructure for the Hodson Bay Hotel Athlone Spa/Leisure Centre shows a connection to this Wastewater Pump Station.

Foul water generated from the proposed WSP will be collected and discharged to an existing foul water manhole MHF34, which connects to the pumping station operated by Uisce Éireann. A sewerage pump out system is proposed on the marina which will convey via a pressure network to a break chamber at the marina washroom facilities. The foul water from the marina washroom facilities will be collected and is proposed to connect to an existing foul water manhole, MHF33. A survey of the existing foul water network is required to confirm the location, condition and capacity. The proposed foul water layout plans are included in the Drainage Strategy, which is included as Appendix 4-4 of Chapter 4 of the accompanying EIAR which accompanies this NIS (Chapter 4 and its appendices are provided as Appendix 1 to this NIS).

2.2.7 Electrical Substation, Generator and Control Building

It is proposed to construct an ESB substation to accommodate the Proposed Development. The footprint of the proposed ESB substation, which includes an MV switchroom and customer switchroom measures approximately 54 m^2. The works will consist of the construction of a ESB substation, all associated electrical plant and apparatus, underground cabling and all ancillary works. The construction and electrical components of the substation will be to ESB specifications.

2.2.8 Other Ancillary Works

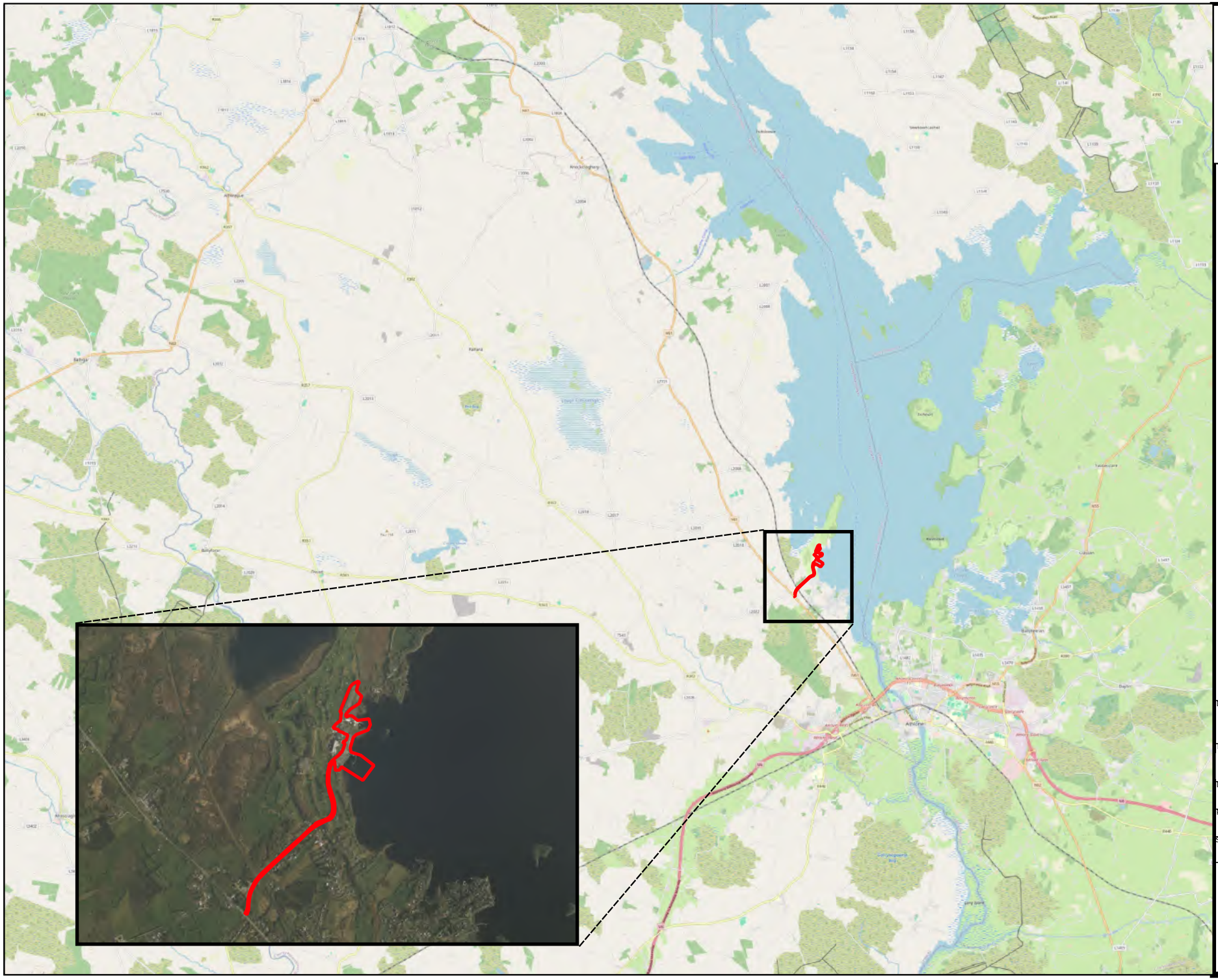
Golf Course Boundary Treatments

Upgrades to sections of the Athlone Golf Club golf course boundary will be required as part of the Proposed Development. The Active Travel site access improvements will see a 415m section of the L2020 Local Road widened involving a land acquisition from Athlone Golf Club. This will result in the removal of the existing boundary ball stop safety netting on the eastern side of this section of the L2020 Local Road and the construction of new ball stop safety netting. The extension and relocation of parking provision on the site will also result in the alteration of the existing golf course boundary in the north of the Proposed Development site.

The Proposed Development will include for the construction of the following ball stop netting and fencing along the site boundary with Athlone Golf Club:

- 272 m of 3m-high ball stop netting
- 449 m of 10m-high ball stop netting
- 158 m of 20m-high ball stop netting

1.5 m-high PVC post and rail fencing will be erected along other areas of the Proposed Development site boundary with the Athlone Golf Club grounds where the boundary will be moved.



Map Legend

Proposed Development Site

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N

Drawing Title
Location of the Proposed Development Site

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 2-1
Scale	Date
1:150,000	28.07.2026

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Map Legend

Proposed Development Site

Simplified Proposed Hodson Bay Design Layout

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Drawing Title

Site Layout of the Proposed Development (1/2)

Project Title

Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 2-2
Scale	Date
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Map Legend

Proposed Development Site

Proposed Water Sports Pavillion Buidlings

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Drawing Title
Location and Layout of the Proposed Water Sports Pavillion Buildings

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 2-3
Scale	Date
1:1,000	28.07.2026

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Map Legend

Proposed Development Site

Proposed Marina Redevelopment and Extension

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Drawing Title
Location and Layout of the Proposed Marina Redevelopment and Extension

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 2-4
Scale	Date
1:2,000	28.07.2026

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Map Legend

- Proposed Development Site
- Proposed Water Sports Pavillion Buidlings
- Car parks, Marina Redevelopment and Extension and Public Access
- Proposed benches
- Proposed Play park
- Proposed planting
- Proposed paving

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Drawing Title
Location and layout of the Proposed Public Realm Upgrades

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 2-5
Scale	Date
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2.3 Proposed Construction Works

2.3.1 Construction Phasing and Timing

It is estimated that the construction phase of the Proposed Development will take approximately 30 months to complete. In the interest of minimising disturbance to breeding birds, construction will not commence during the bird breeding season which runs from the 1st of March to the 31st of August inclusive.

If works must be carried out that continue into the breeding bird season, then these works will commence at a minimum in the weeks prior to 1st March. This will allow for existing levels of disturbance arising from construction works commencing prior to the breeding bird season to act as a disturbance buffer to ensure that waterbird species do not build nests within the Proposed Development Site, but prioritise sites within the wider vicinity, of which there are significant suitable areas to the north and south of the Proposed Development. This would be done to prevent nest abandonment by waterbirds.

The construction schedule for the project will primarily depend on the timing and availability of financial resources, with the assumption that full funding will be secured for the timeframe specified by RCC. Given the sensitive nature of the site and its importance as a tourist attraction, as well as the parameters of various funding schemes, it is expected that the construction works will be undertaken in a phased approach. Subject to financial resourcing, a construction period of 30 months is envisaged however this may be adjusted as the project progresses.

The construction phase can be divided into specific work elements:

1. *Upgrade and extension of existing parking spaces and site roads– 9 months;*
2. *Pedestrian Active Travel corridor enhancements – 5 months;*
3. *Demolition of existing water sports building and construction of new Water Sports Pavilion Buildings - 21 months;*
4. *Construction of Marina Redevelopment and Extension – 6 months;*
5. *Public Realm upgrades including landscaping – 9 months.*

Note that overlap is expected between the commencement of certain phases.

Construction operations will be confined to the period 0700–1900 h Monday-Friday and 0800-1700 h Saturday.

2.3.2 Construction Sequencing

The construction phase for the Proposed Development can be broken down into two main phases, 1) enabling works, and 2) construction works. The main task items under each of the two phases are outlined below.

Enabling Works (including demolition of existing structures)

- Ensure that all pre-construction environmental measures are implemented/conducted e.g. implement Archaeological recovery works that may be needed, surface water protection measures (including installation of cofferdam and silt fencing) or any specific pre-construction planning conditions;
- Clear and hardcore areas for temporary construction compounds and site offices. Install same;
- Provide bunded area for oil tanks for refuelling;

- Set up the construction site enclosures. Protective hoarding will be erected around the perimeter;
- Removal of trees and vegetation in areas for construction. This will be carried out outside of breeding bird season from March 1st to August 31st inclusive;
- The demolition of the existing building used by Bay Sports and the adjacent toilet block building will be undertaken. Temporary structures such as existing marquees on site will also be removed;
- The temporary relocation of the Bay Sports facility to the north of the site (shown in Figure 2-2).
- Commence site clearance and topsoil stripping;
- Regrade to foundation and road formation levels;
- Installation of utilities and services;
- The proposed surface water drainage network will be installed. Further information can be found in Section 4.3.6 of Chapter 4 of the EIAR which accompanies this NIS (Appendix 1 of this NIS).
- The proposed foul water collection system will be installed. Further information can be found in Section 4.3.6 of Chapter 4 of the EIAR which accompanies this NIS (Appendix 1 of this NIS).

Construction Works

- Construct road and footpath upgrades
- Construct parking areas. Removal of waterfront parking spaces, realignment of Marina car park, extension of northern car park;
- Lay foundations;
- Construction of Water Sports Pavilion buildings;
- Construction of Marina extension and Marina services block building;
- Construction of swimming changing shelter;
- Connection to public services – public water supply, sewerage system and electricity network;
- Landscaping and Public Realm upgrade areas completed including installation of lighting scheme;
- Complete all site finishes; and
- Completion of any testing and commission services within the development.

The phasing and scheduling of the main construction task items are outlined in Figure 2-8 where an indicative timeline for construction works has been shown. This timeline may be subject to review and changes following the receipt of planning permission.

			Year 1		Year 2				Year 3			
ID	Task Name	Task Description	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Health and Safety	Ongoing health, safety, environmental and quality management throughout construction	■	■	■	■	■	■	■	■	■	■
2	Site Compounds	Establishment of contractor compounds, welfare facilities, temporary services, site access and security measures	■									
3	Enabling Works and Site Preparation	Demolition, site clearance, vegetation removal, utility diversions, earthworks, and preparation for construction activities	■	■								
4	Pedestrian Active Travel Works	Footway widening, signage, and associated works for active travel route along L2020		■	■							
5	Drainage and Utilities	Installation of drainage networks, utility services, ducting and service connections.		■	■							
6	Building Foundations and Substructure	Construction of foundations, retaining structures and associated below-ground works for the pavilion.		■	■							
7	Water Sports Pavilion	Construction of Water Sports Pavilion buildings, building frames, cladding, glazing			■	■	■	■	■			
8	Marina Extension	In-water piling works and installation of breakwater and pontoons strictly carried out between July–September					■	■				
9	Car Parks and Site Roads	Construction of car parking areas, site roads, traffic calming measures, drainage, lighting and associated infrastructure.							■	■	■	
11	Public Realm and Landscaping	Site reinstatement, landscaping, lighting and tree planting, public realm installations constructed								■	■	■
12	Commissioning and Testing	Preparation for Operational Readiness									■	■

Figure 2-8. Hodson Bay Waterfront Redevelopment Indicative Construction Timeline

2.3.3 Construction Phase Monitoring and Oversight

A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development and is included in Appendix 4-2 of Chapter 4 of the EIAR which accompanies this NIS (Chapter 4 and its appendices are included as Appendix 1 of this NIS). The CEMP includes details of waste management and outlines clearly the mitigation measures and monitoring proposals that are required to be adhered to in order to complete the works in an appropriate manner. In the event that planning permission is granted for the Proposed Development, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for approval.

Routine inspections of construction activities will be carried out on a daily and weekly basis by the Senior Project Manager, Senior Engineers and Foremen to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place. Environmental inspections will ensure that the works are undertaken in compliance with this CEMP and all other planning application documents. Only suitably trained staff will undertake environmental site inspections.

2.4 Site Preparation

Full details of Site Preparation are provided in Section 4.5 of Chapter 4 of the EIAR which accompanies this report (included as Appendix 1 of this NIS).

2.4.1 Hoarding

Hoarding will be installed around the temporary construction compound. During the various phases of construction, the construction site works areas will also be enclosed with hoarding, comprised of Heras fencing or hoarding panels and will be a maximum of 2.4 m in height including supports and appropriate anchoring. Site hoarding will include external lighting. Any temporary lighting will be directed away from Lough Ree to minimise disturbance on wildlife.

2.4.2 Site Compound and Facilities

Site staff facilities will be provided including suitable washing and dry room facilities for construction staff, canteen, sanitary facilities, first aid room, office accommodation etc. Access to the compound will be security controlled and all site visitors will be required to sign in on arrival and sign out on departure. The compound will be constructed using a clean permeable stone finish and will be enclosed with hoarding/fencing. Any wastewater will be removed by vacuum tanker using an authorized waste collector.

The primary construction compound will be located within the Proposed Development site, to the north of the Hodson Bay Hotel, for the duration of the construction phase. A secondary construction compound (also located within the Proposed Development site) will also be used at times as works progress and while the primary construction compound is set up.

2.4.3 Pedestrian and Cyclist Safety

At various stages during construction phase different areas of the Proposed Development site will be enclosed as construction sites. When vehicles are entering or leaving the construction site, these movements will be supervised by road marshals. The construction site gates will be kept closed when not in use and monitored by security. Traffic cones and set-back signage will be put in place to warn and safely direct pedestrians and cyclists around obstructions. A network of footpaths throughout the Proposed Development will provide a high rate of accessibility to the various visitor facilities within the area.

2.4.4 Proposed Hours in which Vehicles will Arrive and Depart

Working hours will be strictly in accordance with the granted planning conditions with no works on Sundays or Bank Holidays. If work is required outside of these hours, written approval will be sought by the contractor from the Local Authority (RCC).

In general, the hours in which vehicles will arrive and depart will coincide with the expected site working hours of 0700–1900 h Monday-Friday and 0800-1700 h Saturday. The construction phase of the Proposed Development is expected to last approximately 30 months in total, and construction of the Proposed Development will proceed in a sequential manner with some overlap expected between construction phases.

2.4.5 Access Arrangements for Vehicles

The access arrangements will be as specified in the statutory publications “Traffic Management Guidelines” manual and the “Traffic Signs Manual” and as agreed with RCC. A Traffic and Transportation Assessment has been prepared by CIVIC Engineers for the Proposed Development.

All deliveries and vehicles into site will access the site from the L2020 Local Road. The location of the construction entrance and access will be regularly reviewed during the construction to ensure that the pedestrian and vehicular access points are located and maintained appropriately.

2.4.6 Vehicles and Plant

It is anticipated that there will be numerous types of vehicles and machinery used for the construction of the Proposed Development and to bring material to and from the site. The site equipment to be used would be at the discretion of the appointed construction contractor. This is expected to include the following equipment:

- Skip lorries
- Ready mix concrete lorries
- Tracked 360-degree excavator
- Kango/demolition hammer
- Flatbed delivery vehicles for the delivery of various materials
- Vibrating roller
- Cranes
- Low loader
- Loadall / Manitu
- Hydraulic lifting equipment
- Cement mixer
- Drilling & cutting equipment
- Welding equipment
- Portable hand tools 110V
- Pumps for de-watering
- Generators
- Dumper truck
- Road paver
- Bitumen sprayer
- Mini piling rig
- Con saws
- Road sweeper
- Bulldozers
- Mobile Elevating Work Platforms (MEWPs)
- Air compressor units
- Pressure washers.
- Waterways Ireland Coill an Eo and Inis Muilinn workboats
- Pontoon with 36t excavator
- Movax hydraulic piling hammer
- Pioneer workboats.

2.4.7 Parking and Loading Arrangements

A “Just in Time” approach will be implemented for the delivery of particular building materials such as concrete formwork and large structural steels. The locations for the storage of materials will be within the site boundary, primarily within the primary construction compound. The secondary construction compound will also be used to store materials if required. Any materials with high potential to cause contamination will be stored in the primary construction compound to minimise potential for runoff or pollution to Lough Ree. Any storage of construction materials in the secondary construction compound will only occur if flood risk is minimal.

It is proposed to provide on-site car parking spaces within the site boundary for workers during the construction phase.

2.4.8 Temporary Water Sports Facilities

During the construction phase of the Proposed Development, a temporary water sports facility (Baysports) will be provided within the development site to ensure continuity of water sports activities and services throughout the construction works. The space available for the temporary water sports facilities covers an area of 3,510 m^2 and a minimum buffer of 10 m will be retained between temporary structures and both the lake shore and nearby alluvial forest habitat.

The temporary site will comprise the following elements:

- Marquees to provide temporary indoor space for equipment storage, changing facilities, and operational use;
- Perimeter fencing to secure the temporary compound and separate it from the active construction area;
- Access points to facilitate safe pedestrian and operational access to and from the temporary facility;
- A water access route to maintain safe and functional access to the water for water sports activities and craft launching during the construction period;
- A relocated footway, temporarily repositioned to maintain safe pedestrian connectivity and permeability around the site during construction, in place of the existing route which will be affected by the works.

To support the operational needs of the temporary facility, portable toilets and shower units will also be provided on site for the duration of the construction phase.

Temporary water and electrical connections to serve the Baysports facility will be required, and the specific details, capacity, and location of these connections will be subject to confirmation with Uisce Éireann (UÉ) and ESB Networks at post-planning / pre-construction stage. It is intended that these services will be provided in agreement with the relevant statutory undertakers to ensure the temporary facility can operate safely and effectively throughout the construction period. There will be minor excavations required to connect to the existing water supply network. These works will be undertaken in accordance with the methodology outlined in Section 4.6.1.1 of Chapter 4 of the EIAR which accompanies this NIS (Appendix 1).

Upon completion of the construction works, the temporary facility, including marquees, fencing, and associated temporary infrastructure, will be removed, and the site reinstated in accordance with the permanent scheme design.

2.5 Construction Methodologies

This section describes the construction methodologies that will be used for the Proposed Development. Full details of construction methodologies are provided in Appendix 4-2 of Chapter 4 of the EIAR which accompanies this NIS (Chapter 4 and its appendices are included as Appendix 1 of this NIS).

2.5.1 General Construction Measures

Communication with the public, local residents and businesses adjacent to the development will be an important responsibility of the Senior Project Manager and delegated persons. All parties will be always kept up to date and informed both shortly prior to, and during, the construction phase.

A Construction Traffic Management Plan (CTMP) will be issued to RCC for approval prior to works commencing on site. The approved CTMP and any revisions thereto will be set up and implemented on site. All necessary signage will be erected in the weeks prior to any works commencing along and on adjacent roads to the Proposed Development giving advance warning to traffic, pedestrians /

members of the public. Every effort will be made to minimise the impact of the above works on local residences and traffic. A CTMP is included as Appendix 4-4 of Chapter 4 of the EIAR which accompanies this NIS (Chapter 4 and its appendices are included as Appendix 1 of this NIS).

- All personnel will be inducted and made familiar with Risk Assessments / Method Statements (RAMS) and TMPs.
- All site-specific safety rules will be adhered to.
- All plant operators will have appropriate Construction Skills Certification Scheme (CSCS) training.
- All personnel will have SOLAS Safe Pass training
- Fire extinguishers and first aid supplies will be available in the work area.
- All adjacent roadways will be maintained in clean condition at all times.
- Helmets, high visibility clothing and safety footwear will be worn at all times.
- Secure access gates to be used to prevent unauthorized access to the site
- Competent foremen will be on site at all times.

2.5.2 Cofferdam Installation

Mitigation measures to avoid water quality impacts during construction phases will include the installation of sheet piled cofferdam around the lake edge following the boundary of the existing concrete hardstand at the Baysports facility.

However, to avoid any impacts on alluvial forest, alternative water quality protection solutions are required in this area. Sheet piling works are not proposed in areas of alluvial forest, and instead an earth bund structure will be installed in the vicinity of the alluvial forest. Works will take place outside of the identified root protection zone, as advised by an arboriculturist. In order to avoid disturbance of root structures, the dam structure will be constructed above ground, with an earth bund installed on top of the existing concrete hardstand. The earth bund will connect to the sheet piling at a point outside of the identified areas of alluvial forest. The top-level of the cofferdam will be installed to a minimum of 37.5 mAOD to ensure that the cofferdam is not breached during flooding. As with the cofferdam, the top-level of the bund will be installed to a minimum of 37.5 mAOD to ensure that the bund is not breached during flooding (Section 8.3.5 of Chapter 8 of the EIAR, which accompanies this NIS (Chapter 8 and its appendices are included as Appendix 6 of this NIS).

Concrete removal under the earth bund will be undertaken in a sensitive manner using hand tools where practical to ensure no tree roots are damaged. Concrete removal in this area will be conducted in the dry. Around the areas of concrete removal and prior to the commencement of works, a sandbag dam will be instated with an impermeable geomembrane to minimise any potential lake water penetration. Should any water penetrate the sandbag dam, water will be pumped from the area to the surface water drainage system (Section 8.5.3.2 of Chapter 8 of the EIAR; Chapter 8 and its appendices are included as Appendix 6 of this NIS). Weather and flood forecasting will be continuously monitored, with concrete removal in this area taking place only during periods of dry weather and low lake levels. Silt curtains will be installed in front of areas of reed bed within the lake, to the north of the existing Baysports facility.

Similarly, concrete pouring will be carried out during periods of dry weather and low lake levels, using water-tight shuttering and form works. Impermeable geomembrane sealing, sandbags and silt curtains will all be retained for the duration of concrete pouring and will be removed following the completion of works. Should rain be forecasted, or lake levels anticipated to rise, any concrete removal or concrete reinstatement works will cease until rain stops and lake levels return to a suitable level.

Sheet piling and concrete removal works will be undertaken in August-September (inclusive) to avoid the main breeding and winter bird seasons, and to coincide with a time when water levels are at their lowest.

Dewatering will be provided as relevant to specific requirements with dewatered discharge pumped using a pump equipped with a silt bag on the discharge outlet. The pumped water will be discharged to either the existing surface water drainage system or to a suitably vegetated area within the site boundary. Where discharge to a vegetated area is required, the area will be enclosed with silt fencing, as necessary, to prevent sediment-laden runoff and ensure compliance with best practice environmental controls.

Planning Drawing 31022-DR-CIV-CE-50001 submitted within the engineering drawing pack shows the location and design of the cofferdam to be installed prior to commencement of demolition works and Water Sports Pavilion construction works. The final detailed design of the cofferdam is to be confirmed by the Contractor prior to commencement of construction works following further detailed ground investigations in the area. The indicative footprint of the cofferdam and bund is also shown Figure 2-9.

2.5.3 Soil Stripping & Temporary Stockpiling

The excavation and stripping of soils and subsoils will be required across much of the site, and this soil will need to be redistributed and temporarily stockpiled around the site as the Proposed Development progresses. Approximately 2,150 m^3 of soil and other overburden will require management during the construction phase. During these works, topsoil from the development area of the site will be stripped and stored in a designated storage area in the construction compounds for reuse as shown in Figure 2-10. Where these works occur, the following will apply:

- Temporary stockpile areas will be located in areas that are a minimum of 50 m away from any water bodies / watercourses where possible.
- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, RCC etc. will be contacted and all drawings for all existing services sought.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- All plant operators and general operatives will be inducted and informed as to the identification of invasive species.
- A tracked 360-degree excavator will be used to strip the topsoil, and a dumper will be used to move the excavated materials to the temporary stockpile location.
- All excavated material which is not required for future landscaping works or for backfill of excavations will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site.
- All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.
- Silt fencing will be installed around these stockpiles.
- Trenches will be backfilled as soon as possible after excavation. When practically possible, excavation depths and volumes will be kept to a minimum.

2.5.4 Material Management

The quantity of soil and overburden, requiring management on the site of the Proposed Development has been calculated, as presented in Table 2-1.

Table 2-1 Summary of Soil Volumes Requiring Management.

Infrastructure Element	Soil Volume to be Excavated (m^3)	Fill Volume Requirement (m^3)	Soil Volume to be Imported (m^3)
Water Sports Pavilion, Public Realm and Promenade	470	5,250	4,780
L2020 Upgrades	210	470	260
Car Parking	1,420	700	-720
Embankment	50	400	350
Total Cut / Fill Volumes to be Managed	**2,150**	**6,820**	**4,670**

2.5.5 Temporary Construction Compound

The primary construction compound area will cover an area of 1,920 m^2 and incorporate temporary site offices, a refuelling area, staff facilities and car-parking areas and will be located within the red line boundary of the site to the north of the Hodson Bay Hotel. A secondary construction compound location will be required during the preparation of the primary construction compound and at various times throughout the construction phase as works progress. Tree and vegetation removal will be required to allow the primary construction compound to be prepared. The secondary construction compound will be located to the northeast of the site and cover an area of 1,660 m^2.

A dedicated waste management area will be located within the primary construction compound, with waste to be sorted and collected from site by permitted collectors. Temporary lighting will be installed for the construction compounds. Lighting will not shine directly on Lough Ree to ensure disturbance to biodiversity is minimised.

Temporary port-a-loo toilets located within portacabins will be used by workers during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewaters being tankered off site by permitted waste collector to wastewater treatment plants. Power will be supplied by a diesel generator located within the compound. Potable water will be provided in the form of bottled water for staff use.

The construction compounds will be used for temporary storage of some construction materials, prior to their delivery to the required area of the site. Any materials with high potential to cause contamination will be stored in the primary construction compound to minimise potential for runoff or pollution to Lough Ree.

Any storage of construction materials in the secondary construction compound will only occur if flood risk is minimal. Given the proximity of the secondary construction compound to Lough Ree, materials stored here will also be subject to bespoke pollution mitigation measures as detailed in the CEMP appended to Chapter 4 of the EIAR which accompanies this NIS (Appendix 1).

Location of temporary construction compounds are shown in Figure 2-10.

2.5.6 Active Travel Improvement Works

The L2020 Local Road which provides access to the Proposed Development site will be narrowed to between 5.5 m and 6 m to facilitate space for a 3.0 m wide shared cycle / pedestrian pathway as part of the Active Travel upgrades. The upgrades to the L2020 Local Road and pathway will involve two elements.

Southern Section of the L2020 Local Road

Involves a widening of approximately 900 m of the existing footpath to at least 3 m wide along the western side of the L2020 Local Road between the junction with the N61 National Road and the golf crossing at the southern end of Athlone Golf Club lands. The footpath widening in this section will be achieved by narrowing approximately 900 m of the L2020 carriageway to between 5.5m and 6m.

Northern Section of the L2020

The Active Travel route crosses the L2020 Local Road at the existing golf crossing at the southern end of Athlone Golf Club lands and the existing footpath along the eastern side of the L2020 Local Road will be widened to 3 m along an approximately 415 m section between the golf crossing and the Hodson Bay Marina. An embankment at a 1:2 slope will be provided at the edge of the proposed 3m wide shared path, to tie back into the golf club levels.

While the active travel corridor will be continuous, it will require crossing of the L2020 Local Road at an existing pedestrian crossing which will be upgraded as part of the works. Raised tables are proposed at all pedestrian crossings along the L2020 to prioritise pedestrians. The Proposed Development will also see the implementation of traffic calming measures along the L2020 Local Road accessing the site including c. 6 no. speed humps at c. 150 m spacing and 7 no. raised crossings at key pedestrian crossing locations.

Upgrades to the Northern Section of the L2020 will involve tree removal and vegetation removal. The location of tree removal and vegetation clearance is shown in Figure 2-11. Layout of the Active Travel Improvements is shown in Figure 2-6.

Full details of construction methodology for the works along the L2020 Local Road are provided in Section 4.6.6 of Chapter 4 of the EIAR which accompanies this NIS (Chapter 4 and its appendices are included as Appendix 1 of this NIS).

2.5.7 Car Parking Areas

There are three parking areas proposed as outlined in Planning Drawings 31022-DR-CIV-CE-00201 to 31022-DR-CIV-CE-00205 prepared by CIVIC Engineers submitted as part of the engineering drawing pack The location of proposed car parking areas are also shown in Figure 2-7.

Existing parking areas being retained will keep existing asphalt surfacing. New parking areas will be constructed using a porous asphalt to assist with site SuDS. The car parking areas will be constructed using the following methodology:

- Establish alignment of the parking areas from the construction drawings and mark out the boundaries with ranging rods or timber posts;
- All drainage measures prescribed in the detailed drainage design for the Proposed Development will be implemented around the works area;
- All excavated material will be managed on-site. Some topsoil will be temporarily stockpiled locally for reuse for landscaping purposes;
- The subsoil will be excavated down to a suitable formation layer of either firm clay or bedrock and managed on-site in the temporary stockpile areas;
- The car park will be constructed using well-graded imported granular fill, spread and compacted in layers typically of 200mm and a suitable capping layer to provide a homogeneous running surface. The thickness of layers and amount of compaction required will be subject to detailed design by Project Engineer in consultation with the Construction Manager based on the characteristics of the material and the compaction plant to be used;

- The car parking areas will be constructed with the necessary gradient to promote drainage;
- Car parking areas will be finished with porous asphalt;
- The parking lines will then be painted; and
- Any updated or new signage will be installed

Other hardstand/paved areas will be installed using the same methodology as that outlined for carparking areas with the only key difference being the paving or finished applied to each area.

2.5.8 Demolition of Existing Buildings

As part of the Proposed Development, 2 no. existing buildings on the site which are owned by RCC will be demolished. The water sports building currently used by Baysports and the adjacent toilet block building will be demolished. Temporary structures such as existing marquees on site will also be removed. The locations of these buildings are shown in Planning Drawing HB-RKD-ZZ-ZZ-DR-A-1010 (submitted as part of the architectural drawing pack). The existing concreted area around the buildings will also be demolished as part of the development. The locations of buildings to be demolished are also shown in Figure 2-12.

Service Disconnections

Prior to commencement of the demolition works the location of services likely to be affected by the works will be ascertained. Arrangements will be made with service providers for all services to be disconnected and/or terminated as required. The demolitions contractor will confirm terminations & disconnections in advance of works commencing liable to affect same. Services to the areas of the site where demolitions are proposed which may need to be disconnected or terminated would be electricity and water.

Soft Strip

This would consist of the removal of remaining furniture, loose rubbish from the individual buildings or rooms to provide a clear working area. The buildings/rooms would then be stripped of all built in units, doors, flooring, skirting, framework, plasterboard etc. Removal of any temporary structures such as marquees and removal water sports equipment will also take place.

Demolitions

Once the above steps have been carried out, demolition of the external structures of the 2 no. buildings for demolition will comprise using kango/demolition hammers and appropriately sized excavators to remove the structures. Waste material will be disposed off-site at an appropriate licensed recovery or waste facility.

2.5.9 Water Sports Pavilion Buildings

Foundations

The WSP buildings and associated structures will be constructed on a reinforced concrete foundation which will be formed on competent strata (i.e. bedrock or subsoil of sufficient load bearing capacity) which will be determined by the Project Design Engineers. The three primary buildings will sit on a concrete plinth. Foundations will be shallow pads, expected to be founded at 1 m below ground level. Ground investigation will be completed prior to final designs to confirm the depth and strength of the bearing strata.

A cofferdam will used to create a works area for the construction works. The works area will be approximately 70 m in width and 120 m in length (subject to final cofferdam design confirmed by the Contactor). Details of cofferdam installation are provided in Section 2.5.2.

Overburden and material excavated to create the working area will be stripped off the foundation area to a suitable formation using a 360-degree excavator and will be stored locally for later reuse in backfilling or site reinstatement. This material will be stored in the temporary stockpile area within the primary construction compound for later reuse. The excavated material will be sealed using the back of the excavator bucket and surrounded by silt fences to ensure sediment-laden run-off does not occur, further details of which are discussed in Section 2.5.3 above, Section 6.1.3 and the accompanying CEMP (Appendix 4-2 of the accompanying Chapter 4 EIAR, included as Appendix 1 of this NIS).

The basement structure will be formed with concrete. The formation material will have to be approved by an engineer as meeting the design specification. If the formation level is reached at a depth greater than the depth of the foundation, the ground level will have to be raised with approved hardcore material, compacted in 250 millimetres (mm) layers, with sufficient compacted effort (i.e. compacted with seven passes using 12 tonne roller).

The formwork and reinforcing steel cage will be installed on completion of all preliminary ground works. Formwork to concrete bases will be propped/supported sufficiently to prevent failure. Concrete for bases will be poured using a concrete pump. Each base will be poured in three stages. Stage 1 will see the concrete being poured and vibrated in the centre of the anchor cage to bring the concrete up to the required level inside the cage. Stage 2 will see the centre of the steel foundation being poured and vibrated to the required level. Stage 3 will see the remaining concrete being poured around the steel foundation to bring it up to the required finished level. After a period when the concrete has set sufficiently the top surface of the concrete surface is to be finished.

Once the base has sufficient curing time it will be backfilled with suitable fill up to existing ground level and finished with the original material that was excavated.

Structural Frame

The structure of the WSP buildings and Plaza Canopy will be formed with a modular steel frame, or similar, which will be installed on the concrete foundation. The frame will be fabricated off site and imported to site in sequence and installed by an experienced erection crew using a combination of lifting equipment such as cranes and hydraulic lifting equipment. The frame will provide a series of columns and beams which will be installed as per the structural frame design. The flooring above ground level will be reinforced concrete and will be installed as the frame installation develops.

The temporary marquees will be constructed with timber-clad walls and tensile canvas roofs, or similar. The demountable marquees will be lightweight steel and fabric. They will be mounted on the concrete plaza to reinforced concrete foundations.

External Finishes

The external finishes proposed for the Water Sports Pavilion buildings and structures are presented in the HB-RKD-ZZ-ZZ-DR-A-1300 drawing series and the Architectural Design Statement (submitted as part of the architectural drawing pack).

As with the structural frame components, the cladding and glazing will be prefabricated off site and delivered to site via Heavy Goods Vehicles (HGVs).

Both the cladding and glazing installation will be completed by specialist contractors using the necessary lifting and access equipment. As with the steel frame also, there is no invasive element to the

installation of the external cladding and glazing finishes as all material will be installed in pre-prepared areas.

Building Services

As outlined in Section 4.3.6 of Chapter 4 of the accompanying EIAR (Appendix 1 of this NIS) the site is already serviced with both foul and storm sewage networks to which the Proposed Development will connect.

All utility infrastructure will be laid underground within the Proposed Development site. This will be carried out using the methodologies set out in Section 2.5.12 below.

Domestic hot and cold water, foul water and power will be provided to all buildings. Power and drainage will be provided under the Plaza Canopy for use in difference seasonal modes. In peak summer season it will function as the reception / wetsuit storage for the Water Sports providers. In winter season it will function as a canopy / bandstand. Power points will be provided in the plaza for use by the demountable changing canopies.

The location and layout of the Proposed Water Sports Pavillion Buildings are shown in Figure 2-3.

Solar Panels

The proposed panels will be installed on WSP building and cafe building using either ballasts, bond or will be mechanically fixed.

- Ballasted - panels sit on a frame held down by weight without penetrating the roof membrane.
- Bonded – the connection points are bonded to membrane layer without penetrating the roof membrane.
- Mechanically Fixed - panels are bolted through the roof structure into the deck below.

2.5.10 Marina Redevelopment and Extension

The marina redevelopment and extension will include the following installations;

- Approximately 42 no. steel piles driven into lakebed;
- Floating breakwater;
- Floating jetties;
- Gangways to connect to the existing marina;
- Canoe step;
- Marina service block building; and
- Provision of services including electricity, potable water and foul water pump-out throughout the marina.

The construction crew will begin by pushing a floating pontoon with 36-tonne excavator and Movax hydraulic piling hammer on board into position using the Inis Muilinn workboat for the location of the first pile to be installed (see Plate 2-2 below). Pile locations will be set out using Global Positioning System (GPS). A silt curtain will be installed around the location of where this pile will be installed and connected back to the pontoon, weights will be used to ensure the silt curtain sits on the bed of the lake. Silt curtains will be monitored regularly for effectiveness.

The 36-tonne excavator using the Movax piling hammer will then lift the steel pile and vibrate the pile into the lakebed to the required depth. The floating pontoon will then be moved to the next pile position and the process repeated until all the piles have been installed.

It will take approximately 4-6 weeks to install all the steel piles. Once the piles have been installed, the contractor suppling the jetties and breakwater will lift the floating jetties and breakwater into the water, push them into position using workboats and connect them to the relevant steel piles and other section of jetties/breakwater. The canoe step will then be pushed into place and connected.

The gangways will then be lifted into place using the 36-tonne excavator on the floating pontoon and bolted to concrete on the existing breakwater.

As outlined in Figure 2-8, the in-water construction elements of the marina and breakwater extension (including piling) will be undertaken between the months of August to September as per Section 4 of the 2016 Inland Fisheries Ireland guidance document *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*[3].

The marina service block building will be constructed with concrete and steel and finished with concrete terracotta tiles similar to the Water Sports Pavilion buildings.

Services including electricity, potable water and foul water pump-out will then be installed on the new sections of jetties.



Plate 2-2 Coill an Eo, Inis Muilinn workboats and Pontoon Raft with 36-tonne excavator

Location and layout of the Proposed Marina Redevelopment and Extension are shown in Figure 2-4.

2.5.11 Public Realm Upgrade Works

Prior to completion of works on the development site, the Public Realm Upgrade works will be carried out. The proposed Public Realm Upgrades plan is described in Chapter 4 of the accompanying EIAR (including as Appendix 1 to this NIS).

The finishes include areas of amenity grassland, a wellness meadow, nature trails, footpaths, playground, changing shelter for wild swimmers, several benches, tree planting. These works will involve the use of plant and machinery in order to carry out tasks such as earth moving. Materials which have been stockpiled for the task will be used as much as possible, and material will only be

[3] Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016) *Available at* https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf

imported where it is required. Where topsoil is stripped prior to excavation, this material will be retained on site for use in landscaping. Hoarding will be erected around the construction site boundary for the duration of the Public Realm Upgrade construction works.

A detailed Tree Replanting Scheme with comprise a key element of the Public Realm Upgrade works (see Drawing HBWP-ZZ-ZZ-DR-OKR-LA-001201, submitted as part of the landscape drawing pack). 240 no. trees and shrubs will be replanted across the site, all of which will be native species. The Tree Replanting Scheme incorporates a significant number of mature trees (10 years or older) to compensate for the removal of a number of mature trees for the construction of the Proposed Development.

OKRA Landscape Architects have prepared detailed landscape drawings and replanting plans which accompany this NIS (see Appendix 2).

The proposed Public Realm Upgrades will also include upgrades to the lighting scheme throughout the site. Lighting design and specification throughout the Proposed Development site has been carefully considered to ensure minimisation of ecological disturbance is balanced with ensuring the safety of those visiting the Hodson Bay area is not compromised (see Appendix 3 of this NIS).

The Northern Swimming Changing Canopy will be constructed of in-situ concrete on a reinforced concrete foundation.

Layout of the Proposed Public Realm Upgrade Works is shown in Figure 2-5.

2.5.12 Excavation and Services Installation

Where excavations and installations of any new services are required on the Proposed Development site, the following will apply:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, Uisce Éireann, RCC etc. will be contacted and all drawings for all existing services sought.
- A Construction Traffic Management Plan will be produced by CIVIC Engineers as required for connection works to the existing service network.
- A road opening licence will be obtained as required for connection to existing services.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the trench to the required dimensions.
- All excavated material will be removed to an authorised waste recovery facility or, if suitable, stockpiled and reused for backfilling and landscaping where appropriate.
- Once the trench has been excavated the ducting/pipework will then be placed in the trench as per specification.
- Once the service ducts/pipework has been installed couplers will be fitted as required and capped to prevent any dirt etc. entering the ducts/pipes.
- The as-built location of the ducting/pipework will be surveyed using a total station/GPS.
- Backfill material will be carefully placed so as not to displace the ducting/pipework within the trench.
- The appropriate warning/marker tape will be installed above the ducts/pipes at the appropriate depths.
- The surface will be reinstated as per original specification or to the requirements of the site layout/Local Authority as appropriate.

2.5.13 Existing Underground Services

Any underground services encountered during the works will be surveyed for level and where possible will be left in place. If there is a requirement to move the service, then the appropriate body (ESB, Gas Networks Ireland, etc.) will be contacted, and the appropriate procedure put in place. Back fill around any utility services will be with dead sand/pea shingle where appropriate. All works will be in compliance with required specifications.

2.5.14 Electrical Substation

The proposed substation will be constructed by the following methodology:

- The area of the onsite substation will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to nearby temporary storage area for later use in landscaping. Any excess material will be disposed/recovered offsite at an appropriately licensed facility;
- The dimensions of the substation area have been designed to meet the current requirements of the ESB;
- The required level platform will be established and finished with well-graded imported granular fill, compacted in layers and finished with a suitable capping layer to the desired level;
- The ESB substation will have oil-less equipment within.
- The foundations will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it.;
- The block work walls will be built up from the footings to damp proof course level and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors;
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the buildings for this operation;
- Concrete roof slabs will be used over the ESB Substation section only and will be lifted into position using an adequately sized mobile crane;
- The timber roof trusses over the complete substation will then be lifted into position using a telescopic load all or mobile crane depending on site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather;
- The substation plinths will be shuttered and poured with reinforced concrete.;
- The electrical equipment will be installed on the concrete plinths and commissioned.

2.5.15 Ball Stop Fencing

Ball stop fencing will be installed along the footway edge adjacent to the golf course, and will be constructed as follows:

- Excavation and concreting of fence post foundations;
- Installation of fence posts and mesh/netting systems.



Map Legend

- Proposed Development Site
- Cofferdam
- Earth bund

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Drawing Title
Location of Cofferdam and Earth Bund Installation

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 2-9
Scale	Date
1:1,500	28.07.2026

MKO
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email:info@mkoireland.ie
Website: ww.mkoireland.ie



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Drawing Title
Location of Proposed Construction Compounds

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 2-10
Scale	Date
1:1,500	28.07.2026

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Map Legend

Proposed Development Site

Locations of Proposed Tree Removal and Vegetation Clearance

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Drawing Title
Location of Proposed Tree Removal and Vegetation Clearance

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 2-11
Scale	Date
1:4,750	28.07.2026

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Map Legend

Proposed Development Site

Buildings Proposed for Demolition

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Drawing Title
Location of Permanent Buildings Proposed for Demolition

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 2-12
Scale	Date
1:1,000	28.07.2026

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3. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

3.1 Hydrological Desk Study

The Proposed Development site is located within the Upper Shannon hydrological catchment (Catchment ID: 26E), and the Shannon [Upper]_SC_090 hydrological sub-catchment (Sub-Catchment ID: 26E_6). Lough Ree (EU Code IE_SH_26_750a) is located along the eastern boundary of the Proposed Development site.

At the local scale, the majority of the Site is situated within the SHANNON (Upper)_110 sub-basin and a small section of the road in the south lies within the BALLYBAY_010 sub basin. There are currently no open surface watercourses or drains present within the Proposed Development Site. The existing L2020 roadway is served by gullies, which are assumed to outfall to Lough Ree. The nearest river water feature is the Shannon (Upper)_110 stream, which originates to the west of the Site and flows northward for approximately 0.8 km before discharging to Lough Ree.

The Proposed Development site is underlain by the Funshinagh (IE_SH_G_091) Groundwater Body (GWB). The Site is underlain by Dinantian Pure Bedded Limestones, which are classified by the GSI as a Regionally Important Aquifer – Karstified (conduit), Rkc. This aquifer type is capable of supplying regionally important supplies (e.g., large public water supplies).

Groundwater vulnerability across most of the site is classified as 'Moderate', with an area of 'High vulnerability identified in a central portion along the L2020 road, where sands and gravels dominate the quaternary deposits The WFD Status 2019-2024 for the Funshinagh GWB is currently classified as having 'Good' status and is assessed as 'Not at Risk' of failing to meet its environmental objectives by 2027. The Lough Ree Lake body is classified as having 'Moderate' ecological status and is classified as 'not at risk' of failing to meet its environmental objectives by 2027.

3.2 National Biodiversity Data Centre (NBDC) Records

The National Biodiversity Data centre (NBDC) database was accessed, most recently on 17th February 2026, to inform survey effort and provide a baseline of likely species composition in the area. Records of protected fauna, including bats species, recorded from hectad N04 are provided in in Table 3-1.

Table 3-2 lists all the protected bird species recorded within the hectad which pertains to the Proposed Site Boundary.

Table 3-1. NBDC records for protected species and species of conservation interest (excl. birds) in hectad N04

Common name	Scientific name	Designation
Badger	*Meles meles*	WA
Brown Long-eared Bat	*Plecotus auritus*	Annex IV, WA
Common Frog	*Rana temporaria*	Annex V, WA
Common Lizard	*Zootoca vivipara*	WA
Common Newt	*Lissotriton vulgaris*	WA

Common Pipistrelle	*Pipistrellus pipistrellus sensu stricto*	Annex IV, WA
Daubenton's Bat	*Myotis daubentonii*	Annex IV, WA
Hedgehog	*Erinaceus europaeus*	WA
Irish Hare	*Lepus timidus subsp. hibernicus*	Annex V, WA
Leisler's Bat	*Nyctalus leisleri*	Annex IV, WA
Marsh Fritillary	*Euphydryas aurinia*	Annex II
Natterer's Bat	*Myotis nattereri*	Annex IV, WA
Otter	*Lutra lutra*	Annex II, IV, WA
Pine Marten	*Martes martes*	Annex V, WA
Pipistrelle spp.	*Pipistrellus pipistrellus sensu lato*	Annex IV, WA
Pygmy Shrew	*Sorex minutus*	WA
Red Squirrel	*Sciurus vulgaris*	WA
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Annex IV, WA
Whiskered Bat	*Myotis mystacinus*	Annex IV, WA
White-clawed Crayfish	*Austropotamobius pallipes*	Annex II, V, WA

Annex II, Annex IV, Annex V – Of EU Habitats Directive, Annex I – Of EU Birds Directive, WA – Irish Wildlife Acts (1976 as amended)

Table 3-2. NBDC Records for Birds for hectad N04

Common Name	Scientific Name	Status
Arctic Tern	*Sterna paradisaea*	Annex I
Common Tern	*Sterna hirundo*	
Great Northern Diver	*Gavia immer*	
Hen Harrier	*Circus cyaneus*	
Kingfisher	*Alcedo atthis*	
Corncrake	*Crex crex*	Annex I, BoCCI Red List
Dunlin	*Calidris alpina*	
Golden Plover	*Pluvialis apricaria*	
Barn Owl	*Tyto alba*	BoCCI Red List
Black-tailed Godwit	*Limosa limosa*	

Common Name	Scientific Name	Status
Common Scoter	*Melanitta nigra*	
Curlew	*Numenius arquata*	
Eider	*Somateria mollissima*	
Goldeneye	*Bucephala clangula*	
Grey Plover	*Pluvialis squatarola*	
Grey Wagtail	*Motacilla cinerea*	
Kestrel	*Falco tinnunculus*	
Lapwing	*Vanellus vanellus*	
Shoveler	*Anas clypeata*	
Teal	*Anas crecca*	BoCCI Amber List
Wigeon	*Mareca penelope*	
Coot	*Fulica atra*	
Little grebe	*Tachybaptus ruficollis*	BoCCI Green List

Annex I – Of EU Birds Directive, Red List – Birds of Conservation Concern in Ireland (Population for which the species is red listed in brackets).

3.3 Irish Wetland Bird Survey (I-WeBS) Records

A data request was placed under I-WeBS data requests for wintering waterbird and wetland bird data for the Hodson Bay area of Lough Ree. The below table outlines the received I-WeBS records for the Hodson Bay subsite between the survey seasons 2018/2019 – 2023/2024. Counts of each species varied widely between year, with some species only being recorded within one season out of the five presented below. Some species such as Coot and tufted Duck were present across every season provided below, but in some cases counts still varied significantly e.g. the highest count of Coot being 541 in 2018/2019 and the lowest count being 12 in 2020/2021.

Table 3-3. Hodson Bay I-WeBS Data

Common name	Scientific Name	2018/2019	2019/2020	2020/2021	2022/2023	2023/2024	Peak Count
Mute Swan	*Cygnus olor*	30	17	4	8	18	30
Whooper Swan	*Cygnus cygnus*	-	-	-	-	4	4
Wigeon	*Mareca penelope*	43	-	19	-	-	43
Teal	*Anas crecca*	-	-	-	2	2	2

Mallard	*Anas platyrhynchos*	2	5	-	14	15	15
Pochard	*Aythya ferina*	-	-	-	-	5	5
Tufted Duck	*Aythya fuligula*	36	52	4	66	65	66
Goldeneye	*Bucephala clangula*	-	-	12	-	-	12
Little Grebe	*Tachybaptus ruficollis*	3	2	-	9	3	9
Great Crested Grebe	*Podiceps cristatus*	4	5	3	6	5	6
Cormorant	*Phalacrocorax carbo*	15	6	2	5	4	15
Little Egret	*Egretta garzetta*	-	1	-	-	-	1
Grey Heron	*Ardea cinerea*	1	1	2	1	1	2
Water Rail	*Rallus aquaticus*	-	-	-	1	-	1
Moorhen	*Gallinula chloropus*	1	2	-	3	-	3
Coot	*Fulica atra*	541	86	12	154	19	541
Golden Plover	*Pluvialis apricaria*	-	-	100	-	-	100
Lapwing	*Vanellus vanellus*	119	-	150	50	300	300
Snipe	*Gallinago gallinago*	-	-	-	-	2	2
Kingfisher	*Alcedo atthis*	-	–		1	1	1
Black-headed Gull	*Chroicocephalus ridibundus*	36	3	21	3	-	36
Common Gull	*Larus canus*	-	-	-	-	1	1
Lesser Black-backed Gull	*Larus fuscus*	5	5	-	-	-	5
Great Black-backed Gull	*Larus marinus*	-	-	-	1	-	1
Unidentified duck	*Anatinae sp*	-	-	-	-	5	5

3.4 NPWS Protected Species Records

National Parks and Wildlife Service (NPWS) online records were searched to see if any rare or protected species of flora or fauna have been recorded from the 10 km hectad N04. An information request was also sent to the NPWS scientific data unit requesting records from the Rare and Protected Species Database on the 28th of January 2026. A response was received on the 03rd of June 2026. Table 3-4 lists rare and protected species records obtained from NPWS.

Table 3-4. NPWS records for rare and protected species

Common name	Scientific name	Designation	Hectad
Basil Thyme	*Clinopodium acinos*	NT	N04
Common Frog	*Rana temporaria*	Annex V, WA	N04
Common Lizard	*Zootoca vivipara*	WA	N04
Desmoulin's Whorl Snail	*Vertigo moulinsiana*	Annex II	N04
Eurasian Badger	*Meles meles*	WA	N04
Eurasian Otter	*Lutra lutra*	Annex II, IV, WA	N04
Fragrant Agrimony	*Agrimonia procera*	NT	N04
Greenland white fronted goose	*Anser albifrons flavirostris*	BoCCI Amber List	N04
Green-winged Orchid	*Orchis morio*	VU	N04
Golden Bog-moss	*Sphagnum pulchrum*	Annex V	N04
Irish Hare	*Lepus timidus subsp. hibernicus*	Annex V, WA	N04
Irish Stoat	*Mustela erminea subsp. hibernica*	WA	N04
Irish Whitebeam	*Sorbus hibernica*	Vulnerable, IUCN Redlist	N04
Marsh Fern	*Thelypteris palustris*	NT	N04
Narrow-leaved Helleborine	*Cephalanthera longifolia*	FPO, NT	N04
Pine Marten	*Martes martes*	WA	N04
Prickly Poppy	*Papaver argemone*	VU	N04
Red Hemp-nettle	*Galeopsis angustifolia*	FPO, VU	N04
Red-neck Forklet-moss	*Dicranella cerviculata*	NT	N04
Short-leaved Water-starwort	*Callitriche truncata*	FPO, NT	N04

Common name	Scientific name	Designation	Hectad
Smooth Newt	*Lissotriton vulgaris*	WA	N04
Stoat	*Mustela erminea*	WA	N04
Tufted Duck	*Aythya fuligula*	BoCCI Amber List, SCI of Lough Ree SPA	N04
Upright Brome	*Bromopsis erecta*	NT	N04
West European Hedgehog	*Erinaceus europaeus*	WA	N04
White-clawed Crayfish	*Austropotamobius pallipes*	Annex II, V, WA	N04

Annex II and V of EU Habitats Directive; FPO = Flora Protection Order; Annex II Red List Species, VU = Vulnerable, NT-=Near Threatened, WA = Wildlife Act

3.5 Results of Consultation

Table 3-5 lists the relevant bodies consulted regarding the Proposed Development, as well as a summary of the responses received to the scoping document circulated on 27th June 2025.

A consultation meeting took place with the National Parks and Wildlife (NPWS) on 23rd June 2026, in which the NPWS were presented with an overview of the Proposed Development, its context in relation to European Designated Sites and the findings of ecological surveys conducted within the Proposed Development Site and wider study area.

Table 3-5. Consultees and Responses

Consultee	Response
An Taisce	No Response
Bat Conservation Ireland	No Response
Bird Watch Ireland	No Response
Department of Environment, Climate and Communications	No Response
Department of Housing, Local Government and Heritage Development Applications Unit (DAU)	Site Specific considerations were provided with regards to nature conservation, in particular regarding European and National nature conservation sites. General ecological requirements were set out for both Environmental Impact Assessment and Appropriate Assessment and NIS.
Geological Survey of Ireland	No Response
Inland Fisheries Ireland	No Response
Uisce Éireann	The response outlined that Uisce Éireann (UÉ) operate numerous downstream abstractions points that serves much of the country, and as such these proposals cannot give rise to any deterioration of Lough Ree or River Shannon water sources. Uisce Éireann operates several assets within and around the project area of this proposal. A 150mm UPVC (Unplasticized Polyvinyl Chloride) watermain runs parallel to

Consultee	Response
	the L2020 road, which feeds a number of subsidiary pipes throughout the redevelopment area and there is a wastewater pump station serving the area is in operation north of Cushlea Estate.
Irish Wildlife Trust	No Response
Office of Public Works	No Response
Transport Infrastructure Ireland	No Response
The Heritage Council	The response sets out recommendations to provide general guidance for the preparation of an EIAR which may affect the national road network.
National Parks and Wildlife Service (NPWS)	See response from the Department of Housing, Local Government and Heritage (DAU) above.
Local Authorities Waters Programme (LAWPRO)	No Response
Breeding Waders EIP Project	No Response
Friends of the Earth	No Response
Westmeath County Council – Environment	No Response
Longford County Council - Environment	Longford County Council set out general ecological considerations for both Environmental Impact Assessment and Appropriate Assessment and NIS, including QI species to consider. General suggestions for best practice construction methodology and mitigation measures were also suggested.

3.6 Results of Baseline Ecological Surveys

3.6.1 Description of Habitats and Flora with the Proposed Development Site

A total of 13 habitats were recorded within the Proposed Development site, summarised in Table 3-6 below. The majority of habitats within the Proposed Development are artificial or heavily modified/ managed in nature, in character with the urbanised baseline condition of the Proposed Development.

Habitat mapping of the existing environment is provided within Figures 3-3, 3-4, and 3-5. An overlay of the Proposed Development Site over the habitat mapping is shown in Figure 3-6, 3-7, and 3-8.

Table 3-6. Habitats recorded at the Proposed Development Site

Habitat	Fossitt Code
Eutrophic lakes	FL5
Exposed sand, gravel, or till	ED1
Reed and large sedge swamps	FS1
Drainage Ditches (*In the form of gullies adjacent to the Proposed Development*)	FW4
Amenity grassland	GA2
Scattered trees and parkland	WD5
Treelines	WL2
Wet willow-alder-ash woodland	WN6
Scrub	WS1
Recolonising bare ground	ED3
Buildings and artificial surfaces	BL3
Spoil and bare ground	ED2
Hedgerow	WL1

3.6.1.1 Eutrophic lakes (FL5)

The areas of Lough Ree located within the Proposed Development Site were assessed as **Eutrophic Lake (FL5).** Aquatic plants identified throughout wading and aquatic drone transects included yellow water lily (*Nuphar lutea*), fennel pondweed *(Stuckenia pectinata),* Nuttall's waterweed *(Elodea nuttalli),* Canadian waterweed (*Elodea canadensis*), ivy-leaved duckweed (*Lemna triscula*), greater water moss (*Fontinalis antipyretica*), perfoliate pondweed (*Potamogeton perfoliatus*), arrowhead *(Sagittaria sagittifolia),* long-leaved pondweed (*Potamogeton lucens x gramineus = angustifolius*) and Berchtold's pondweed *(Potamogeton bertchtoldii),* with semi-continuous, dense charophyte *(Chara spp.)* beds with filamentous green algae throughout.

Reed beds, classified as **Reed and large sedge swamp (FS1)** were commonly found along the margins of lake habitat, with species present including common club-rush *(Schoenoplectus lacustris)*, reed canary-grass *(Phalaris arundinacea),* common reed *(Phragmites australis),* common spike-rush *(Eleocharis palustris),* willowherb *(Epilobium sp.)*, water mint *(Mentha aquatica)*, and water horsetail *(Equisetum fluviatile).*

Macrophyte communities identified throughout wading and aquatic drone transect surveys showed affinities for Annex I *'Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]'.*

Starry stonewort *(Nitellopsis obtuse)*, an invasive charophyte, was found throughout transects within the current marina, often in conjunction with Quagga mussel *(Dreissena rostriformis bugensis)*.

Results of macrophyte surveys can be found in Appendix 4 of this NIS.



Plate 3-1 Eutrophic Lake habitat within and adjacent to the Proposed Development.

3.6.1.2 Reed and large sedge swamps (FS1)

Areas of the shoreline of Lough Ree located within the Proposed Development Site featured dense reedbeds, dominated by common reed grass and common club-rush, which were classified as **Reed and large sedge swamps (FS1).** Other species commonly recorded within these reedbeds included canary reed grass, willowherb *(Epilobium sp.)*, water mint, common spike-rush and water horsetail.

Closer to the lakeshore margins, where reedbeds met areas of **Wet willow-alder-ash woodland (WN6)** and grassland habitats, species such as goat and basket willow were common, in addition to tufted sedge *(Carex acuta),* yellow flag, bottle sedge *(Carex rostrata),* silverweed, common spike-rush, common vetch *(Vicia sativa),* common club-rush, lesser spearwort *(Ranunculus flammula),* narrow-leaved water-plantain *(Alisma gramineum),* marsh pennywort *(Hydrocotyle vulgaris),* jointed rush *(Juncus articulatus)*, common sedge *(Carex nigra)*, shoreweed *(Littorella uniflora)* and water germander *(Teucrium scordium*).

Further from the shoreline, submerged unbranched bur-reed (*Sparganium emersum*) and yellow water-lily (*Nuphar lutea*) were also present in conjunction with the reed beds. Areas of reedbed habitat mapped via ecological walkover survey and aerial drone survey are shown in Figure 3-1.



Plate 3-2. A representative photo of a section of the Lough Ree shore located within the centre of the Site, classified as ***Reed and large sedge swamps (FS1).***



*Plate 3-3. A representative photo of **Reed and large sedge swamps (FS1)** habitat located along the shoreline of Lough Ree in the northern area of the Proposed Development Site*



*Plate 3-4. A representative photo of a section of common club-rush-dominant **Reed and large sedge swamps (FS1)** located along the shoreline of Lough Ree in the northern area of the Proposed Development Site.*



Map Legend

Proposed Development Site

Reed and large sedge swamp (FS1)

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Drawing Title
Location of reedbed habitat mapped via ecological walkover survey and aerial drone survey

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 3-1
Scale	Date
1:6,500	28.07.2026

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3.6.1.3 Wet willow-alder-ash woodland (WN6)

Fragmented, fringing areas of woodland present along the shoreline of Lough Ree which were regularly inundated with water were classified as **Wet willow-alder-ash woodland (WN6).** Tree species commonly recorded within these areas of woodland included grey willow, goat willow, basket willow *(Salix viminalis)*, alder and ash, with sycamore and black poplar (*Populus nigra*) also present at the edges of an area of woodland located to the north of the Proposed Development Site, as well as pedunculate oak *(Quercus robur)* in drier areas. A mix of tree sizes and varying degrees of deadwood were recorded throughout areas of lakeshore woodland within the Proposed Development Site. The shrub layer throughout areas of this woodland consisted of hawthorn, guelder rose *(Viburnum opulus),* alder buckthorn *(Frangual alnus)* and crab apple *(Malus sylvestris).*

The field layer throughout areas of wet willow-alder-ash woodland consisted of creeping bent *(Agrostis stolonifera),* remote sedge *(Carex remota),* wild angelica *(Anglica sylvestris),* meadowsweet *(Filipendula ulmaria),* water mint (*Mentha aquatica*), reed-canary grass *(Phalaris arundinacea),* common reed (*Phragmites australis)*, purple loosestrife, (*Lythrum salicaria*), yellow loosestrife *(Lysimachia vulgaris),* yellow flag iris (*Iris pseudacorus*), marsh ragwort (*Jacobaea aquatica*), bogbean *(Mentanthes trifoliata),* gipsywort *(Lycopus europaeus),* lesser skullcap *(Scutellaria minor),* water horsetail *(Equisetum fluviatile),* marsh horsetail (*Equisetum palustre*), field horsetail *(Equisetum arvensis.),* greater willow-herb (*Epilobium hirsutum*), water forget-me-not (*Myosotis scorpioides*), marsh bedstraw (*Galium palustre*), cleaver, nettle, marsh-marigold (*Caltha palustris*), creeping jenny (*Lysimachia nummularia*), common sedge (*Carex nigra)*, glaucous sedge *(Carex flacca)* and bladder sedge (*Carex vesicaria)*, stone bramble *(Rubus saxatillis),* and bramble were recorded.

The moss *Thamnobryum alopecurum* occurred frequently in the rockier areas as well as scattered *Kindbergia praelonga and Plagionium sp.* Trees contained abundant moss epiphytes such as *Neckera complanata*, *Ulota sp.,* and *Orthotrichum sp.*

Following condition assessment, small areas of fragmented woodland set back from the margins of Lough Ree conformed to *91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*, listed in Annex I of the EU Habitats Directive and included as a Qualifying Interest of Lough Ree SAC [Site code: 000440]. Areas of habitat conforming to 91E0 habitat lie largely outside of the Proposed Development Site, with the exception of fringing areas of woodland located to the north of the Proposed Water Sports Pavilion.

Annex I alluvial forest habitat, a QI habitat associated with Lough Ree SAC, is mapped along the lakeshore at St John's wood, approx. 8.8 km north of the Proposed Development Site. There is likely to be additional alluvial forest habitat present along the shoreline of Lough Ree within the wider vicinity.

Results of alluvial forest condition assessments are provided in Appendix 5 of this report. Location of alluvial forest relevés are shown in Figure 3-2.



*Plate 3-5. A representative image of **Wet willow-alder-ash woodland (WN6)** located to the north of the Study Area, outside of the Proposed Development Site.*



*Plate 3-6. A representative image of **Wet willow-alder-ash woodland (WN6)** located to the north of the existing Baysports facility, with the outer margins of this habitat located within the Proposed Development Site.*



*Plate 3-7. A representative image of an area of **Wet willow-alder-ash woodland (WN6)** located north of (and outside of) the Proposed Development Site during a period of inundation from Lough Ree.*



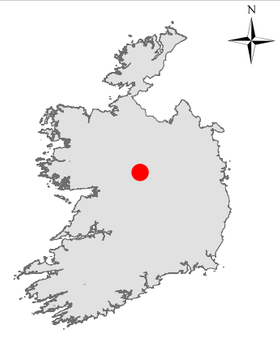
*Plate 3-8. A representative image of **Wet willow-alder-ash woodland (WN6)** located north of (and outside of) the Proposed Development Site during a period of inundation from Lough Ree.*

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Map Legend

- Proposed Development Site
- Alluvial Forest Condition Assessment Survey Locations
- Alluvial Forest and Willow Scrub

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title
Location of alluvial forest relevés and areas of habitat

Project Title
Hodson Bay Waterfront Park

Project No.	Drawing No.	Scale
241220	Figure 3-2	1:8,000
Drawn By	Checked By	Date
TS	AvdGM	10/08/2026

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3.6.1.4 Amenity grassland (GA2)

A number of areas of **Amenity grassland (GA2)** are present throughout the Proposed Development Site. These include areas of managed grassland located adjacent to the Hodson Bay Hotel and existing Lough Ree marina and pier (Plate 3-9) as well as grassland located within the north of the site adjacent to the existing carpark north of the Baysports facility.

Species recorded in these grasslands included Yorkshire fog *(Holcus lanatus),* creeping bent, dandelion *(Taraxacum officinale agg.),* ribwort plantain *(Plantago lanceolata),* silverweed *(Potentilla anserina),* creeping cinquefoil *(Potentilla reptans),* broadleaved dock *(Rumex obtusifolius),* daisy *(Bellis perennis),* and white clover *(Trifolium repens).*



Plate 3-9. A representative area of managed grassland, located adjacent to the Hodson Bay Hotel and the existing Lough Ree pier and marina, classified as Amenity grassland (GA2).

3.6.1.5 Buildings and artificial surfaces (BL3)

Buildings and artificial habitats (BL3) within the Proposed Development Site mainly consist of roadways, footpaths and car parking associated with the Hodson Bay Hotel (Plate 3-10 and Plate 3-11). Buildings from which the existing Baysports facility operates from (Plate 3-12, Plate 3-13), as well as public toilets (Plate 3-14), are also classed as buildings and artificial surfaces. Both the Baysports buildings and public toilets are proposed to be demolished, with marquees used by Baysports to be removed. Additionally, the existing marina and pier present along the shore of Lough Ree within the Proposed Development Site is classed as Buildings and artificial surfaces (Plate 3-15).



Plate 3-10. A representative photo of the existing L2020 road and footpaths, classified as ***Buildings and artificial surfaces (BL3),*** *located in the southern area of the Site.*



Plate 3-11. A representative photo of a carpark classified as Buildings and artificial surfaces (BL3), located adjacent to the Hodson Bay Hotel.



*Plate 3-12. A representative photo of one of the Baysports buildings, classed as **Buildings and artificial surfaces (BL3),** which is proposed for demolition.*



*Plate 3-13. A representative photo of one of the temporary marquees used by Baysports, classed as **Buildings and artificial surfaces (BL3),** which is proposed for removal*



*Plate 3-14. A representative photo of the toilets classed as **Buildings and artificial surfaces (BL3)**, which are proposed for demolition*



*Plate 3-15. A representative picture of the pre-existing pier, classified as **Buildings and artificial surfaces (BL3),** located within the Proposed Development Site.*

3.6.1.6 Drainage Ditches (FW4)

Existing gullies which serve the southern end of the L2020 road lie outside of the Proposed Development Site and are classed as **Drainage Ditch (FW4)**. These run parallel to the existing active railway line and are assumed to outfall to Lough Ree. A representative photo of this habitat is shown in Plate 3-16.



*Plate 3-16. A representative photo of a **Drainage Ditch (FW4)** located in the southern area of the Site.*

3.6.1.7 Recolonising Bare Ground (ED3)

A small area of **Recolonising bare ground (ED3)** was recorded along the northern side of the L2020 road within the Proposed Development Site. Species recorded in this habitat included common ruderals as well as cleavers *(Galium aparine),* bramble, vipers'-bugloss *(Echium vulgare),* cosmos *(Cosmos sp.),* cornflower *(Centaurea cyanus),* nipplewort *(Lapsana communis),* clover *(Trifolium sp.),* herb-robert *(Geranium robertianum),* and ivy *(Hedera helix).* A representative photo of this habitat is shown in Plate 3-17. Over the period of survey carried out for the Proposed Development (March 2025 – May 2026) this habitat was cleared and recolonised. Other minor areas of this habitat occurred throughout the Proposed Development Site often in transitional zones associated with areas of hardstand.



*Plate 3-17. A representative photo of an area of **Recolonising bare ground (ED3)** located adjacent to the roadway within the Proposed Development Site.*

3.6.1.8 Spoil and Bare Ground (ED2)

Small areas of spoil and bare ground occur within the Proposed Development Site. The most notable areas being segments of the gravel trackway within the Athlone Golf Club that overlap within the outer margins of the Proposed Development Site running along the L2020 road.



Plate 3-18. A segment of trackway within the Athlone Golf Club classified as Spoil and Bare Ground habitat on the outer margins of the Proposed Development Site located along the L2020 road.

3.6.1.9 Scrub (WS1)

Areas of grey willow *(Salix cinerea)* and crack willow *(Salix x fragilis)* dominant lakeshore **Scrub (WS1)** were located within the Proposed Development Site along the shoreline, north of the existing marina and pier (Plate 3-19 and Plate 3-20).

Common species throughout areas of willow scrub included meadowsweet *(Filipendula ulmaria),* common reed, water mint, guelder rose *(Viburnum opulus),* tufted vetch *(Vicia cracca)*, creeping bent *(Agrostis stolinifera),* field horsetail *(Equisetum arvense),* hedge bindweed *(Calystegia sepium)* and great willowherb *(Epilobium hirsutum).*



*Plate 3-19. An area of willow **Scrub (WS1)** south of the existing Baysports marquees*



*Plate 3-20. An area of willow **Scrub (WS1)** north of the existing marina and pier*

3.6.1.10 Treelines (WL2)

Treelines (WL2) were recorded throughout the Proposed Development Site, along the L2020 roadway, within the outer boundaries of Athlone Golf Club and often bordering areas of **Scattered trees and parkland (WD5)**.

The following tree species were recorded within treeline habitat throughout the Proposed Development Site: ash *(Fraxinus excelsior)*, Leyland cypress *(Cupressus leylandii)*, beech *(Fagus sylvatica)*, hawthorn *(Crataegus monogyna),* sycamore *(Acer pseudoplatanus)*, willow *(Salix spp.)*, Arizona cypress (*Hesperocyparis arizonica*), lime *(Tilia x europaea),* Norway maple (*Acer platanoides),* sitka spruce *(Picea sitchensis),* aspen *(Populus tremula),* horse chestnut *(Aesculus hippocastanum)*, Silver birch *(Betula pendula),* Alder *(Alnus glutinosa)* sessile oak (*Quercus petraea*), cypress *(Cupressus sp.)*, and rowan *(Sorbus aucuparia).*

The understories of these treelines were comprised of species such as elder *(Sambucus nigra),* ivy, bramble *(Rubus fructicosus)*, nettle *(Urtica dioica)*, cleavers *(Galium aparine)*, bracken *(Pteridium aquilinum)*, hogweed *(Heracleum sphondylium)* and lords and ladies *(Arum maculatum).*



*Plate 3-21. A representative image of **Treeline (WL2)** located along the L2020 roadway within the Proposed Development Site.*



*Plate 3-22. A representative image of Leyland cypress **Treeline (WL2)** located between the northern carpark and Athlone Golf Club, within the Proposed Development Site*

3.6.1.11 Hedgerow (WL1)

Low growing and heavily managed beech (*Fagus sylvatica*) **Hedgerow (WL1)** was recorded at the boundary of the marina car park and the L2020 roadway in a number of short segments.



Plate 3-23 Beech Hedgerow (WL1) located on the boundary of the marina car park and L2020 road.

3.6.1.12 Exposed sand, gravel or till (ED1)

An area of lake shore gravel, classified as **Exposed sand, gravel or till (ED1),** was recorded along the shore of Lough Ree in front of the Hodson Bay Hotel.

Small sections of this exposed gravel area featured the growth of species such as dandelion, Yorkshire fog, ribwort plantain, silverweed *(Potentilla anserina)*, canary reed-grass, horsetail *(Equisetum sp.)* cinquefoil *(Potentilla sp.)*, and jointed rush.



*Plate 3-24 Area of the shore of Lough Ree classified as **Exposed sand, gravel or till (ED1)**.*

3.6.1.13 Scattered trees and parkland (WD5)

Areas within the Proposed Development Site classed as **Scattered trees and parkland (WD5)** featured grassland species outline in Section 3.6.1.4 such as Yorkshire fog and creeping bent, as well as perennial rye grass *(Lolium perenne)*, broad-leaved dock *(Rumex obtusifolius)* and daisy *(Bellis perennis)*. Tree species throughout this habitat included beech, lime, silver birch, ash, alder, sycamore and Norway maple. These areas of scattered trees and parkland were primarily recorded within the boundaries of the Athlone Golf Club along the L2020 Local Road (Plate 3-25), the area adjacent to the Baysports buildings, as well as associated with areas of amenity grassland and existing carparks within the Proposed Development Site (Plate 3-26).



*Plate 3-25. A representative photo of **Scattered trees and parkland (WD5)** throughout Athlone Golf Club, on the southern side of the L2020 Local Road*



*Plate 3-26. A representative photo of **Scattered trees and parkland (WD5)** throughout existing carparks between Hodson Bay Hotel and Lough Ree, within the Proposed Development Site.*

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Drawing Title
Habitat Mapping within the Proposed Development Site (1/3)

Project Title
Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 3-3
Scale	Date
1:3,500	28.07.2026

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Drawing Title
Habitat mapping within the Proposed Development Site (2/3)

Project Title
Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 3-4
Scale	Date
1:3,500	28.07.2026

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Map Legend

- Proposed Development Site
- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)

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N

Drawing Title
Habitat mapping within the Proposed Development Site (3/3)

Project Title
Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 3-5
Scale	Date
1:3,500	28.07.2026

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Map Legend

- Proposed Development Site
- Simplified Hodson Bay Design Layout
- Buildings and artificial surfaces (BL3)
- Reed and large sedge swamps
- Scrub (WS1)
- Exposed sand, gravel or till (ED1)
- Eutrophic Lakes (FL5)
- Amenity Grassland (GA2)
- Scattered trees and parkland (WD5)
- Wet willow-alder-ash woodland (WN6)
- Hedgerows (WL1)
- Treelines (WL2)

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

N

SITE LOCATION - NOT TO SCALE

Drawing Title
Habitat Mapping overlain on the Proposed Development Site Layout Overview (1/3)

Project Title
Hodson Bay Waterfront Park

Project No.	Drawing No.	Scale
241220	Figure 3-6	1:3,000
Drawn By	Checked By	Date
BOC	AvdGM	04/08/2026

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Map Legend

- Proposed Development Site
- Treelines (WL2)
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Recolonising bare ground
- Reed and large sedge swamps
- Eutrophic Lakes (FL5)
- Amenity Grassland (GA2)
- Scattered trees and parkland (WD5)
- Simplified Hodson Bay Design Layout

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title
Habitat Mapping overlain on the Proposed Site Layout Overview (2/3)

Project Title
Hodson Bay Waterfront Park

Project No.	Drawing No.	Scale
241220	Figure 3-7	1:2,000
Drawn By	Checked By	Date
BOC	AvdGM	04/08/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

600,000

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0 150 300 m

Map Legend

- Proposed Development Site
- Buildings and artificial surfaces (BL3)
- Recolonising bare ground
- Simplified Hodson Bay Design Layout

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

N

SITE LOCATION - NOT TO SCALE

Drawing Title
Habitat Mapping within the Proposed Development Site Overview (3/3)

Project Title
Hodson Bay Waterfront Park

Project No.	Drawing No.	Scale
241220	Figure 3-8	1:3,000
Drawn By	Checked By	Date
BOC	AvdGM	04/08/2026

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3.6.2 Results of Faunal Surveys

3.6.2.1 Breeding Bird Survey Results

A full suite of breeding bird and wintering bird surveys were undertaken to inform the assessment of the Proposed Development. Transect and vantage point locations for breeding bird surveys and wintering bird surveys are shown in Figure 3-9.

Six no. SCI species of SPAs within the vicinity of the Proposed Development were identified using habitats within or adjacent to the Proposed Development Site during breeding bird surveys, including; Black-headed gull, *(Chroicocephalus ridibundus),* Common tern *(Sterna hirundo),* Coot *(Fulica atra),* Goldeneye *(Bucephala clangula)* Little grebe *(Tachybaptus ruficollis),* Mallard *(Anas platyrhynchos).*

High levels of disturbance in the form of human activity were observed during the breeding bird surveys conducted within and adjacent to the Proposed Development Site. Disturbance included boating (fishing boats, cruisers and a tourist ferry), water sports activities, wild swimmers, walkers, runners and dog walkers, as well as ongoing traffic and vehicle disturbance along the main access road and throughout carparks. Therefore, it is likely that birds which utilise Lough Ree in the vicinity of the Proposed Development Site are accustomed to a high level of disturbance during the breeding season.

Black-headed gull were frequently observed flying over the Proposed Development Site, as well as perching on the existing marina, swimming on Lough Ree and foraging along the shoreline and throughout areas of Amenity grassland (GA2). Common tern were also similarly observed flying over the Proposed Development Site and foraging within the bays. While black-headed gull and common tern were observed foraging within the Proposed Development Site, no breeding activity for black-headed gull or common tern was observed during breeding bird surveys.

A small number of remnant wintering goldeneye were observed outside of the Proposed Development Site on one occasion (15/05/2025). Coot were frequently observed foraging around reed beds located to the north and south of the Proposed Development Site, with a possible breeding pair identified. Little grebe were heard calling from the reed beds on two occasions (16/04/2025 and 25/07/2025), with a possible breeding little grebe observed swimming and foraging adjacent to reed beds outside of the Proposed Development Site on 02/05/2025.

Mallard were observed frequently on all breeding bird surveys foraging on the lake and flying overhead. One possible breeding pair and one probable breeding pair were identified adjacent to suitable nesting habitat within reed beds outside of the Proposed Development Site.

No waterbird nests were identified within the Proposed Development Site during Breeding Bird Surveys. No significant suitable potential breeding or nesting habitat was identified in the existing marina, existing Baysports facility or throughout existing carparks within the Proposed Development Site. Any possible or probable breeding birds identified during surveys were frequently observed foraging or commuting alongside reedbeds, located to the north and south of the existing marina, outside of the Proposed Development Site.

A summary of birds recorded during the breeding season are summarised in Table 3-7.

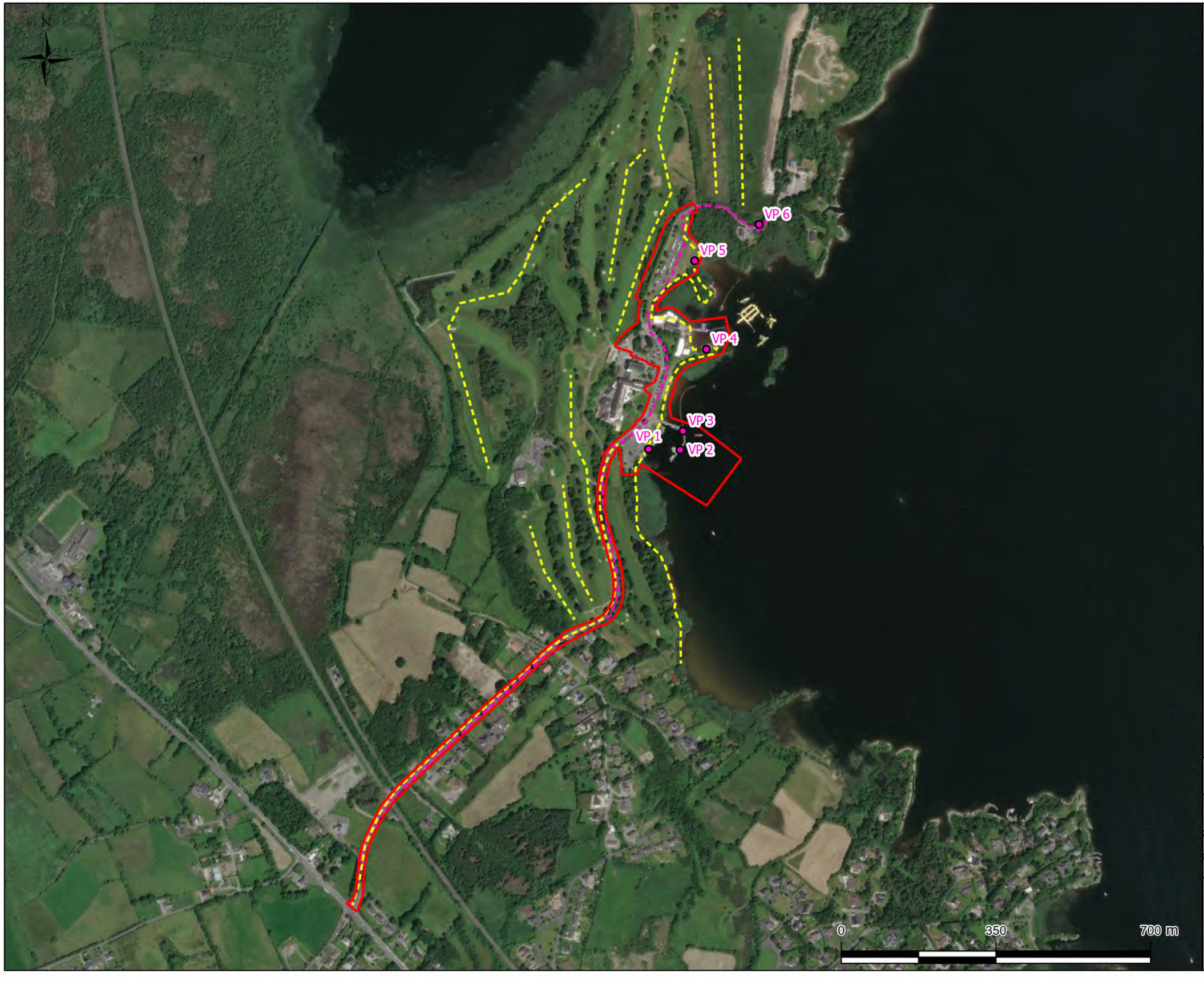
Table 3-7. Summary of bird records during the breeding season

Species	Date	Total Count	Notes	SCI of SPA within the vicinity of the Proposed Development (Yes/No)
Black-headed gull *(Chroicocephalus ridibundus)*	16/04/2025	3 (non-flight) 11 (flight, eastern transect) 4 (flight, western transect)	Foraging and walking along lakeshore; flying over lake; flying northwest toward golf course	Yes - Middle Shannon Callows SPA
	02/05/2025	1	Flyover close to the shore; non-breeding	
	15/05/2025	7 (flight, western transect) 1 (flight, western transect) 12 (non-flight)	Flyover across the lake; foraging on golf course fairway and grass areas; flyover across fairway and golf course	
	27/06/2025	2 (non-flight) 3 (flight)	Resting on lake and on rocks; flyover across lake	
	25/07/2025	21 (non-flight, eastern transect) 16 (non-flight, western transect) 6 (flight, eastern transect) 2 (flight, western transect)	Foraging along shoreline, perched on quay and resting on rocks and boats along reedbeds within marina; foraging along areas of grass; flyover along Baysports facility and across water; circling over golf course fairway	
Common tern *(Sterna hirundo)*	02/05/2025	2	Flyover low over the water; non-breeding	Yes – Lough Ree SPA
	15/05/2025	2 (non-flight) 3 (flight)	Resting on inflatable slide within Baysports area; flying south and over existing marina	
	27/06/2025	1 (flight)	Flying south	
	25/07/2025	5 (flight)	Flying north	
Coot *(Fulica atra)*	16/04/2025	7	Foraging on lake and along reedbeds, emerging from and retreating to reedbeds, calling from reedbeds	Yes – Lough Ree SPA
	02/05/2025	3	Foraging in and out of reed bed, suitable	

			nesting habitat; possible breeders	
	15/05/2025	3	Foraging along and retreating into reedbeds	
	27/06/2025	4	Foraging along reedbeds, calling from reedbeds	
	25/07/2025	5	Foraging along reedbeds, calling from reedbeds; 1 possible breeding pair	
Cormorant *(Phalacrocorax carbo)*	02/05/2025	3	Swimming and foraging, summering; non-breeding, flyover; 2 non-breeding, including last year's juvenile	No
	15/05/2025	2	Flying south over lake	
	27/06/2025	2 (non-flight) 2 (flight)	2 resting on rock in lake; 2 flying southeast over lake	
	25/07/2025	3	Foraging and basking on rocks at the edge of reedbed	
Great Crested Grebe *(Podiceps cristatus)*	16/04/2025	2	Foraging along reed bed	No
	02/05/2025	2	Courtship and display; probable breeding pair	
	15/05/2025	1	Swimming on lake	
	25/07/2025	4	2 adults and 2 juveniles; probable breeding pair, foraging	
Grey heron *(Ardea cinerea)*	16/04/2025	1	Flying south from shoreline	No
	02/05/2025	2	Summering; non-breeding hunting close to the shore, flyover; non-breeding	
	15/05/2025	3	Flying east and west	
	27/06/2025	2 (non-flight) 2 (flight)	Foraging and roosting; resting on a pole; flying east and south	

Goldeneye *(Bucephala clangula)*	15/05/2026	6	Swimming on water	Yes – Lough Ree SPA
Lesser black-backed gull *(Larus fuscus)*	25/07/2025	1 (non-flight, eastern transect) 1 (flight, western transect)	Resting on quay; flying over main road, south of golf course	No
	27/06/2025	1	Flying east	
Little egret *(Egretta garzetta)*	27/06/2025	1	Flying south and landed on pier	No
Little grebe *(Tachybaptus ruficollis)*	16/04/2025	1	Heard calling in reedbed	Yes – Lough Ree SPA
	02/05/2026	1	Swimming and foraging near reedbed, suitable nesting habitat; possible breeder	
	25/07/2025	2	Calling and foraging	
Mallard *(Anas platyrhynchos)*	16/04/2025	6 (non-flight) 10 (flight)	Foraging on lake, including one potential breeding pair; flying from reedbeds and along lakeshore	Yes – Lough Ree SPA
	02/05/2026	5 (non-flight) 2 (flight)	1 probable breeding pair, 1 possible breeding pair and 1 possible breeding individual, within suitable nesting habitat; flying east and west	
	15/05/2025	21 (non-flight) 2 (flight, western transect)	Swimming, foraging and resting on the lake, sitting on rocks Flushed and flying north from fields	
	27/06/2025	30 (non-flight) 6 (flight)	Swimming, foraging and resting on the lake, sitting on rocks Flying south from edge of reedbed	
	25/07/2025	22 (non-flight) 15 (flight)	Swimming, foraging and resting on the lake, sitting on rocks, flying across lake; flying north, northeast and east	

Moorhen *(Gallinula chloropus)*	02/05/2026	2	2 separate possible breeders, audible within suitable nesting habitat amongst reedbeds	No
	15/05/2025	3	Seen emerging from reedbed, heard calling in reedbed	
	27/06/2025	1	Heard calling in reedbed	
Mute swan *(Cygnus olor)*	16/04/2025	6	Foraging on lake	No
	02/05/2025	2	Probably breeding pair; swimming in open water	
	15/05/2025	5	Foraging and pruning on lake	
	27/06/2025	2	Foraging on lake	
	25/07/2025	7	Foraging and commuting, including 2 adult breeding pairs (with 2 signets and 1 signet, respectively)	
Redwing *(Turdus iliacus)*	16/04/2025	2	Calling in wooded area and foraging on golf course fairway	No
Snipe *(Gallinago gallinago)*	16/04/2025	1	Flushed and flying east	No
	15/05/2025	1	Flushed and flying northeast	
Water rail *(Rallus aquaticus)*	16/04/2025	1	Heard calling in reedbed	No
	27/06/2025	1		
	25/07/2025	1		



Map Legend

- Proposed Development Site
- Wintering Bird Survey Vantage Points
- Breeding Bird Survey Transect Routes
- Wintering Bird Survey Transect Routes

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title
Breeding and Wintering Bird Survey Transects and Vantage Points

Project Title
Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Project No.	Drawing No.	Scale
241220	Figure 3-9	1:8,000
Drawn By	Checked By	Date
BOC	AvdGM	04/08/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

3.6.2.2 Wintering Bird Survey Results

The areas along the shoreline of Lough Ree, at the existing marina and areas of Lough Ree within the Proposed Development Site are subject to moderate-high levels of existing disturbance during the wintering season, as observed during surveys, with walkers, runners, dog walkers, lake swimmers and boating (cruisers and fishing boats).

The area is also subject to ongoing traffic disturbance along the main access road via the L2020 road, as well as throughout carparks located in front of the existing marina and to the north of the site, the latter of which is utilised by camper vans. Therefore, birds utilising the lake within Hodson Bay are likely accustomed to existing levels of disturbance.

SCI species of EU Designated Sites within the vicinity of the Proposed Development, including teal, common scoter, wigeon or shoveler were not recorded across any wintering bird surveys. No golden plover or lapwing were observed across any wintering bird surveys conducted for the Proposed Development, with no significant suitable undisturbed grassland or shoreline habitat for wintering golden plover or lapwing within the Proposed Development Site.

3.6.2.2.1 *Vantage Point 1*

Five no. SCI species of SPAs within the vicinity of the Proposed Development were observed utilising habitats within and in the wider vicinity of the Proposed Development Site from VP 1. These included; Black-headed gull *(Chroicocephalus ridibundus),* Coot *(Fulica atra),* Little grebe *(Tachybaptus ruficollis),* Tufted duck *(Aythya fuligula)* and Mallard *(Anas platyrhynchos).* Table 3-8 provides a summary of bird species recorded at VP 1 during the wintering season.

Most species were observed swimming, foraging and loafing on the Lough Ree, with coot commonly foraging both within and in the wider vicinity of the existing marina. Coot and little grebe were also frequently seen and heard, respectively, utilising the reed beds to the south of VP 1, outside of the Proposed Development Site. Large rafts of a combination of tufted duck and coot were observed on Lough Ree outside of the Proposed Development Boundary, up to 525 m from VP 1, indicating that existing human activity within the Proposed Development Site likely creates an existing disturbance buffer which already limits utilisation of the area by SCI species.

Table 3-8. Summary of bird species recorded at VP 1 during the Wintering Season

Species	Date	Total Count	Notes	SCI of SPA within Likely Zone of Influence (Yes/No)
Black-headed gull *(Chroicocephalus ridibundus)*	21/10/2025	1	Flying southeast to northwest over lake	Yes - Middle Shannon Callows SPA
	27/01/2026	13	Flying above water and feeding, between 150–450 m from VP 1	
	24/02/2026	5	Flying over marina	
	10/03/2026	3	Flying overhead and perching on marina	
	24/03/2026	2	Flying overhead and perching on marina	

Coot *(Fulica atra)*	07/10/2025	15	Loafing and feeding, up to 100 m from shoreline adjacent to reed beds	Yes – Lough Ree SPA
	21/10/2025	18	Loafing and foraging between 85–610 m from shoreline at VP 1	
	04/11/2025	36	Foraging, between 160–180 m from VP 1	
	18/11/2025	2	Foraging along reedbeds approx. 85 southeast from VP 1	
	16/12/2025	3	Swimming in reed beds, approx. 5–20 m from VP 1	
	13/01/2026	2	Swimming and foraging along reedbeds to the south of VP 1	
	27/01/2026	3	One heard calling from reedbeds and a further two swimming along reedbeds	
	10/02/2026	1	Heard within reedbeds	
	24/02/2026	2	Swimming and foraging within existing marina	
	10/03/2026	4	Foraging along reedbeds	
	24/03/2026	3	Swimming within existing marina and foraging along reedbeds	
Cormorant *(Phalacrocorax carbo)*	18/11/2025	2	Perched on depth markers southwest of VP 1	No
	05/12/2025	2	Perched on depth markers southwest of VP 1	
	13/01/2026	3	One foraging within marina; two flying north to south and landing to perch on buoys	
	27/01/2026	1	Perched on depth marker pole	
	24/02/2026	4	Two flying south to northeast; one perched	

			on depth marker pole; one swimming and feeding east of marina	
	10/03/2026	1	Flying south to north	
	24/03/2026	2	Perched on buoy and rock	
Great Crested Grebe *(Podiceps cristatus)*	18/11/2025	1	Swimming approx. 75 m southeast of VP 1	No
	05/12/2025	1	Swimming within existing marina	
	16/12/2025	1	Swimming within existing marina	
	13/01/2026	1	Foraging and diving approx. 75 m southeast of VP 1	
	10/02/2026	3	Foraging within marina and up to approx. 150 m from VP 1	
	24/02/2026	2	Swimming and foraging within existing marina and along reedbeds	
	24/03/2026	1	Swimming in front of existing marina	
Grey heron *(Ardea cinerea)*	07/10/2025	1	Flying over water	No
	05/12/2025	1	Heron perching within alluvial forest to the south of VP 1	
	16/12/2025	1	Perched in reed bed and woodland to the south of VP 1	
	27/01/2026	1	Perched on rock within alluvial forest south of VP 1	
	24/02/2026	22	22 perched in trees on island approx. 1.2 km east-southeast of VP 1	
	10/03/2026	1	Perched on rock on edge of alluvial forest south of VP 1	
	24/03/2026	1	Flying over marina	

Little grebe *(Tachybaptus ruficollis)*	07/10/2025	1	Foraging (diving)	Yes – Lough Ree SPA
	21/10/2025	1	Foraging	
	13/01/2026	1	Heard in reedbeds south of VP 1	
	27/01/2026	1	Heard in reed beds south of VP 1	
	10/02/2026	1	Heard in reed beds south of VP 1	
	24/02/2026	1	Heard in reed beds south of VP 1	
	10/03/2026	1	Heard in reed beds south of VP 1	
Tufted duck (Aythya fuligula)	07/10/2025	108	Loafing and feeding, up to 500 m from the shoreline	Yes – Lough Ree SPA
	21/10/2025	51	Loafing and foraging, between 90–120 m from shoreline at VP 1	
	04/11/2025	103	Foraging and loading between 125–525 m from VP 1; flying northeast to southwest and landing on the lake	
	18/11/2025	2	Foraging and loafing approx. 500 m southeast from VP 1	
	16/12/2025	15	Foraging and loafing approx. 75 m from VP 1	
	13/01/2026	2	Loafing approx. 60 m southeast of VP 1	
	27/01/2026	11	Loafing between approx. 300–400 m from VP 1	
	10/03/2026	2	Flying southwest approx. 1.4 km from VP 1	
Mallard *(Anas platyrhynchos)*	16/12/2025	2	Swimming within flooded alluvial forest to the south of VP 1	Yes – Lough Ree SPA
	10/03/2026	3	Foraging along willows	

	24/03/2026	1	One female walking around carpark	
Mute swan *(Cygnus olor)*	24/02/2026	4	Two foraging on grass adjacent to carpark beside VP 1; two foraging approx. 500–600 m southeast of VP 1	No
	10/03/2026	1	Swimming on lake	

3.6.2.2.2 *Vantage Point 2*

4 no. SCI species of SPAs within the vicinity of the Proposed Development were observed utilising habitats within and in the wider vicinity of the Proposed Development Site from VP 2. These included; Black-headed gull, Coot, Tufted duck and Mallard. Table 3-9 provides a summary of bird species recorded at VP 2 during the wintering season.

Most species were observed swimming, foraging and loafing on the Lough Ree in the wider vicinity of the existing marina, often outside of the Proposed Development Site. Coot were again frequently seen utilising the reed beds located within the bay to the southeast of VP 2, outside of the Proposed Development Site. Large rafts of a combination of tufted duck and coot were observed up to 735 m from VP 2, indicating that existing human activity within the Proposed Development Site likely creates an existing disturbance buffer which limits utilisation of the area by SCI species. Black-headed gulls were noted flying over or circling the lake on several occasions over the wintering bird surveys.

Table 3-9. Summary of bird species recorded at VP 2 during the Wintering Season

Species	Status	Date	Total Count	Notes	SCI of SPA within Likely Zone of Influence (Yes/No)
Black-headed gull *(Chroicocephalus ridibundus)*	BoCCI Amber List (Breeding/ Wintering)	04/11/2025	1	Flying east to west over lake	Yes - Middle Shannon Callows SPA
		27/01/2026	1	Circling over lake approx. 400 m southeast of VP 2	
		24/02/2026	3	Flying north to south	
		10/03/2026	1	Flying north	
Coot *(Fulica atra)*	BoCCI Amber List (Breeding/ Wintering)	07/10/2025	182	Loafing in a large raft, approx. 700 m from the marina in a southeast direction, foraging and feeding	Yes - Lough Ree SPA
		21/10/2025	54	Foraging and loafing, between 90–600 m from the marina at VP 2	
		05/12/2025	3	Swimming, approx. 700 m southeast from VP 2	
		13/01/2026	1	Swimming toward reedbeds	
		27/01/2026	1	Loafing by reed beds, approx. 600 m south of VP 2	
		10/02/2026	2	Foraging along reedbeds between 80–150 m from foot path	

		24/02/2026	1	Swimming by reedbeds	
		24/03/2026	1	Foraging in reedbeds approx. 300 m south of VP 2	
Cormorant ***(Phalacrocorax carbo)***	BoCCI Amber List (Breeding/ Wintering)	07/10/2025	5	Basking on depth marker poles and rocks, between approx. 400–700 m from the marina at VP 2; one flying north to south	No
		21/10/2025	2	Perched on rock and buoy, approx. 500 m from marina at VP 2	
		04/11/2025	3	Two basking on a rock and depth marker post; one foraging	
		18/11/2025	4	Two diving approx. 575 m east of VP 2; perched on rock and on depth marker pole	
		16/12/2025	2	Perched on rocks to the east of VP 2	
		13/01/2026	2	Perched on buoy and depth marker southeast of VP 2	
		27/01/2026	2	One flying northwest to southeast; one swimming and foraging approx. 575 m southeast of VP 2	
		10/02/2026	1	Flying north to south, then east	
		24/02/2026	3	Two flying north to south; one perched on depth marker pole	
		10/03/2026	1	Flying northeast in front of island, approx. 1.3 km from VP 2	
		24/03/2026	3	Perched on buoy, flying over lake	
Great Black-backed Gull ***(Larus marinus)***	BoCCI Green Conservatio	04/11/2025	1	Perched on buoy	No

	n Status (Wintering)				
Grey heron *(Ardea cinerea)*	BoCCI Green Conservation Status (Breeding/ Wintering)	13/01/2026	1	Flying northwest to southeast	No
		27/01/2026	1	Flying southwest to northeast	
		24/02/2026	1	Flying north to south and then west	
		10/03/2026	8	Six perched in trees on island approx. 1.4 km east-southeast of VP 2, two flying in the vicinity of possible heronry	
Great Crested Grebe *(Podiceps cristatus)*	BoCCI Amber List (Breeding/ Wintering)	04/11/2025	1	Flying north to south	No
		24/02/2026	3	Foraging and diving near reedbeds	
		10/03/2026	2	Swimming north of marina	
		24/03/2026	1	Resting on water approx. 500 m south of VP 2	
Mallard *(Anas platyrhynchos)*	BoCCI Amber List (Breeding/ Wintering)	10/02/2026	2	Flying northeast to southwest	Yes – Lough Ree SPA
		10/03/2026	16	Two foraging on shoreline north of VP 2; two perched on stone tower on island northeast of VP 2; seven flying in a general north-south direction during VP; five foraging along reedbeds approx. 1.1 km southeast of VP 2	
		24/03/2026	3	Flying north to south approx. 1.4 km southeast of VP 2	
Moorhen *(Gallinula chloropus)*	BoCCI Green Conservation Status (Breeding/ Wintering)	10/03/2026	1	Heard in reedbeds south of VP 2	No
Mute swan *(Cygnus olor)*	BoCCI Amber List	21/10/2025	4	1 adult and 3 juveniles, swimming across lake	No

	(Breeding/ Wintering)	27/01/2026	3	Sheltering in reed beds between 500–750 m southeast of VP 2	
		10/02/2026	2	Swimming along reedbeds approx. 800 m southeast of VP 2	
		24/02/2026	2	Feeding on shoreline	
		10/03/2026	7	Two flying south to north over Baysports; 5 swimming along reedbeds approx. 1.2 km southeast of VP 2	
Tufted duck (Aythya fuligula)	BoCCI Amber List (Breeding/ Wintering)	07/10/2025	45	Loafing and feeding, between approx. 135–735 m from the marina at VP 2	Yes – Lough Ree SPA
		21/10/2025	12	Foraging and loafing, between 75–550 m from the marina at VP 2	
		18/11/2025	23	Loafing approx. 1.4 km southeast from VP 2	
		05/12/2025	2	Diving approx. 715 m southeast from VP 2	
		13/01/2026	72	Loafing approx. 400 m southeast of VP 2	
		27/01/2026	8	Loafing approx. 600 m southeast of VP 2 along reedbeds	
		10/02/2026	18	Loafing approx. 270 m northeast of VP 2	
		24/02/2026	10	Flying above marina; flying southeast to northwest	

3.6.2.2.3 Vantage Point 3

5 no. SCI species of SPAs within the vicinity of the Proposed Development were observed utilising habitats within and in the wider vicinity of the Proposed Development Site from VP 3. These included; Black-headed gull, Coot, Tufted duck, little grebe, and Mallard. Table 3-10 provides a summary of bird species recorded at VP 3 during the wintering season.

Most species were observed swimming, foraging and loafing on the Lough Ree in the wider vicinity of the existing marina, often outside of the Proposed Development Site. Coot were frequently seen utilising the reed beds located within the bay to north and northeast of VP 3. Both Mallard and tufted duck were observed utilising the two bays to the north of VP 3 on several survey dates, between 90 – 400 m from VP 3. Most birds observed were utilising habitat outside of the Proposed Development Site.

Table 3-10. Summary of bird species recorded at VP 3 during the Wintering Season

Species	Status	Date	Total Count	Notes	SCI of SPA within Likely Zone of Influence (Yes/No)
Black-headed gull *(Chroicocephalus ridibundus)*	BoCCI Amber List (Breeding/ Wintering)	27/01/2026	4	Feeding on lake shoreline north of existing marina	Yes - Middle Shannon Callows SPA
		24/02/2026	2	Circling over lake	
		10/03/2026	3	Circling over lake	
		24/03/2026	3	Circling over lake	
Coot *(Fulica atra)*	BoCCI Amber List (Breeding/ Wintering)	07/10/2025	1	Heard calling from reed beds	Yes - Lough Ree SPA
		21/10/2025	1	Loafing	
		18/12/2025	4	Swimming along reed beds and island to the north and northeast of VP 3, respectively	
		13/01/2026	4	Swimming from island toward reedbeds	
		27/01/2026	1	Swimming along northern-most reed beds	
Cormorant *(Phalacrocorax carbo)*	BoCCI Amber List (Breeding/ Wintering)	18/11/2025	1	Flying south to north	No
		05/12/2025	1	Perched on marina	
		27/01/2026	1	Flying southeast to northwest	
		24/02/2026	1	Perched on rock	

		24/03/2026	1	Swimming around island northeast of VP 3	
Great Crested Grebe *(Podiceps cristatus)*	BoCCI Amber List (Breeding/ Wintering)	07/10/2025	4	3 foraging around island; 1 flying toward island	No
		21/10/2025	1	Swimming and foraging, approx. 225 m east of the marina at VP 3	
		04/11/2025	1	Foraging approx. 175 m northeast of VP 3	
		18/11/2025	1	Foraging adjacent to island northwest of VP 3	
		13/01/2026	1	Foraging approx. 185 m northeast of VP 3	
		10/02/2026	1	Swimming and diving approx. 85m east of VP 3	
		24/02/2026	1	Swimming and foraging north of VP 3	
		24/03/2026	1	Swimming approx. 50 m north of VP 3	
Great northern diver *(Gavia immer)*	BoCCI Amber List (Wintering)	04/11/2025	1	Foraging approx. 125 m northeast of VP 3	No
Grey heron *(Ardea cinerea)*	BoCCI Green Conservation Status (Breeding/ Wintering)	04/11/2025	1	Flying northeast to southwest, landing on the island northeast of VP 3	No
		10/03/2026	1	Flying southeast	
Lesser black-backed gull *(Larus fuscus)*	BoCCI Amber List (Breeding/ Wintering)	07/10/2025	1	Flying over lake	No
Little grebe *(Tachybaptus ruficollis)*	BoCCI Green Conservation Status (Breeding/ Wintering)	21/10/2025	2	Foraging approx. 80 m north of the marina at VP 3	Yes - Lough Ree SPA
Mallard *(Anas platyrhynchos)*		07/10/2025	4	Loafing adjacent to red beds	Yes - Lough Ree SPA

	BoCCI Amber List (Breeding/ Wintering)	13/01/2026	1	Pair foraging through reedbeds north of VP 3	
		10/03/2026	2	Flying toward shoreline and landing beside willows	
		24/03/2026	4	Three resting on water approx. 400 m north of VP; one swimming within existing marina	
Tufted duck (Aythya fuligula)	BoCCI Amber List (Breeding/ Wintering)	21/10/2025	57	Foraging and loafing approx. 90 m north of the marina at VP 3	Yes - Lough Ree SPA
		04/11/2025	23	Foraging and loafing between 200–250 m from VP 3	
		18/11/2025	2	Flying southwest to northeast	
		05/12/2025	26	Swimming, between approx. 270 m – 1.1 km east from VP 3 (majority of birds concentrated at 270 m from marina)	
		18/12/2025	26	Diving and swimming toward reed beds north of VP 3	
		27/01/2026	10	Loafing northeast of VP 3 beside island	
		10/02/2026	4	Flying southwest to northeast then north	

3.6.2.2.4 Vantage Point 4

5 no. SCI species of SPAs within the vicinity of the Proposed Development were observed utilising habitats within and in the wider vicinity of the Proposed Development Site from VP 4. These included; Black-headed gull, Coot, Little grebe, Tufted duck and Mallard. Table 3-11 provides a summary of bird species recorded at VP 4 during the wintering season.

Species were observed resting and foraging on the shoreline at VP 4, as well as foraging through shallow waters off the shore from VP 4, adjacent to the current bay sports building. In periods of heavier rain or winds, several SCI species, including coot, mallard, tufted duck and little grebe, were observed sheltering along the shoreline and adjacent to more sheltered reedbeds and existing willows. The area of land at VP 4 was frequently inundated with water from Lough Ree.

Table 3-11. Summary of bird species recorded at VP 4 during the Wintering Season

Species	Status	Date	Total Count	Notes	SCI of SPA within Likely Zone of Influence (Yes/No)
Black-headed gull *(Chroicocephalus ridibundus)*	BoCCI Amber List (Breeding/ Wintering)	27/01/2026	3	Resting on grass	Yes - Middle Shannon Callows SPA
		24/02/2026	1	Flying southwest to northeast	
		10/03/2026	5	Perched on jetty and circling above Baysports	
Coot *(Fulica atra)*	BoCCI Amber List (Breeding/Winteri ng)	07/10/2025	3	Foraging	Yes - Lough Ree SPA
		21/10/2025	2	Foraging	
		05/12/2025	2	Swimming within bay adjacent to Baysports facility	
		27/01/2026	4	Loafing and feeding in reedbeds directly adjacent to shoreline	
		24/02/2026	1	Swimming along lake shore	
		10/03/2026	2	Foraging on grass	
Cormorant *(Phalacrocorax carbo)*	BoCCI Amber List (Breeding/Winteri ng)	04/11/2025	2	Flying east to west	No
		18/11/2025	1	Flying northwest to southeast	
		13/01/2026	1	Flying northeast to southwest	
Great Crested Grebe *(Podiceps cristatus)*	BoCCI Amber List (Breeding/Winteri ng)	27/01/2026	1	Feeding in sheltered bay	No
		24/02/2026	1	Swimming approx. 150 northeast of VP 4	
		10/03/2026	2	Swimming north of Baysports	
Grey heron *(Ardea cinerea)*	BoCCI Green Conservation	16/12/2025	1	Wading along shoreline	No

	Status (Breeding/Wintering)	27/01/2026	1	Flying north to south and landed on grass	
Little grebe *(Tachybaptus ruficollis)*	BoCCI Green Conservation Status (Breeding/Wintering)	07/10/2025	2	Foraging	Yes - Lough Ree SPA
		21/10/2025	1	Foraging	
		27/01/2026	1	Feeding in reeds directly adjacent to shoreline	
Mallard *(Anas platyrhynchos)*	BoCCI Amber List (Breeding/Wintering)	07/10/2025	10	5 male, 5 female foraging along shoreline	Yes - Lough Ree SPA
		21/10/2025	16	8 pairs, foraging along the shoreline and loafing by reedbeds to the north of VP 4	
		04/11/2025	16	7 pairs swimming and foraging, 2 individuals flying northwest to southeast	
		05/12/2025	20	18 resting on lake shoreline; 2 flying in to join and landed	
		16/12/2025	2	Swimming along shoreline	
		27/01/2026	12	Feeding on grass	
		24/02/2026	2	Swimming beside reedbeds	
		10/03/2026	2	Flying from northwest and landing on water by VP 4	
Moorhen *(Gallinula chloropus)*	BoCCI Green Conservation Status (Breeding/Wintering)	24/02/2026	2	Foraging on grass and swimming along shoreline	No
Mute swan *(Cygnus olor)*	BoCCI Amber List (Breeding/Wintering)	27/01/2026	1	Resting on grass	No
		10/02/2026	2	Swimming along shoreline	
		24/03/2026	2	Foraging along shoreline	
Tufted duck (Aythya fuligula)	BoCCI Amber List (Breeding/Wintering)	21/10/2025	31	Loafing and foraging approx. 65 m north of VP 4	Yes - Lough Ree SPA
		27/01/2026	6	Sheltering behind willow treeline	

3.6.2.2.5 Vantage Point 5

4 no. SCI species of SPAs within the vicinity of the Proposed Development were observed utilising habitats within and in the wider vicinity of the Proposed Development Site from VP 5. These included; Coot, Tufted duck and Mallard. Table 3-12 provides a summary of bird species recorded at VP 5 during the wintering season.

Most species were observed swimming and foraging along the reed beds located either side of VP 5, outside of the Proposed Development Site. Both little grebe and coot were also heard from within reedbeds and surrounding woodland which was inundated with water from Lough Ree during several of the wintering bird surveys.

Table 3-12. Summary of bird species recorded at VP 5 during the Wintering Season

Species	Date	Total Count	Notes	SCI of SPA within Likely Zone of Influence (Yes/No)
Coot *(Fulica atra)*	07/10/2025	7	Foraging	Yes - Lough Ree SPA
	21/10/2025	2	Foraging and loafing, between 10–80 m from the shoreline at VP 5	
	18/12/2025	2	Heard in reed beds	
	13/01/2026	2	Foraging and swimming along reedbeds	
	27/01/2026	1	Swimming in northern most bay	
	10/02/2026	2	Swimming in reeds	
	24/02/2026	3	Two seen swimming along reed beds, one more heard in reed beds	
	10/03/2026	3	Foraging and swimming along northern-most reedbeds	
Cormorant *(Phalacrocorax carbo)*	04/11/2025	3	Flying northwest to southeast	No
Great Crested Grebe *(Podiceps cristatus)*	07/10/2025	1	Foraging	No
	21/10/2025	1	Pruning, swimming	
	18/11/2025	1	Foraging approx. 250 m east of VP 5	
	13/01/2026	1	Foraging approx. 120 m east of VP 5	
Grey heron *(Ardea cinerea)*	05/12/2025	1	Flying overhead	No
Little grebe *(Tachybaptus ruficollis)*	07/10/2025	5	Foraging	
	21/10/2025	4	3 foraging, 1 heard in reed beds and flushed	Yes - Lough Ree SPA

			by other bird from reeds, approx. 15–120 m from the shoreline at VP 5	
	14/11/2025	2	Foraging and loafing approx. 80 m from VP 5	
	18/11/2025	5	Foraging by northern reed beds, approx. 115 m east of VP 5	
	13/01/2026	2	Heard in reedbeds	
	27/01/2026	3	At least two heard in reed beds; one heard in flood alluvial forest	
	10/02/2026	2	Swimming in reedbeds	
	24/02/2026	1	Heard in reedbeds	
	10/03/2026	1	Heard in reedbeds	
	24/03/2026	1	Heard in reedbeds	
Mallard *(Anas platyrhynchos)*	21/10/2025	4	2 pairs, loafing	Yes - Lough Ree SPA
	04/11/2025	9	Flying southwest to northwest and southeast and northwest	
	18/11/2025	4	Heard calling in reeds; flying east to west	
	16/12/2025	1	Heard in reed beds	
	13/01/2026	3	Foraging along reed beds approx. 200 m east of VP 5	
	27/01/2026	2	Swimming along reedbeds	
	10/02/2026	1	Swimming in reeds	
	10/03/2026	2	Foraging in alluvial forest north of VP 5	
Mute swan *(Cygnus olor)*	13/01/2026	1	Foraging along treeline approx. 300 m east of VP 5	No
	27/01/2026	2	Feeding along reedbeds	
	10/03/2026	2	Flying west to east	
Tufted duck (Aythya fuligula)	04/1/1/2025	7	3 loafing approx. 130 m east from VP 5; 4 flying northeast to southwest	Yes - Lough Ree SPA
Water rail *(Rallus aquaticus)*	27/01/2026	1	Heard in flooded alluvial forest to the south of VP 5	No

3.6.2.2.6 *Vantage Point 6*

1 no. SCI species of an SPA within the vicinity of the Proposed Development was observed utilising habitats from VP 6, located outside of the Proposed Development Site. Mallard were observed swimming and foraging within areas of flooded field. Table 3-13 provides a summary of bird species recorded at VP 5 during the wintering season.

The area adjacent to VP 6 consisted of an active building site with ongoing disturbance. Levels of inundation within the field at VP 6 fluctuated across the wintering survey dates.

Table 3-13. Summary of bird species recorded at VP 6 during the Wintering Season

Species	Status	Date	Total Count	Notes	SCI of SPA within Likely Zone of Influence (Yes/No)
Grey heron *(Ardea cinerea)*	BoCCI Green Conservation Status (Breeding/Wintering)	18/11/2025	1	Perched on wooded area in the middle of field	No
		24/02/2026	1	Flying southwest to northwest	
Mallard *(Anas platyrhynchos)*	**SCI,** BoCCI Amber List (Breeding/Wintering)	07/10/2025	2	Flying overhead	
		24/02/2026	3	Foraging in grass within flooded area of field	Yes - Lough Ree SPA
		10/03/2026	2	Resting on edge of flooded area of field	
		24/03/2026	2	Foraging and swimming in flooded area of field	
Moorhen *(Gallinula chloropus)*	BoCCI Green Conservation Status (Breeding/Wintering)	07/10/2025	1	Heard calling in flooded area of field	No
		18/11/2025	1	Swimming in flooded area of field	
		10/02/2026	1	Foraging and swimming in flooded area of field	
		24/02/2026	2	Swimming and foraging in flooded area of field	
Mute swan *(Cygnus olor)*	BoCCI Amber List (Breeding/Wintering)	24/02/2026	2	Foraging in flooded area of field	No

3.6.2.2.1 *Transect survey*

Following surveys at the wintering bird vantage points, a walking transect from the northern end of the Proposed Development along the L2020 road, to the N61 junction was conducted. The following non-target bird species were identified throughout the transect:

- Blackbird *(Turdus merula)*
- Blue tit *(Cyanistes caeruleus)*
- Buzzard *(Buteo buteo)*
- Chaffinch *(Fringilla coelebs)*
- Coal tit *(Periparus ater)*
- Collared dove *(Streptopelia decaocto)*
- Dunnock *(Prunella modularis)*
- Goldcrest *(Regulus regulus)*
- Goldfinch *(Carduelis carduelis)*
- Great tit *(Parus major)*
- Greenfinch *(Chloris chloris)*
- Hooded crow *(Corvus cornix)*
- House sparrow *(Passer domesticus)*
- Jackdaw *(Coloeus monedula)*
- Long-tailed tit *(Aegithalos caudatus)*
- Magpie *(Pica pica)*
- Mistle thrush *(Turdus viscivorus)*
- Pied wagtail *(Motacilla alba yarrellii)*
- Robin *(Erithacus rubecula)*
- Reed bunting *(Emberiza schoeniclus)*
- Song thrush *(Turdus philomelos)*
- Starling *(Sturnus vulgaris)*
- Wood pigeon *(Columba palumbus)*
- Wren *(Troglodytes troglodytes)*

3.6.2.3 Incidentals recorded during Aerial Drone Survey

An aerial drone-based topographical survey was conducted on 2nd May 2025 over an area of approx. 35 ha along the shore of Lough Ree within the Proposed Development Boundary. An additional hectare was surveyed to include the small island on which Hodson's Tower is located. A map of the surveyed area is shown in Figure 3-10.

During topographical drone surveys, birds and nests were observed as incidentals. Areas of suitable nesting habitat amongst reed beds were identified to the north and south of the Proposed Development site, outside of the Proposed Development Site. 3 no. nests and 5 no. nesting birds were identified during the survey in areas of reed bed located outside of but adjacent to the Proposed Development Site, as well as a 24 no. birds utilising the area at the time of the aerial drone survey. Due to the sensitive nature of nests and nesting birds, the exact location of nests and nesting birds are not disclosed in this report. An example of RGB imaging alongside thermal imaging of an identified nest is shown in Figure 3-8.



Figure 3-10. Area surveyed as part of the aerial drone topographical survey



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Drawing Title
Thermal and RGB imaging of a nest from the aerial drone survey

Project Title
Hodson Bay Waterfront Park, Co. Roscommon

Drawn By	Checked By
NR	AvdGM
Project No.	Drawing No.
241220	Figure 3-11
Scale	Date
1:200	10.06.2026

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3.6.2.4 Proposed Development Survey Data vs I-WeBS Data vs NPWS Conservation Objectives

The table below draws together, for each SCI species of Lough Ree SPA [004064] and Middle Shannon Callows SPA [004096] recorded during the dedicated Proposed Development bird surveys, three independent data points:

- The peak count recorded during breeding and wintering bird surveys conducted for the Proposed Development. In the case of wintering surveys, peak numbers are calculated by adding all numbers of a given species on a given date across all vantage points;
- The peak count recorded at the Hodson Bay I-WeBS subsite (0E528) over five recent survey seasons (2018/19–2023/24, per Table 6-14); and
- The current SPA-wide population estimate, and conservation status set out in the respective NPWS Conservation Objectives documents (Lough Ree SPA 004064, Version 1, 04 April 2025; Middle Shannon Callows SPA 004096, Version 1, 15 November 2022).

The final column expresses the site's peak recorded count as a proportion of the current SPA-wide population, to illustrate the significant Hodson Bay is as a proportion of each SPA's current estimated populations.

Table 3-14 Proposed Development Survey Data vs I-WeBS Data vs NPWS Conservation Objectives

SPA	SCI Species	Proposed Development Surveys Peak Numbers	I-WeBS Hodson Bay Peak (2018/19–23/24)	SPA Population as per SPA Conservation Objectives Documents	NPWS Conservation Objective and SPA Trend since Baseline	Site Peak as approx. % of SPA Population
Lough Ree SPA	Coot	208 (wintering surveys); 7 (breeding surveys)	541	619	To maintain the favourable conservation condition of Coot in Lough Ree SPA; +83% vs baseline (contrary to national decline)	33.6% (Wintering) The Peak I-WeBS numbers for Hodson Bay (2018/19 season) represent 87% of the current estimated population of wintering Coot utilising Lough Ree SPA.
Lough Ree SPA	Tufted Duck	153 (wintering surveys)	66	989	To maintain the favourable conservation condition of Tufted Duck in Lough Ree SPA; –2% vs baseline (broadly stable, contrary to national decline)	15.5%

SPA	SCI Species	Proposed Development Surveys Peak Numbers	I-WeBS Hodson Bay Peak (2018/19–23/24)	SPA Population as per SPA Conservation Objectives Documents	NPWS Conservation Objective and SPA Trend since Baseline	Site Peak as approx. % of SPA Population
Lough Ree SPA	Little Grebe	8 (wintering surveys); 2 (breeding surveys)	9	89	To maintain the favourable conservation condition of Little Grebe in Lough Ree SPA; +71% vs baseline	9% (Wintering)
Lough Ree SPA	Mallard	27 (wintering surveys); 37 (breeding surveys)	15	537	To restore the favourable conservation condition of Mallard in Lough Ree SPA; –51% vs baseline (more severe than national decline)	4.6% (wintering)
Lough Ree SPA	Goldeneye	6 (single record during the breeding survey season (April), Goldeneye were not recorded during dedicated wintering surveys. It is considered likely that these Goldeneye were late leaving after the wintering season).	12	47	To restore the favourable conservation condition of Goldeneye in Lough Ree SPA; –77% vs baseline (more severe than national decline)	12.8%
Lough Ree SPA	Common Tern	5 (Common Tern were only recorded during the breeding season	Not recorded (I-WeBS is a wintering survey and Common Tern utilises Lough Ree during the	64 breeding pairs (most recent estimate)	To restore the favourable conservation condition of Common Tern in Lough Ree SPA;	Common Tern did not utilise the Proposed Development Site or wider Study Area for Breeding activity. Additionally, the peak number of Terns

SPA	SCI Species	Proposed Development Surveys Peak Numbers	I-WeBS Hodson Bay Peak (2018/19–23/24)	SPA Population as per SPA Conservation Objectives Documents	NPWS Conservation Objective and SPA Trend since Baseline	Site Peak as approx. % of SPA Population
		as would be anticipated).	breeding season)		–29% vs 1995 baseline	cannot be directly compared to the estimate for breeding pairs within the SPA.
Middle Shannon Callows SPA	Black-headed Gull	21 (wintering surveys) 45 (breeding surveys)	36	1,055 (2-yr mean, 2018/19–20/21)	To restore the favourable conservation condition of Black-headed Gull in Middle Shannon Callows SPA; –13% vs baseline	2% (Wintering)

Though a peak of 208 coot were recorded during wintering surveys, these numbers were recorded on the first survey on the 7th of October 2025. Numbers declined steeply across further surveys with numbers of coot recorded during surveys not exceeding 10 individuals on any given survey from December 2025 to March 2026. The lowest numbers of coot recorded on any survey date was two individuals on the 18th of November 2025. Tufted duck followed a similar trend to coot, but with higher overall numbers across the majority of survey dates. These species often occurred together in rafts and when in large congregations tended to utilise waters at considerable distance from the Proposed Development Site (approx. 250m – 700m). Little Grebe numbers were generally lower than other bird species, but were recorded within or in close proximity to the Proposed Development Site in all months but December. Little grebe were typically associated with reedbed habitat. Mallard were recorded during all 12 wintering bird surveys with a peak count of 27 and a minimum count of three. Black-headed gull were not recorded on six of the 12 wintering bird surveys undertaken. All black-headed gulls, excluding two individuals were recorded within January, February, and March of 2026.

The peak numbers recorded of both mallard and black-headed gull were higher within the breeding season than the wintering season. Both little grebe and coot were also recorded within the breeding season within or in the vicinity of the Proposed Development Site.

Though five common tern were recorded utilising the Proposed Development Site and wider area during the breeding season, no breeding behaviour was noted. No suitable habitat for breeding common tern is located within the Proposed Development Site.

Four further SCI species recorded as part of I-WeBS surveys of the Hodson Bay subsite (Whooper Swan, Wigeon, Golden Plover, and Lapwing) were not recorded during any of the 5 breeding or 12 wintering bird surveys carried out for the Proposed Development. All four appear in the Hodson Bay I-WeBS dataset (Table 3-14: Whooper Swan peak 4; Wigeon peak 43; Golden Plover peak 100; Lapwing peak 300) and/or with the NBDC desk study records for the Hectad. Golden Plover and Lapwing in particular show large historical peak counts at Hodson Bay (100 and 300 respectively) relative to their absence from the surveys undertaken for the Proposed Development. The absence of these species from the surveys undertaken for the Proposed Development is likely due to the natural inter-annual and

inter-seasonal variability in these species. This level of inter-seasonal variability has been previously observed at Hodson Bay within I-WeBS data.

3.6.2.5 Otter

Otter surveys were conducted along the shoreline of Lough Ree located within the Proposed Development Site, as well on the island located approx. 100m east of the existing Baysports Facility.

Large amounts of otter spraint (Plate 3-27, Plate 3-28) were identified on the island, which was determined to be in frequent use as a sprainting site for otter. Otter spraint was also identified on fallen trees within a strip of woodland approx. 100m south of the existing marina, behind stands of **Reed and large sedge swamp (FS1)** habitat (Plate 3-29). No holts or couches were identified within the Proposed Development Site, 150m up-shore or down-shore of the Proposed Development Site, or on the island at the time of survey.



Plate 3-27. A representative photo of otter spraint identified on Temple Island, outside of the Proposed Development Site.



Plate 3-28. A representative photo of otter spraint identified on Temple Island, outside of the Proposed Development Site.



Plate 3-29. A representative photo of old otter spraint identified on a fallen tree, approx. 100m south of the existing marina, outside of the Proposed Development Site.

3.6.3 Invasive Species

Starry stonewort *(Nitellopsis obtusa),* an invasive charophyte, was found throughout aquatic drone transects and grapnel throws within the existing marina (Plate 3-30), often in conjunction with Quagga mussel *(Dreissena rostriformis bugensis)*. Both Quagga mussel and Zebra mussel *(Dreissena polymorpha)*, both listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) and Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011), were identified colonising the concrete marina and were also found on substrate outcrops throughout wading transects within the Proposed Development Site (Plate 3-31, Plate 3-32, Plate 3-33). The First and Third Schedule Nuttall's waterweed *(Elodea nutallii)* and Third Schedule Canadian waterweed *(Elodea candensis)* were recorded in macrophyte transects within and adjacent to the Proposed Development Site (Plate 3-34). No other invasive species listed on the First or Third Schedule were recorded within the Proposed Development Site.

Invasive Species within the wider vicinity.

The medium impact species Butterfly bush (*Buddleia davidii*) was recorded outside of the Proposed Development Site, to the northwest of the southern end of L2020 Local Road (Plate 3-35). Snowberry (*Symphoricarpos albus*) was recorded in the northwestern corner of Wet grassland (GS4) to the south of the L2020 Local Road, also outside of the Proposed Development Site to the south (Plate 3-36). Spanish Blubell (*Hyacinthoides hispanica*), which is a First and Third Schedule listed species, was recorded outside the Proposed Development Site within Athlone Golf Club.



Plate 3-30. A representative photo of mats of non-native starry stonewort identified during macrophyte surveys within the Proposed Development Site

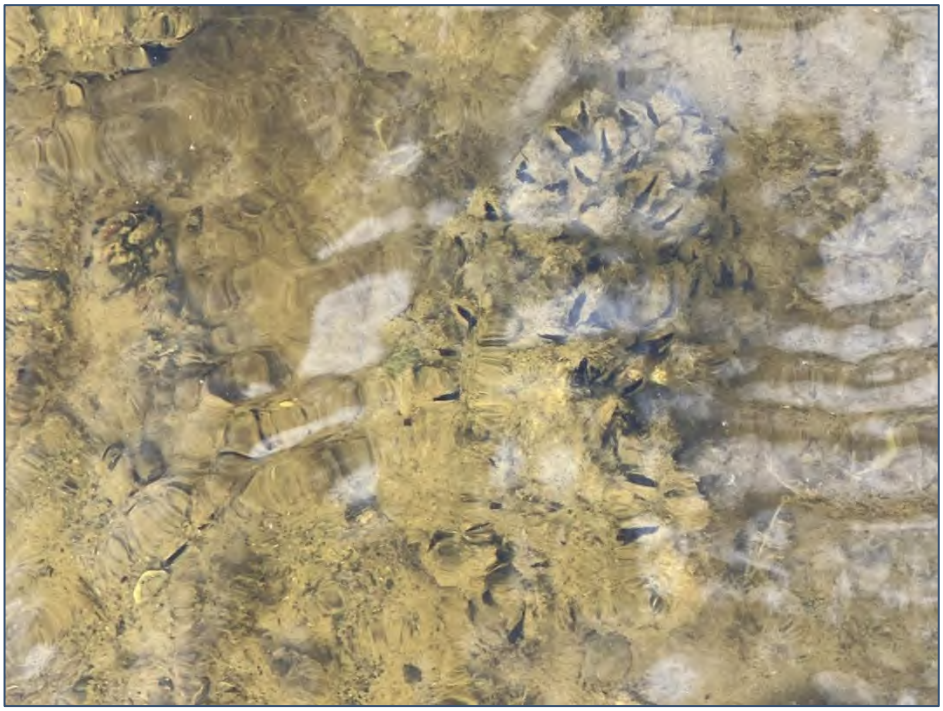


Plate 3-31. A representative photo of encrustations of quagga and zebra mussel throughout the Proposed Development Site



Plate 3-32. A representative photo of quagga and zebra mussel colonisation on the existing marina within the Proposed Development Site

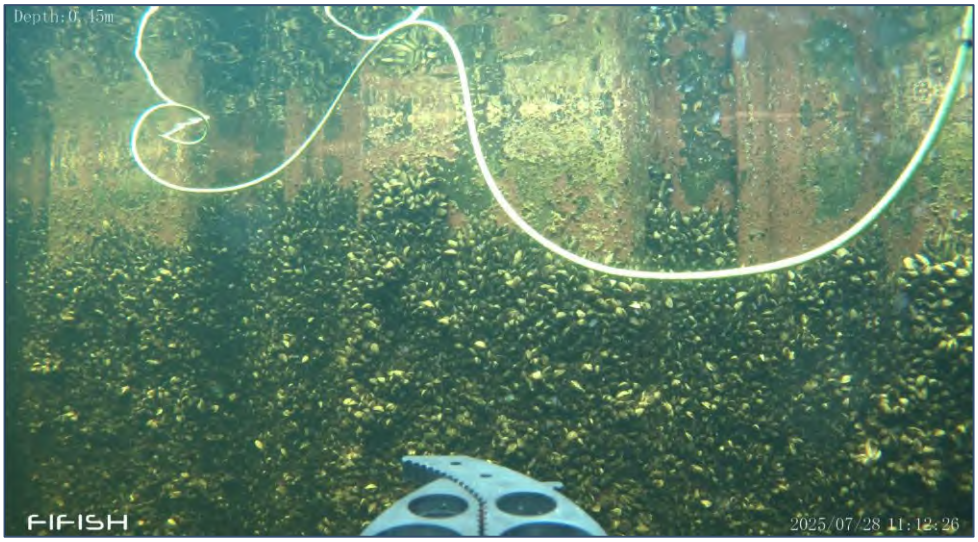


Plate 3-33. A representative photo of quagga and zebra mussel encrustations on the existing marina within the Proposed Development Site

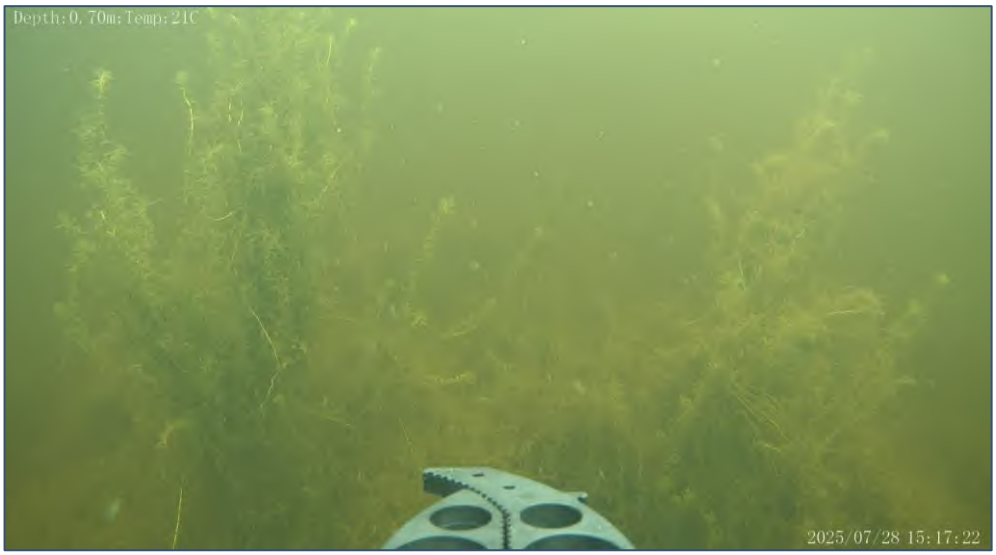


Plate 3-34. A representative photo of Canadian and Nuttall's waterweed identified within the Proposed Development Site



Plate 3-35 Snowberry (Symphoricarpos albus) recorded along a field boundary along the southern side of the L2020, outside of the Proposed Development Site.



Plate 3-36 Spanish bluebell (Hyacinthoides hispanica) recorded within Athlone Golf Club, outside of the Proposed Development Site.

4. APPROPRIATE ASSESSMENT SCREENING

4.1 Identification of Relevant European Sites

The following methodology was used to establish any European Sites upon which there is a potential for a likely significant effect to occur either individually or in combination with other plans and projects as a result of the Proposed Development:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie).
- All European Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, European Sites surrounding the Proposed Development are shown on Figure 4-1. Information on these sites according to the site-specific conservation objectives is provided in Table 4-1. Sites that were further away from the Proposed Development were also considered and no complete source-pathway-receptor chain for significant effect was identified for any other European Site.
- The catchment mapping was used to establish or discount potential hydrological connectivity between The Proposed Development and any European Sites. The hydrological catchments are also shown in Figure 4-1.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, '*Assessing Connectivity with Special Protection Areas* (SPA)' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between Proposed Development and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- Table 4-1 provides details of all relevant European Sites as identified in the preceding steps and assesses the potential for likely significant effects on each.
- The assessment considers any likely direct or indirect impacts of the Proposed Development, both alone and in combination with other plans and projects, on European Sites by virtue of criteria including the following: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this assessment.
- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report.
- Where potential pathways for Likely Significant Effect are identified, the site is included within the Likely Zone of Influence and further assessment is required within the NIS.
- The potential for the Proposed Development to result in cumulative impacts on any European Sites in combination with other plans and projects was considered in the assessment that is presented in Table 4-1. Plans and projects considered include those that are listed in Appendix 7.

580,000
600,000
620,000
760,000
740,000

N

Scramoge_SC_010
Carrick on Shannon
Scramoge North
Corbo Bog SAC
Shannon[Upper]_SC_070
Mount Jessop Bog SAC
Newtown Forbes
Shannon[Upper]_SC_080
Inny[Shannon]_SC_050
Glen Lough SPA
Glen Lough SPA
Suck_SC_030
Clooneigh_SC_010
Curraghroe
Upper Shannon
Longford
Ballinalee
Shannon[Upper]_SC_060
Suck_SC_020
Fortwilliam Turlough SAC
Hind_SC_010
Suck_SC_040
Inny[Shannon]_SC_040
Bilberry_SC_010
Inny[Shannon]_SC_080
Inny
Ballinturly Turlough SAC
Camderry Bog SAC
River Suck Callows SPA
Lough Ree SPA
Mount Mary
Funshinagh
GWDTE-Lough Ree Fen 12 (SAC000440)
Inny[Shannon]_SC_060
Aughrim (Aghrane) Bog SAC
Lisduff Turlough SAC
Knockcroghery_SC_010
Upper Shannon
Inny[Shannon]_SC_070
GWDTE-Lough Ree Fen 10 (SAC000440)
Upper Shannon
Ballygar (Aghrane) Bog SAC
Suck_SC_060
Shannon[Upper]_SC_090
GWDTE-Lough Ree Fen 9 (SAC000440)
Ballygar
Suck_SC_050
Four Roads Turlough SAC
Four Roads Turlough SPA
Lough Funshinagh SAC
GWDTE-Ballymore Fen & Mire (SAC002313)
Lough Croan Turlough SPA
Lough Croan Turlough SAC
Lough Ree SPA
Lough Ree SPA
Ballymore Fen SAC
BROSNA_SC_010
Castlegar_SC_010
Inny[Shannon]_SC_090
Lough Ree SAC
Upper Shannon
Breensford_SC_010
Ballynamona Bog and Corkip Lough SAC
Athlone Gravels
Carn Park Bog SAC
Suck South
Killeglan Grassland SAC
Suck_SC_070
Industrial Facility (P0110-01)
Middle Shannon Callows SPA
Crosswood Bog SAC
Castlesampson Esker SAC
Shannon[Upper]_SC_100
BROSNA_SC_030
Gageborogh-Brosna Gravels Group 1
Upper Shannon
Shannon[Lower]_SC_010
Gageborogh-Brosna Gravels Group 2
Kilbeggan Gravels
Athlone West
Middle Shannon Callows SPA
GWDTE-Clara Bog (SAC000572)
BROSNA_SC_020
Pilgrim's Road Esker SAC
Lough Ree SPA
Lough Ree SAC
Funshinagh
Shannon[Lower]_SC_020
Mongan Bog SPA
Boor Gravels
Lower Shannon
Fin Lough (Offaly) SAC
GWDTE-Fin Lough Fen (SAC000576)
BROSNA_SC_060
Clara Bog SAC
Silver[Tullamore]_SC_010
Middle Shannon Callows SPA
Shannon[Lower]_SC_030
Ferbane
Tullamore_SC_010
Tullamore
Lower Shannon
Clara
Ferbane Bog SAC
Charleville Wood SAC
River Shannon Callows SAC
Moyclare Bog SAC
BROSNA_SC_040
Gageborogh-Brosna Gravels Group 3
CLODIAGH[TULLAMORE]_SC_010
BROSNA_SC_050
Tolimshill-Killeigh Gravels
Shannon[Lower]_SC_050
BROSNA_SC_080
BROSNA_SC_070
Geashill

0 5 10 km

1:18,000

Map Legend

- Proposed Development Site
- Special Protection Areas (SPA)
- Special Area of Conservation (SAC)
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments
- WFD Groundwater Bodies

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

SITE LOCATION - NOT TO SCALE

Drawing Title
European Designated Sites within the Likely Zone of Influence

Project Title
Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Project No.	Drawing No.	Scale
241220	Figure 4-1	1:180,000
Drawn By	Checked By	Date
TS	AvdGM	10/08/2026

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Table 4-1 Identification of European Sites within the Likely Zone of Influence

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
Special Areas of Conservation (SAC)				
Lough Ree SAC [000440] **Distance:** The Proposed Development is located within and adjacent to the SAC.	› [1355] Otter (*Lutra lutra*) › [3150] Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation › [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) › [7120] Degraded raised bogs still capable of natural regeneration › [7230] Alkaline fens › [8240] Limestone pavements › [91D0] Bog woodland › [91E0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	Detailed conservation objectives for this site, (Version 2, March 2026), were reviewed as part of the assessment and are available at www.npws.ie	As the Proposed Development is located partially within and adjacent to Lough Ree SAC, there is potential for direct effects upon the designated site. Potential for direct effects on QI habitat of the SAC were identified in the form of habitat disturbance arising from the Proposed Development. The potential for disturbance and displacement of Otter and associated potential for likely significant effect was identified as a result of the Proposed Development. Additionally, the potential for likely significant effect on aquatically influenced QI habitats and species were identified in the form of surface water and groundwater quality deterioration arising from the construction and operational phases of the Proposed Development **A complete source-pathway-receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Development to result in likely significant effects on this European Site. The SAC is considered to be within the Likely Zone of Influence of the Proposed Development and further assessment is required.**	**Yes**

[4] *Accessed at <https://www.npws.ie/protected-sites/conservation-management-planning/conservation-objectives>*

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
River Shannon Callows SAC [000216] **Distance**: 5.3km **Hydrological distance:** 6.5 km	› [1355] Otter (*Lutra lutra*) › [6410] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) › [6510] Lowland hay meadows *(Alopecurus pratensis, Sanguisorba officinalis)* › [7230] Alkaline fens › [8240] Limestone pavements › [91E0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)	Detailed conservation objectives for this site, (Version 1, January 2022), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SAC. As there is direct hydrological connectivity between the Proposed Development Site and the River Shannon Callows SAC via Lough Ree and the River Shannon (approx. 6.5 km downstream), there is potential for likely significant effects upon the aquatic and aquatically influenced QI habitats and species of the SAC via deterioration in surface water quality. Taking a precautionary approach, there is also the potential for likely significant effects on Otter as a result of ex-situ disturbance resulting from the Proposed Development. **A complete source-pathway-receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Development to result in likely significant effects on this European Site. The SAC is considered to be within the Likely Zone of Influence of the Proposed Development and further assessment is required.**	**Yes**
Ballynamona Bog and Corkip Lough SAC [002339] **Distance**: 5.6 km	› [3180] Turloughs › [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion* › [91D0] Bog woodland	Detailed conservation objectives for this site, (Version 1, September 2016), were reviewed as part of the assessment and are	There will be no direct effects as the Proposed Development is located entirely outside the SAC. The Proposed Development and the SAC are located within the same groundwater body (Funshinagh GWB). However, given that no works associated with the Proposed Development will affect groundwater levels, as well as the intervening, topographically upgradient distance of 5.6 km between the Proposed Development Site and SAC, no potential for likely	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
		available at www.npws.ie	significant effects on the QI habitats of the SAC via deterioration in groundwater quality or alteration of groundwater regime were identified. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	
Castlesampson Esker SAC [001625] **Distance**: 6.7 km	› [3180] Turloughs › [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	Detailed conservation objectives for this site, (Version 1, October 2021), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SAC. Indirect effects on the terrestrial QI habitat of the Castlesampson Esker SAC can be ruled out due to the terrestrial nature of the habitat, the distance from the Proposed Development (6.7 km), and the absence of a complete source-pathway-receptor chain for effect. While a section of this SAC is located within the same hydrological sub-catchment as The Proposed Development , there is no direct connectivity between the two via surface water pathways. Additionally, The Proposed Development and the SAC are underlain by separate groundwater bodies. Therefore, due to the intervening distance and lack of any source-receptor pathways, there is no potential for indirect effects on the QI habitats via surface water pathways, or through deterioration of groundwater quality. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination**	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
			with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.	
Lough Funshinagh SAC [000611] **Distance**: 7 km	› [3180] Turloughs › [3270] Rivers with muddy banks with *Chenopodion rubri p.p.* and *Bidention p.p.* vegetation	Detailed conservation objectives for this site, (Version 1, February 2018), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SAC. While a section of this SAC is located within the same hydrological sub-catchment as The Proposed Development , there is no direct connectivity between the two via surface water pathways. Therefore, due to the lack of any complete source-pathway-receptor chain for effect, there is no potential for indirect effects on the QI habitats of the SAC via surface water pathways. The Proposed Development and the SAC are located within the same groundwater body (Funshinagh GWB). However, given that no works associated with the Proposed Development will affect groundwater levels, as well as the intervening, topographically upgradient distance of 7.0 km between the Proposed Development Site and SAC, no potential for significant indirect effects on the QI habitats of the SAC via deterioration in groundwater quality or alteration of groundwater regime were identified. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
Crosswood Bog SAC [002337] **Distance**: 8.7 km	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration	Detailed conservation objectives for this site, (Version 1, February 2016), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SAC. The SAC and Proposed Development are located within separate hydrological catchments, with no direct surface water connectivity between the two. Additionally, the SAC and Proposed Development Site are underlain by separate groundwater bodies. Indirect effects on the terrestrial QI habitats of the Crosswood Bog SAC can be ruled out due to the terrestrial nature of the habitats, the distance from the Proposed Development (8.7 km), the lack of any and the absence of a complete source-pathway-receptor chain for effect. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	No
Carn Park Bog SAC [002336] **Distance**: 10.2 km	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration	Detailed conservation objectives for this site, (Version 1, November 2015), were reviewed as part of the assessment and are	There will be no direct effects as the Proposed Development is located entirely outside the SAC. The SAC and Proposed Development are located within separate hydrological sub-catchments, with no direct surface water connectivity between the two. Additionally, the SAC and Proposed Development Site are underlain by separate groundwater bodies.	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
		available at www.npws.ie	Indirect effects on the terrestrial QI habitats of the Carn Park Bog SAC can be ruled out due to the terrestrial nature of the habitats, the distance from the Proposed Development (10.2 km), and the absence of a complete source-pathway-receptor chain for effect. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	
Lough Croan Turlough SAC [000610] **Distance**: 11.2 km	› [3180] Turloughs	Detailed conservation objectives for this site, (Version 1, January 2018), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SAC. Lough Croan Turlough SAC is located a distance of 11.2 km from the Proposed Development Site, within both a separate hydrological catchment and groundwater body. Therefore, due to the intervening distance and lack of any complete source-chain-receptor pathway for effect, there is no potential for indirect effects on the groundwater dependent QI habitat via surface water pathways, or through deterioration of groundwater quality. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
Killeglan Grassland SAC [002214] **Distance**: 13.4 km	› [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	Detailed conservation objectives for this site, (Version 1, June 2018), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SAC. Indirect effects on the terrestrial QI of the Killeglan Grassland SAC can be ruled out due to the terrestrial nature of the habitat, the distance from the Proposed Development (13.4 km), and the absence of a complete source-pathway-receptor chain for effect. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	No
Pilgrim's Road Esker SAC [001776] **Distance**: 13.8 km	› [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	Detailed conservation objectives for this site, (Version 1, July 2018), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SAC. Indirect effects on the terrestrial QI of the Pilgrim's Road Esker SAC can be ruled out due to the terrestrial nature of the habitat, the distance from the Proposed Development (13.8 km), and the absence of a complete source-pathway-receptor chain for effect. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
Mongan Bog SAC [000580] **Distance**: 14.1 km	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	Detailed conservation objectives for this site, (Version 1, April 2016), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SAC. The SAC and Proposed Development are located within separate hydrological catchments, with no direct surface water connectivity between the two. The SAC and Proposed Development Site are partially underlain by the same groundwater body (Funshinagh GWB). However, given that no works associated with the Proposed Development will affect groundwater levels, as well as the intervening, distance of 14.1 km between the Proposed Development Site and SAC, no potential for significant indirect effects on the QI habitats of the SAC via deterioration in groundwater quality or alteration of groundwater regime were identified. **No complete source-pathway-receptor chain for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	No
Lough Derg, North-east Shore SAC [002241]	› [5130] *Juniperus communis* formations on heaths or calcareous grasslands › [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* › [7230] Alkaline fens › [8240] Limestone pavements	Detailed conservation objectives for this site (Version 1, April 2019) were reviewed as part of the assessment and	The Proposed Development site is located (approx. 43.2km) north-east of this SAC. Given the Proposed Development site is located entirely outside this SAC, direct effects on this European Site can be excluded. The Proposed Development site and this SAC are located within separate hydrological catchments. A potential surface water connectivity exists between Lough Ree and Lough Derg, North east Shore SAC via the River Shannon. However, Lough Derg, North east SAC is located approximately	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
Distance: approx. 43.2km **Hydrological distance:** approx. 65km	› [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelssior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) › [91J0] *Taxus baccata* woods of the British Isles	are available at www.npws.ie	65km downstream from Lough Ree. Given the intervening hydrological distance (65km) between the Proposed Development site and this SAC and the assimilative capacity of Lough Ree, and the River Shannon, there is no potential for deterioration of surface water quality in this SAC associated with the construction and operational phases of the Proposed Development. Additionally, the Proposed Development Site and SAC are underlain by separate groundwater bodies. Given that no works associated with the Proposed Development will affect groundwater levels, as well as the intervening, distance of 43.2 km between the Proposed Development Site and SAC, no potential for significant indirect effects on the QI habitats of the SAC via deterioration in groundwater quality or alteration of groundwater regime were identified associated with the construction or operational phase of the Proposed Development. As such, no complete source-pathway-receptor chain for effect was identified. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	
Lower River Shannon SAC [002165]	› [1029] Freshwater Pearl Mussel *Margaritifera margaritifera* › [1095] Sea Lamprey *Petromyzon marinus* › [1096] Brook Lamprey *Lampetra planeri*	Detailed conservation objectives for this site (Version 1, August 2012) were reviewed as part of	The Proposed Development site is located (approx. 80km) north-east of this SAC. Given the Proposed Development site is located entirely outside this SAC, direct effects on this European Site can be excluded.	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
Distance: approx. 77.99km **Hydrological Distance:** approx. 105km	› [1099] River Lamprey *Lampetra fluviatilis* › [1106] Atlantic Salmon *Salmo salar* (only in fresh water) › [1110] Sandbanks which are slightly covered by sea water all the time › [1130] Estuaries › [1140] Mudflats and sandflats not covered by seawater at low tide › [1150] *Coastal lagoons › [1160] Large shallow inlets and bays › [1170] Reefs › [1220] Perennial vegetation of stony banks › [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts › [1310] Salicornia and other annuals colonizing mud and sand › [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) › [1349] Bottlenose Dolphin *Tursiops truncatus* › [1355] Otter *Lutra lutra* › [1410] Mediterranean salt meadows (*Juncetalia maritimi*) › [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	the assessment and are available at www.npws.ie	The Proposed Development site and this SAC are located within separate hydrological catchments. Potential surface water connectivity exists between Lough Ree and Lower River Shannon SAC via Lough Ree, the River Shannon, and Lough Derg. However, the Lower River Shannon SAC is located approximately 105km downstream from Lough Ree. Given the intervening hydrological distance (approx. 105km) between the Proposed Development site and this SAC and the assimilative capacity of the intervening waterbodies (Lough Ree, River Shannon, Lough Derg), there is no potential for deterioration of surface water quality in this SAC associated with the Proposed Development. Additionally, the Proposed Development Site and SAC are underlain by separate groundwater bodies. Given that no works associated with the Proposed Development will affect groundwater levels, as well as the intervening, distance of 77.99 km between the Proposed Development Site and SAC, no potential for significant indirect effects on the QI habitats of the SAC via deterioration in groundwater quality or alteration of groundwater regime were identified associated with the construction or operational phase of the Proposed Development. Due to the significant intervening distance between the Proposed Development and the SAC, there is no potential for likely significant effect via ex-situ disturbance of the QI species of the Lower River Shannon SAC. As such, no complete source-pathway-receptor chain for effect was identified. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective**	

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
	› [6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) › [91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)		**information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	
Special Protection Area (SPA)				
Lough Ree SPA [004064] **Distance:** The Proposed Development is located within and adjacent to the SPA.	› [A004] Little Grebe *Tachybaptus ruficollis* (Wintering) › [A038] Whooper Swan *Cygnus cygnus* (Wintering) › [A050] Wigeon *Anas penelope* (Wintering) › [A052] Teal *Anas crecca* (Wintering) › [A053] Mallard *Anas platyrhynchos* (Wintering) › [A056] Shoveler *Anas clypeata* (Wintering) › [A061] Tufted Duck *Aythya fuligula* (Wintering) › [A065] Common Scoter *Melanitta nigra* (Breeding) › [A067] Goldeneye *Bucephala clangula* (Wintering) › [A125] Coot *Fulica atra* (Wintering)	Detailed conservation objectives for this site, (Version 1, April 2025), were reviewed as part of the assessment and are available at www.npws.ie	As a section of the Proposed Development Site is located within the boundaries of Lough Ree SPA, with phases of the Proposed Development taking place within Lough Ree itself, there is the potential for direct and indirect effects upon the European Designated Site via habitat disturbance, disturbance and/or displacement of SCI species, as well as water quality deterioration of supporting wetland habitat arising from the Proposed Development. **A complete source-pathway-receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Development to result in likely significant effects on this European Site. The SPA is considered to be within the Likely Zone of Influence of the Proposed Development and further assessment is required.**	**Yes**

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
	› [A140] Golden Plover *Pluvialis apricaria* (Wintering) › [A142] Lapwing *Vanellus vanellus* (Wintering) › [A193] Common Tern *Sterna hirundo* (Breeding) › [A999] Wetlands			
Middle Shannon Callows SPA [004096] **Distance**: 5.3 km **Hydrological distance:** 6.5 km	› [A038] Whooper Swan *Cygnus cygnus* (Wintering) › [A050] Wigeon *Anas penelope* (Wintering) › [A122] Corncrake *Crex crex* (*Under Review*) › [A140] Golden Plover *Pluvialis apricaria* (Wintering) › [A142] Lapwing *Vanellus vanellus* (Wintering) › [A156] Black-tailed Godwit *Limosa limosa* (Wintering) › [A179] Black-headed Gull *Chroicocephalus ridibundus* (Wintering) › [A999] Wetlands	Detailed conservation objectives for this site, (Version 1, November 2022), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SPA. The site of Proposed Development is located within the max foraging range of the following listed SCI species. Therefore, there is the potential for likely significant effects upon these species via ex-situ disturbance/displacement: › [A140] Golden Plover (*Pluvialis apricaria*) - 11km › [A156] Black-tailed Godwit (*Limosa limosa*) - 40 km › [A179] Black-headed Gull (*Chroicocephalus ridibundus*) - 40 km As there is direct hydrological connectivity between The Proposed Development and the Middle Shannon Callows SPA via Lough Ree and the River Shannon, there is potential for significant effects upon the supporting wetland habitats of the SPA via deterioration in surface water quality. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Development to result in likely significant effects on this SPA. Therefore, the SPA is located within the Likely Zone of Influence and is considered further in this assessment.**	**Yes**

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
Lough Croan Turlough SPA [004139] **Distance**: 11.3 km	› [A056] Shoveler *Anas clypeata* (Wintering) › [A140] Golden Plover *Pluvialis apricaria* (Wintering) › [A395] Greenland White-fronted Goose *Anser albifrons flavirostris* (Wintering) › [A999] Wetland and Waterbirds	Detailed conservation objectives for this site, (Version 1, January 2025), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SPA. According to Scottish Natural Heritage (2016) and Johnson et al. (2014), the max foraging range of the SCI species of the Lough Croan Turlough SPA are listed below: › [A056] Shoveler (*Anas clypeata.*): 2–3 km › [A140] Golden Plover (*Pluvialis apricaria*): 11 km › [A395] Greenland White-fronted Goose (*Anser albifrons flavirostris*): 8 km (core foraging range 5 - 8km) As The Proposed Development is outside of the maximum foraging ranges of the SCI species of Lough Croan Turlough SPA, there is no potential for significant indirect effects upon these SCI species via disturbance/displacement. Additionally, none of the SCI species of this SPA were recorded over a full season of breeding and wintering bird surveys conducted for the Proposed Development. Lough Croan Turlough SPA is also located within both a separate hydrological catchment and groundwater body. Therefore, due to the lack of a complete source-pathway-receptor chain for effect, there is no potential for water quality deterioration effects on the supporting wetland habitat habitat via surface water pathways, or through deterioration of groundwater quality.	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
			No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.	
Mongan Bog SPA [004017] **Distance**: 14.3 km	› [A395] Greenland White-fronted Goose (*Anser albifrons flavirostris*) (Wintering)	Detailed conservation objectives for this site (Version 1, April 2025) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Development is located entirely outside the SPA. As the core foraging range of the Greenland White-fronted Goose is 5 - 8 km (SNH, 2016), and The Proposed Development is 14.3 km from the Mongan Bog SPA, there is no potential for significant indirect effects upon this SCI species via disturbance/displacement. Additionally, no Greenland white-fronted geese were recorded over a full season of breeding and wintering bird surveys conducted for the Proposed Development. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	No
Lough Derg (Shannon) SPA [004058]	› [A017] Cormorant *Phalacrocorax carbo* (Breeding) › [A061] Tufted Duck *Aythya fuligula* (Wintering) › [A067] Goldeneye *Bucephala clangula* (Wintering)	Detailed conservation objectives for this site (Version 1, August 2024) were reviewed as part of	The Proposed Development site located entirely outside this SPA, at a distance of approx. 43.5km. There is no potential for direct effects as the Proposed Development is located entirely outside this SPA.	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
Distance: approx. 43.5 km **Hydrological distance**: approx. 65 km	› [A193] Common Tern *Sterna hirundo* (Breeding) › [A999] Wetland and Waterbirds	the assessment and are available at www.npws.ie	The Proposed Development site and this SPA are located within separate hydrological catchments. Potential surface water connectivity exists between Lough Ree and Lough Derg (Shannon) SPA via the River Shannon. However, Lough Derg (Shannon) SPA is located approximately 65 km downstream from the Proposed Development. Given the intervening hydrological distance (approx. 65km) between the Proposed Development site and this SPA and the assimilative capacity of Lough Ree, and the River Shannon, there is no potential for deterioration of surface water quality in this SPA associated with the Proposed Development. Additionally, the Proposed Development Site and SAC are underlain by separate groundwater bodies. Given that no works associated with the Proposed Development will affect groundwater levels, as well as the intervening, distance of approx. 43.5 km between the Proposed Development Site and SPA no potential for likely significant effects on the supporting wetland habitats of the SPA via deterioration in groundwater quality or alteration of groundwater regime were identified associated with the construction or operational phase of the Proposed Development. While the site provides some suitable supporting habitat for the SCI species of the SPA, the Proposed Development site does not provide significant suitable habitat for any of the SCI species of the SPA when considering the abundance of freshwater foraging habitat in the vicinity of the SPA and in the intervening distance between the SPA and the Proposed Development. In addition, the Proposed Development Site is located outside of the maximum foraging ranges of SCI species of this SPA. As such, no potential for likely significant effects via ex-situ disturbance or displacement was identified.	

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
			As such, no complete source-pathway-receptor chain for effect was identified. **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	
River Shannon and River Fergus Estuaries SPA [004077] **Distance:** approx. 96 km **Hydrological Distance:** Approx. 135km	› [A017] Cormorant *Phalacrocorax carbo* breeding + wintering › [A038] Whooper Swan *Cygnus cygnus* wintering › [A046] Light-bellied Brent Goose *Branta bernicla hrota* wintering › [A048] Shelduck *Tadorna tadorna* wintering › [A050] Wigeon *Anas penelope* wintering › [A052] Teal *Anas crecca* wintering › [A054] Pintail *Anas acuta* wintering › [A056] Shoveler *Anas clypeata* wintering › [A062] Scaup *Aythya marila* wintering › [A137] Ringed Plover *Charadrius hiaticula* wintering	Detailed conservation objectives for this site (Version 1, September 2012) were reviewed as part of the assessment and are available at www.npws.ie	The Proposed Development site located approx. 96 km from this SPA. Therefore, this SPA is located entirely outside the Proposed Development site and direct effects to SCIs for this SPA can be excluded. The Proposed Development site and this SPA are underlain by separate groundwater bodies, as well as located within separate hydrological sub-catchments. Potential surface water connectivity exists between the Proposed Development and the SPA via Lough Ree, Upper River Shanno, Lough Derg, Lower River Shannon, and the upper extents of the River Shannon estuarine waters. However, the River Shannon and River Fergus Estuaries SPA is located approximately 135 km downstream from the Proposed Development. Given the intervening hydrological distance (approx. 135 km) between the Proposed Development site and this SPA and the assimilative capacity of the above outlined intervening waterbodies, there is no potential for deterioration of surface water quality in this SPA associated with the Proposed Development. Additionally, the Proposed Development Site and SAC are underlain by separate groundwater bodies. Given that no works associated with the Proposed Development will affect groundwater levels, as well as the	No

European Sites and distance from Proposed Development	Qualifying Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie[4])	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs)
	› [A140] Golden Plover *Pluvialis apricaria* wintering › [A141] Grey Plover *Pluvialis squatarola* wintering › [A142] Lapwing *Vanellus vanellus* wintering › [A143] Knot *Calidris canutus* wintering › [A149] Dunlin *Calidris alpina* wintering › [A156] Black-tailed Godwit *Limosa limosa* wintering › [A157] Bar-tailed Godwit *Limosa lapponica* wintering › [A160] Curlew *Numenius arquata* wintering › [A162] Redshank *Tringa totanus* wintering › [A164] Greenshank *Tringa nebularia* wintering › [A179] Black-headed Gull *Chroicocephalus ridibundus* wintering › [A999] Wetlands		intervening, distance of 96 km between the Proposed Development Site and SPA no potential for likely significant effects on the supporting wetland habitats of the SPA via deterioration in groundwater quality or alteration of groundwater regime were identified associated with the construction or operational phase of the Proposed Development. While the site provides some suitable supporting habitat for some of the SCI species of the SPA, the Proposed Development site does not provide significant suitable habitat for any of the SCI species of the SPA when considering the abundance of freshwater and estuarine foraging habitat in the vicinity of the SPA and in the intervening distance between the SPA and the Proposed Development. In addition, the Proposed Development Site is located outside of the known maximum foraging ranges of SCI species of this SPA. It is acknowledged that information on core foraging ranges is not available for all SCI species. In this case, the 15km core ranging for waders (waterfowl) has been adopted as a precautionary approach. As such, no potential for likely significant effects via ex-situ disturbance or displacement was identified. As such, no complete source-pathway-receptor chain for effect was identified **No pathway for effect on this European Site exists and the site is not within the Likely Zone of Influence. It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**	

4.2 Appropriate Assessment Screening Conclusion

It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the Proposed Development, individually or in combination with other plans and projects, would be likely to have a significant effect on the following EU Designated Sites:

- Lough Ree SAC [000440]
- River Shannon Callows SAC [000216]
- Lough Ree SPA [004064]
- Middle Shannon Callows SPA [004096]

As a result, an Appropriate Assessment (AA) of the Proposed Development is required. Information to enable the Competent Authority to carry out an AA of the Proposed Development is presented in Sections 5 – 8 of this report.

5. INFORMATION TO INFORM APPROPRIATE ASSESSMENT

The potential for likely significant effects on the following European Sites in the absence of any mitigation, individually or cumulatively with other plans or projects, was identified in the preceding section:

- Lough Ree SAC [000440]
- River Shannon Callows SAC [000216]
- Lough Ree SPA [004064]
- Middle Shannon Callows SPA [004096]

The following sections consider each European Site individually to:

1. Determine which individual qualifying features have the potential to be adversely affected by the Proposed Development.
2. Provide information with regard to the Conservation Objectives and site-specific pressures and threats for those qualifying features that have the potential to be adversely affected.

5.1 Identification of relevant Qualifying Features and Desk Study

5.1.1 Lough Ree SAC

The potential for likely significant effect on this SAC was identified in Section 4.1 above. In the absence of mitigation, the identified pathways for effect include the following:

- Potential loss/ disturbance of select QI habitats of the SAC as a result of the Proposed Development ([3150] Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation, and [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)).
- Potential water quality deterioration effects on aquatic QI habitats and supporting habitat for the QI species otter as a result of the Proposed Development.
- Potential disturbance to otter as a result of the Proposed Development
- Potential for increase in the spread of aquatic invasive species found within the Proposed Development Site within Lough Ree SAC

Table 5-1 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any potential by which adverse effects may occur.

5.1.1.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 5-1 Assessment of Qualifying features potentially affected

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2016[5])	Rationale	Potential for Adverse Effects Y/N
[1355] Otter (*Lutra lutra*)	To maintain the favourable conservation condition of Otter in Lough Ree SAC	The Proposed Development is located within Lough Ree SAC, with works proposed within and in the vicinity of Lough Ree. Therefore, the potential for adverse effect on Otter was identified via water quality deterioration of suitable supporting habitat. The Proposed Development is located within Lough Ree SAC. No otter holts or couches were identified within the Proposed Development Site. However, sprainting was noted on the	**Yes**

[5] *NPWS (2026) Conservation Objectives: Lough Ree SAC 000440. Version 2. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2016[5])	Rationale	Potential for Adverse Effects Y/N
		offshore island and along areas of shoreline, both outside of the Proposed Development Boundary. Otters which utilise Lough Ree SAC in the vicinity of the Proposed Development are likely accustomed to high levels of disturbance from water sports, boating, fishing, swimming, walkers, runners, dog walkers and traffic. This level of activity forms the baseline condition of the Proposed Development. However, taking a precautionary approach, the potential for adverse effects on this species was identified via disturbance of foraging or commuting otter, within or in the vicinity of the Proposed Development Site as a result of the Proposed Development, and it is assessed further in this NIS.	
[3150] Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation	To restore the favourable conservation condition of Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation in Lough Ree SAC	The Proposed Development is located within Lough Ree SAC, including the Proposed Marina Redevelopment and Extension which will take place during the construction phase. Macrophyte species assemblage identified during wading transect surveys and aquatic drone transect surveys showed conformity between the lake habitat within the Proposed Development Site and this QI habitat. Therefore, in the absence of mitigation, potential adverse effects on this QI habitat via direct disturbance of habitat arising from the construction phase, as well as water quality deterioration during the construction and operational phases of the Proposed Development were identified. In addition, while invasive species have been documented extensively within Lough Ree, taking a precautionary approach the further spread of invasive species as a result of the Proposed Development has the potential to result in adverse effects on this QI habitat of the SAC. These potential adverse effects are assessed further in this NIS.	**Yes**
[6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates	To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates	The Proposed Development is located within Lough Ree SAC. According to the Conservation Objectives (CO), known incidences of this habitat have been mapped by NPWS approx. 2.0 km northwest and 4.5 km southeast of the Proposed	No

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2016[5])	Rationale	Potential for Adverse Effects Y/N
(*Festuco-Brometalia*) (* important orchid sites)	*(Festuco-Brometalia)* in Lough Ree SAC	Development site. No incidences of this terrestrial QI habitat were identified within or surrounding the Proposed Development Site. Therefore, as a result of the terrestrial nature of this QI habitat, the nature and scale of the works and the absence of this habitat within or in the vicinity of the Proposed Development Site no potential adverse effect on this habitat as a result of the Proposed Development was identified. No further assessment is required.	
[7110] Active raised bogs	To restore the Favourable conservation condition of Active raised bogs* in Lough Ree SAC	The Proposed Development is located within Lough Ree SAC. According to the Conservation Objectives (CO), known incidences of this habitat have been mapped by NPWS in the centre of Clooncraff and Cloonlarge Bog, approx. 15.0 km northwest of the Proposed Development site. No incidences of this terrestrial QI habitat were identified within or surrounding the Proposed Development Site. Therefore, as a result of the terrestrial nature of this QI habitat, the nature and scale of the works and the absence of this habitat within or in the vicinity of the Proposed Development, no potential adverse effect on this habitat as a result of the Proposed Development was identified. No further assessment is required.	No
[7120] Degraded raised bogs still capable of natural regeneration	To restore the favourable conservation condition of Degraded raised bogs still capable of natural regeneration in Lough Ree SAC	The Proposed Development is located within Lough Ree SAC. According to the Conservation Objectives (CO), known incidences of this habitat have been mapped by NPWS in the centre of Clooncraff and Cloonlarge Bog, approx. 15.0 km northwest of the Proposed Development site. No incidences of this terrestrial QI habitat were identified within or surrounding the Proposed Development Site.	No

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2016[5])	Rationale	Potential for Adverse Effects Y/N
		Therefore, as a result of the terrestrial nature of this QI habitat, the nature and scale of the works and the absence of this habitat within or in the vicinity of the Proposed Development, no potential adverse effect on this habitat as a result of the Proposed Development was identified. No further assessment is required.	
[7230] Alkaline fens	To maintain the favourable conservation condition of Alkaline fens in Lough Ree SAC	The Proposed Development is located within Lough Ree SAC. According to the Conservation Objectives (CO), the full extent of this habitat is unknown in the SAC. No incidences of this QI habitat were identified within or surrounding the Proposed Development Site. Taking a precautionary approach, given the karst nature of the Funshinagh GWB which underlies the Proposed Development Site, and the Proposed Development phases within and in the vicinity of Lough Ree, the potential for adverse effect on this habitat arising from ground water quality deterioration during the construction phase of the Proposed Development was identified, and is assessed further in this NIS.	**Yes**
[8240] Limestone pavements*	To maintain the favourable conservation condition of Limestone pavements in Lough Ree SAC	The Proposed Development is located within Lough Ree SAC. According to the Conservation Objectives (CO), known incidences of this habitat have been mapped by NPWS, approx. 13.0 km north of the Proposed Development site. No incidences of this terrestrial QI habitat were identified within or surrounding the Proposed Development Site. Therefore, as a result of the terrestrial nature of this QI habitat, the nature and scale of the works and the absence of this habitat within or in the vicinity of the Proposed Development, no potential for any effect on this habitat as a result of the Proposed Development was identified.	No

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2016[5])	Rationale	Potential for Adverse Effects Y/N
		No further assessment is required.	
[91D0] Bog woodland*	To restore the favourable conservation condition of Bog woodland in Lough Ree SAC	The Proposed Development is located within Lough Ree SAC. According to the Conservation Objectives (CO), known incidences of this habitat have been mapped by NPWS in the centre of Clooncraff Bog, approx. 16 km northwest of the Proposed Development site. No incidences of this terrestrial QI habitat were identified within the Proposed Development Site. Therefore, as a result of the terrestrial nature of this QI habitat, the nature and scale of the works and the absence of this habitat within the Proposed Development, no potential for any effect on this habitat as a result of the Proposed Development was identified. No further assessment is required.	No
[91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)	To maintain the Favourable conservation condition of Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* in Lough Ree SAC	The Proposed Development is located within Lough Ree SAC. According to the Conservation Objectives (CO), the full extent of this habitat is unknown in the SAC. The main mapped area of this habitat is considered to occur in the vicinity of St John's Wood, approx. 8.8 km north of the Proposed Development Site. During the multi-disciplinary ecological walkover survey, five no. areas of potential alluvial forest were identified in fringing areas along the shoreline of Lough Ree. These areas of habitats were largely located outside of the Proposed Development Site, with outward fringes of the potential areas of alluvial forest extending into the Proposed Development Site. Dedicated alluvial forest relevés confirmed these areas of habitat to have affinities to Annex I [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*). Four of the five areas of woodland assessed as conforming to 91E0 habitat lie outside of the Proposed Development Site and will not be directly affected by the construction phase of the Proposed Development. One area of woodland conforming to 91E0	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2016[5])	Rationale	Potential for Adverse Effects Y/N
		habitat which lies to the north of the existing Baysports facility is located partially within the Proposed Development Site. The potential for adverse effect on the outer margins of this area of 91E0 habitat in the form of temporary habitat disturbance arising from the construction phase of the Proposed Development was identified. Additionally, taking a precautionary approach, given the proximity of woodland conforming to 91E0 habitat to Lough Ree, and the nature of in-lake works and works in the vicinity of Lough Ree as part of the Proposed Development, the potential for adverse effect on this habitat arising from surface water quality deterioration during the construction phase of the Proposed Development was identified, and is assessed further in this NIS.	

5.1.1.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Development. These are provided in Table 5-2.

Table 5-2. Site-specific threats, pressures and activities

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
High	I01	Invasive non-native species	Both
High	J02.11.02	Other siltation rate changes	Outside
High	K03.05	Antagonism arising from introduction of species	Inside
Low	D03.01.02	Piers/tourist harbours or recreational piers	Inside
Low	G01.02	Walking, horse-riding and non-motorised vehicles	Inside
Low	H06.03	Thermal heating of water bodies	Outside
Low	J02.04	Flooding modifications	Both
Low	L08	Inundation (natural processes)	Inside
Medium	A03.03	Abandonment/lack of mowing	Inside
Medium	A04	Grazing	Inside
Medium	A08	Fertilisation	Both
Medium	B02	Forest and plantation management and use	Both
Medium	E01.03	Dispersed habitation	Outside
Medium	F02.03	Leisure fishing	Inside
Medium	F03.01	Hunting	Inside
Medium	G01.01	Nautical sports	Inside
Medium	H01.08	Diffuse pollution to surface waters due to household sewage and waste waters	Both
Medium	H02.06	Diffuse groundwater pollution due to agricultural and forestry activities	Both

Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to altered siltation rates associated with construction phases, development of piers (recreational or tourist) within the SAC, increased or further spread of invasive non-native species, diffuse pollution to surface waters arising from the construction and operational phases of the Proposed Development, as well as the potential for diffuse pollution due to waste waters in the absence of correct drainage systems associated with the Proposed Development.

Faunal species utilising the Proposed Development Site, including otter, are likely accustomed to high levels of existing disturbance associated with ongoing leisure activities (including fishing), nautical sports, boating (including fishing boats, commercial cruisers and tourist ferries) within Lough Ree. Additionally, high levels of existing disturbance also arise from walkers, runners, dog walkers and busy traffic along the L2020 access road and throughout existing carparks within the Proposed Development Site and throughout the wider area.

Large areas of invasive species were recorded within the Proposed Development site and within the vicinity of the Proposed Development within Lough Ree, and these form part of the baseline condition of the Proposed Development.

5.1.1.3 QI Specific Information

5.1.1.3.1 *Otter Lutra lutra [1355]*

The conservation objective for this QI species is:

'To maintain the favourable conservation condition of Otter in Lough Ree SAC'

The attributes and targets for this species are provided in Table 5-3.

Table 5-3. Targets and attributes associated with nominated site-specific conservation objectives for Otter in Lough Ree SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution	No significant decline	**Yes** – Otters which utilise Lough Ree SAC in the vicinity of the Proposed Development are likely accustomed to high levels of disturbance from water sports, boating, fishing, swimming, walkers, runners, dog walkers and traffic. While no otter holts or couches were identified within the Proposed Development Site, otter spraint was identified on the island and along the shoreline south of the existing marina (both outside of the Proposed Development Site), indicating that otters likely utilise areas of Lough Ree within and surrounding the Proposed Development Site, but that the existing level of disturbance limits the use of habitats within and immediately adjacent to the Proposed Development site. Disturbance or displacement of otter associated with the operational phase of the Proposed Development is not anticipated to significantly change from current baseline conditions, with the Proposed Development designed to be largely utilised in the same manner as it currently is. However, taking a precautionary approach and in the absence of mitigation, disturbance and displacement of commuting and foraging otter arising from the construction phase of the Proposed Development has the potential to result in a decline of the distribution of otter in Lough Ree SAC. Furthermore, in the absence of mitigation, lighting associated with the construction and operational phases of the Proposed Development has the potential to result in disturbance and displacement of otter, which has the potential to cause a decline in the distribution of otter in Lough Ree SAC. Taking a precautionary approach, in the absence of mitigation, water quality deterioration arising from the construction and operational phase of the Proposed Development may also result in a significant decline of the distribution of otter in Lough Ree SAC.

		Therefore, in the absence of mitigation, taking a precautionary approach, the Proposed Development has the potential to undermine the conservation objectives of this QI species in relation to distribution.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 330.6ha along riverbanks/lake shoreline/around pools	**No** – the Proposed Development will not result in any significant decline of terrestrial habitat within Lough Ree SAC. The areas of terrestrial habitat as they exist in their current state within the Proposed Development Site are urbanised, developed and subject to high levels of existing disturbance. The areas of gravel and grassy shoreline located within and immediately adjacent to the Proposed Development are not proposed to be altered during the Proposed Development. These areas will continue to be utilised as during baseline assessment i.e. walking, swimming, water sports, and dog access. Additionally, the construction phase of the Proposed Development will be phased in nature. No areas within the Proposed Development site are considered to provide significant suitable terrestrial habitat for Otter. There will be no permanent loss and minimal temporary disturbance of habitat at The Proposed Development. There will be no loss of terrestrial habitat associated with the operational phase of the Proposed Development. No potential for significant decline of the extent of terrestrial habitat utilised by this QI species was identified in relation to the Proposed Development.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 22.7 km	**No** – No areas of freshwater river habitat are present within the Proposed Development Site, with no river works associated with the Proposed Development. Consequently, the Proposed Development will not result in any significant decline of the extent of freshwater river habitat within Lough Ree SAC.
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 2097.4ha	**No** – The areas of lake habitat as they exist in their current state within the Proposed Development Site are subject to a high level of disturbance from boating, fishing, swimming and water sports. Additionally, the area of lake habitat which will be interacted with constitutes a very small area of the lake habitat (approx. 0.157 ha) within the Proposed Development Site, and the wider Lough Ree. There will be minimal disturbance of freshwater lake habitat at The Proposed Development. Therefore, the Proposed Development will not result in any significant decline in the extent of freshwater lake habitat within Lough Ree SAC.
Couching sites and holts	No significant decline	**No** – The areas of lake and shoreline habitat as they exist in their current state within the Proposed Development Site are subject to a high level of disturbance from boating, fishing, swimming, water sports, walking/running, dog running and traffic, with no significant suitable potential couching or holt habitat identified within the Proposed Development. Additionally, no couches or holts were identified within the Proposed Development site during dedicated otter surveys. There will be no additional works outside of the Proposed Development site which may affect more suitable potential couching sites or holts. The Proposed Development will not result in any significant decline of couching sites and holts within Lough Ree SAC.
Fish biomass available	No significant decline	**Yes** – In the absence of mitigation, the construction and operational phases of the Proposed Development has the potential to result in water quality deterioration, which has the potential to result in decreased available fish biomass.

Barriers to connectivity	No significant increase. For guidance, see map 9	**No** – the areas of in-lake works associated with the Proposed Development comprise a small total area (0.157 ha) in an area with existing high levels of baseline disturbance. The construction works associated within in-lake works will be phased in nature and areas in which in-lake works are proposed to take place do no offer significant suitable otter habitat. The construction and operational phases of the Proposed Development are not anticipated to significantly increase barriers to connectivity for otter in Lough Ree SAC. Therefore, no significant increase in barriers to connectivity for otter in Lough Ree SAC is anticipated.

5.1.1.3.2 *Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]*

The conservation objective for this QI is:

> 'To restore the favourable conservation condition of Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation in Lough Ree SAC'

The attributes and targets for this habitat are provided in Table 5-4.

Table 5-4. Targets and attributes associated with nominated site-specific conservation objectives for Natural eutrophic lakes with Magnopotamion or Hydrocharition – type vegetation in Lough Ree SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on the area of this habitat within Lough Ree SAC in the vicinity of the Proposed Development Site.
Habitat distribution	No decline, subject to natural processes	**Yes** – in the absence of mitigation, or appropriate design, the Proposed Development has the potential to result in impacts on the distribution of this habitat within Lough Ree SAC in the vicinity of the Proposed Development Site.
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on the abundances and distribution of typical species of this habitat within Lough Ree SAC in the vicinity of the Proposed Development Site.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on characteristic zonation of vegetation in this habitat within Lough Ree SAC in the vicinity of the Proposed Development Site.
Vegetation distribution: maximum depth	Maintain maximum depth of vegetation, subject to natural processes	**Yes -** in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on maximum depth of vegetation in this habitat within Lough Ree SAC in the vicinity of the Proposed Development Site.
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	**No** – the Proposed Development will not impact the maintenance of natural hydrological regime necessary to support this habitat within Lough Ree SAC

Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the vegetation	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on the lake substratum type, extent and chemistry to support vegetation in this habitat within Lough Ree SAC in the vicinity of the Proposed Development Site.
Water quality: transparency	Maintain/restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on lake water quality in terms of water transparency within Lough Ree SAC in the vicinity of the Proposed Development Site.
Water quality: nutrients	Maintain the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on lake water quality in terms of nutrient concentration within Lough Ree SAC in the vicinity of the Proposed Development Site.
Water quality: phytoplankton biomass	Maintain appropriate water quality to support the habitat, including good chlorophyll *a* status	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on lake water quality in terms of phytoplankton biomass within Lough Ree SAC in the vicinity of the Proposed Development Site.
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including good phytoplankton composition status	**Yes -** in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on lake water quality in terms of phytoplankton composition within Lough Ree SAC in the vicinity of the Proposed Development Site.
Water quality: attached algal biomass	Maintain trace/absent attached algal biomass (<5% cover) and good phytobenthos status	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on lake water quality in terms of algal biomass within Lough Ree SAC in the vicinity of the Proposed Development Site.
Water quality: macrophyte status	Restore good macrophyte status	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on lake water quality in terms of macrophyte status within Lough Ree SAC in the vicinity of the Proposed Development Site.
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on lake water quality in terms of acidification within Lough Ree SAC in the vicinity of the Proposed Development.
Water colour	Maintain appropriate water colour to support the habitat	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on water colour within Lough Ree SAC in the vicinity of the Proposed Development.
Dissolved organic carbon (DOC)	Maintain appropriate organic carbon levels to support the habitat	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on Dissolved organic carbon (DOC) within Lough Ree SAC in the vicinity of the Proposed Development.
Turbidity	Maintain appropriate turbidity to support the habitat	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on water turbidity within Lough Ree SAC in the vicinity of the Proposed Development.

Fringing habitat: area	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of the lake habitat	**Yes** – in the absence of mitigation or appropriate design, the Proposed Development has the potential to result in impacts on areas of fringing habitats within Lough Ree SAC in the vicinity of the Proposed Development.

5.1.1.3.3 *Alkaline fens [7230]*

The conservation objective for this QI is:

'To maintain the favourable conservation condition of Alkaline fens in Lough Ree SAC'

The attributes and targets for this habitat are provided in Table 5-5.

Table 5-5. Targets and attributes associated with nominated site-specific conservation objectives for Alkaline fens in Lough Ree SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes	**Yes** – This habitat was not recorded within or adjacent to the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may result in a reduction in area of this QI habitat within Lough Ree SAC.
Habitat distribution	No decline, subject to natural processes	**Yes** – This habitat was not recorded within or adjacent to the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may result in a reduction in distribution of this QI habitat within Lough Ree SAC.
Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	**Yes** – While this habitat was not recorded within or adjacent to the Proposed Development Site, taking a precautionary approach and in the absence of mitigation, hydrocarbon, petrochemical, construction material, dust, construction phase silt-laden run-offs or wastewater run-offs arising from the Proposed Development have the potential to result in impacts on soil nutrient ranges in areas of habitat in Lough Ree SAC within the Proposed Development Site.
Hydrological regime	Appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	**No** – No works with the potential to alter the hydrological regime are proposed as part of the Proposed Development. The Proposed Development will not impact the maintenance of hydrological regime necessary to support the structure and functioning of this habitat within Lough Ree SAC.
Peat formation	Active peat formation, where appropriate	**No** – This habitat was not recorded within the Proposed Development Site, and the Proposed Development will not result in impacts on active peat formation within Lough Ree SAC.
Water quality: nutrients	Appropriate water quality to support the natural structure and functioning of the habitat	**Yes** – While this habitat was not recorded within or adjacent to the Proposed Development Site, taking a precautionary approach and in the absence of mitigation, the Proposed Development has the potential to result in impacts on water quality in terms of nutrient composition within Lough Ree SAC.

Community diversity	Maintain variety of vegetation communities, subject to natural processes	**Yes** – This habitat was not recorded within or adjacent to the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may impact the maintenance of vegetation communities within this habitat in Lough Ree SAC.
Vegetation composition: typical species	Maintain vegetation cover of typical species including brown mosses and vascular plants	**Yes** – This habitat was not recorded within or adjacent to the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may impact the typical composition of vegetation communities within this habitat in Lough Ree SAC.
Vegetation composition: negative indicator species	Total cover of negative indicator species less than 1%	**No** – This habitat was not recorded within or adjacent to the Proposed Development Site, and the Proposed Development does not have the potential to cause an increase in negative indicator species. As such the Proposed Development will not impact the typical composition of vegetation communities within this habitat in terms of negative indicator species within in Lough Ree SAC.
Vegetation composition: non-native species	Total cover of non-native species less than 1%	**No** – This habitat was not recorded within or adjacent to the Proposed Development Site, and the Proposed Development will not impact the typical composition of vegetation communities within this habitat in terms of non-native species within in Lough Ree SAC. Non-native invasive species have been recorded within the site (Section 3.6.3), however these are fully aquatic in nature and are not considered threats to this terrestrial wetland habitat.
Vegetation composition: trees and shrubs	Cover of scattered native trees and shrubs less than 10%	**No** – This habitat was not recorded within or adjacent to the Proposed Development Site. The Proposed Development will not impact the maintenance of hydrological regime necessary to support the structure and functioning of this habitat within Lough Ree SAC. Therefore, there is no potential for the Proposed Development to impact the cover of trees and shrubs within this habitat as a result of hydrological regime changes. In addition, as the Proposed Development is not located within or adjacent to this habitat within the SAC, there is no potential for spread of trees or shrubs from the Proposed Development site to this habitat.
Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%. Where tufa is present, disturbed bare ground less than 1%	**No** – This habitat was not recorded within or adjacent to the Proposed Development Site. The Proposed Development does not have the potential to result in any alteration to grazing regimes of any fen habitat, or direct disturbance of any fen habitat within the SAC. Therefore, the Proposed Development will not impact the physical structure of this habitat in terms of disturbed bare ground coverage within in Lough Ree SAC.
Physical structure: drainage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling less than 10%	**No** – This habitat was not recorded within or adjacent to the Proposed Development Site, and as a result the Proposed Development does not have the potential to impact the physical structure of this habitat in terms of drainage.
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	**Yes** – This habitat was not recorded within or adjacent to the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may result in a decline in distribution or population sizes of rare,

		threatened or scarce species associated with this habitat within Lough Ree SAC.

5.1.1.3.4 *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]*

The conservation objective for this QI is:

> "To maintin the Favourable conservation condition of Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* in Lough Ree SAC"

The attributes and targets for this habitat are provided in Table 5-5 5-6.

Table 5-6. Targets and attributes associated with nominated site-specific conservation objectives for Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) in Lough Ree SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes.	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. In the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact the area of this habitat within Lough Ree SAC.
Habitat distribution	No decline, subject to natural processes.	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. In the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact the distribution of this habitat within Lough Ree SAC.
Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. In the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact woodland size of this habitat within Lough Ree SAC.
Woodland structure: cover and height	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site.

	cover at least 20% and height at least 20cm; bryophyte cover at least 4%	In the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact woodland structure in terms of cover and height of this habitat within Lough Ree SAC.
Woodland structure: community diversity and extent	Maintain diversity and extent of community types	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. In the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact woodland structure in terms of community diversity and extent of this habitat within Lough Ree SAC.
Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. In the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact woodland structure in terms of natural regeneration of this habitat within Lough Ree SAC.
Hydrological regime: flooding depth/height of water table	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	**No** – The Proposed Development will not impact the maintenance of hydrological regime necessary to support the structure and functioning of this habitat within Lough Ree SAC.
Woodland structure: dead wood	At least 19 stems/ha of dead wood at least 20cm diameter	**No** – No works associated with the Proposed Development have the potential to result in any effect relating to reduction of deadwood and overall deadwood structure. Therefore, the Proposed Development will not impact woodland structure in terms of dead wood in this habitat within Lough Ree SAC.
Woodland structure: veteran trees	No decline	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. In the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact woodland structure in terms of veteran trees in this habitat within Lough Ree SAC.
Woodland structure: indicators of local distinctiveness	No decline in distribution and, in the case of red listed and other rare or localised species, population size	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site.

		In the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact woodland structure in terms of indicators of local distinctiveness in this habitat within Lough Ree SAC.
Woodland structure: indicators of overgrazing	All five indicators of overgrazing absent	**No** – No works associated with the Proposed Development have the potential to result in an increase in grazing pressures and as such, the Proposed Development will not undermine this Conservation Objective of this habitat within Lough Ree SAC.
Vegetation composition: native tree cover	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. Taking a precautionary approach and in the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact vegetation composition in terms of native tree cover in this habitat within Lough Ree SAC.
Vegetation composition: typical species	At least one target species for 91E0* woodlands present; at least six positive indicator species for 91E0* woodlands present	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. Taking a precautionary approach and in the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development, as well as temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact vegetation composition in terms of typical species in this habitat within Lough Ree SAC.
Vegetation composition: negative indicator species	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. Taking a precautionary approach and in the absence of mitigation or appropriate design, temporary disturbance of the area of habitat to the north of Baysports, have the potential to impact vegetation composition in terms of negative indicator species in this habitat within Lough Ree SAC.
Vegetation composition: problematic native species	Cover of common nettle (Urtica dioica) less than 75%	**Yes** – Woodland conforming to 91E0 habitat was identified adjacent to the Proposed Development Site, with one area of this habitat present partially within the Proposed Development Site to the north of the existing Baysports facility. No works are proposed within areas of this habitat outside of the Proposed Development Site. Taking a precautionary approach and in the absence of mitigation or appropriate design, water quality deterioration arising from the Proposed Development may result in increased nutrient load within the habitat. Additionally, potential temporary disturbance of the area of habitat to the north of Baysports could result in suitable habitat for

		common nettle to proliferate. Both water quality and disturbance have the potential to impact vegetation composition in terms of problematic native species in this habitat within Lough Ree SAC.

5.1.2 River Shannon Callows SAC

The potential for likely significant effects on this SAC were identified in Section 4.1 above. In the absence of mitigation, the identified pathways for effect include the following:

- Taking a precautionary approach, there is the potential for ex-situ disturbance of the QI species Otter as a result of the Proposed Development
- Taking a precautionary approach, there is the potential for water quality deterioration of downstream aquatic QI habitats and supporting habitat of the aquatic QI species Otter as a result of the Proposed Development
- Taking a precautionary approach, there is the potential for increase in the spread of aquatic invasive species found within the Proposed Development Site to River Shannon Callows SAC

Table 5-7 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any potential by which adverse effects may occur.

5.1.2.1 Identification of Special Conservation Interest (SCI) Species with the Potential to be Affected

Table 5-7. Assessment of Qualifying features potentially affected

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2022[6])	Rationale	Potential for Adverse Effects Y/N
[1355] Otter (*Lutra lutra*)	To maintain the favourable conservation condition of Otter (*Lutra lutra*) in River Shannon Callows SAC	The Proposed Development is located hydrologically upstream of the European site and there is a direct surface water connection. Potential for adverse effect on this species was identified in the form of water quality deterioration. In addition, the potential for adverse effect in the form of ex-situ disturbance was also identified and is assessed further in this NIS.	**Yes**
[6410] *Molinia* meadows on calcareous, peaty or clayey-	To restore the favourable conservation condition of *Molinia* meadows on calcareous, peaty or	The Proposed Development is located approximately 5.3 km from the SAC with no identifiable habitat, surface or ground water connection with this terrestrial habitat. Therefore, due to the terrestrial nature of this habitat, as well as the lack of direct connectivity and	No

[6] *NPWS (2022) Conservation Objectives: River Shannon Callows SAC 000216. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2022[6])	Rationale	Potential for Adverse Effects Y/N
silt-laden soils (*Molinion caeruleae*)	clayey-silt-laden soils (*Molinion caeruleae*) in River Shannon Callows SAC	intervening distance to this terrestrial habitat, no potential for adverse effect on this habitat as a result of the Proposed Development was identified. No further assessment is required.	
[6510] Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)	To restore the favourable conservation condition of Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) in River Shannon Callows SAC	The Proposed Development is located approximately 5.3 km from the SAC with no identifiable habitat, surface or ground water connection with this terrestrial habitat. Therefore, due to the terrestrial nature of this habitat, as well as the lack of direct connectivity and intervening distance to this terrestrial habitat, no potential for adverse effect on this habitat as a result of the Proposed Development was identified. No further assessment is required.	No
[7230] Alkaline fens	To maintain the favourable conservation condition of Alkaline fens in River Shannon Callows SAC	The Proposed Development is located approx. 5.3 km upstream of the European Site. Mapped areas of Alkaline Fen habitat within River Shannon Callows SAC occur south of Portumna bridge and south-east of the town of Portumna and are underlain by a separate groundwater body to the Proposed Development. However, the CO document also states' *It is important to note that further areas of the habitat may be present elsewhere within the SAC'.* Therefore, taking a highly precautionary approach, a potential pathway for indirect adverse effects on unmapped area of this QI habitat was identified in the form of ground water and surface water quality deterioration arising from the Proposed Development.	**Yes**
[8240] Limestone pavements*	To maintain the favourable conservation condition of Limestone pavements* in River Shannon Callows SAC	The Proposed Development is located approximately 5.3 km from the SAC with no identifiable habitat, surface or ground water connection with this terrestrial habitat. Therefore, due to the terrestrial nature of this habitat, as well as the lack of direct connectivity and intervening distance to this terrestrial habitat, no potential for adverse effect on this habitat as a result of the Proposed Development was identified. No further assessment is required.	No
[91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)*	To maintain the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)* in River Shannon Callows SAC	The Proposed Development is located upstream of the European Site and there is a direct surface water connection. Therefore, the potential for adverse effects on this habitat was identified in the form of surface water quality deterioration and is assessed further in this NIS	**Yes**

5.1.2.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Development. These are provided in Table 5-8.

Table 5-8. Site-specific threats, pressures and activities

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
High	A03.03	Abandonment/lack of mowing	Inside
High	A04.03	Abandonment of pastoral systems, lack of grazing	Inside
High	A07	Use of biocides, hormones and chemicals	Inside
High	J02.04.01	Flooding	Inside
Low	A04.02.05	Non-intensive mixed animal grazing	Inside
Low	A10.01	Removal of hedges and copses or scrub	Inside
Low	B06	Grazing in forests/woodland	Inside
Low	C01.03.02	Mechanical removal of peat	Inside
Low	D01.01	Paths, tracks, cycling tracks	Inside
Low	F03.01	Hunting	Both
Low	G01	Outdoor sports and leisure activities, recreational activities	Inside
Low	G05.01	Trampling, overuse	Inside
Low	J02.01	Landfill, land reclamation and drying out, general	Inside
Low	J02.05	Modification of hydrographic functioning, general	Inside
Medium	A04.01	Intensive grazing	Inside
Medium	A08	Fertilisation	Inside
Medium	B02.02	Forestry clearance	Inside
Medium	J02.05.02	Modifying structures of inland water courses	Inside
Medium	J02.11	Siltation rate changes, dumping, depositing of dredged deposits	Inside
Medium	K03.04	Predation	Both

Taking a highly precautionary approach, the Proposed Development has the potential to influence siltation rate changes associated with the Proposed Development, albeit while not originating from within the River Shannon Callows SAC.

5.1.2.3 QI Specific Information

5.1.2.3.1 *Otter Lutra lutra [1355]*

The conservation objective for this QI species is:

> 'To maintain the favourable conservation condition of Otter in River Shannon Callows SAC:

The attributes and targets for this species are provided in Table 5-9.

Table 5-9. Targets and attributes associated with nominated site-specific conservation objectives for Otter in River Shannon Callows SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution	No significant decline	**Yes –** Taking a highly precautionary approach, the construction and operational phases of the Proposed Development have the potential to result in downstream water quality deterioration, which has the potential to result in a decline in the distribution of otter within the SAC.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 330.6ha along riverbanks/lake shoreline/around pools	**No** – The Proposed Development Site is located outside of the River Shannon Callows SAC and will therefore have no impact on the extent of terrestrial habitat for otter within the SAC.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 22.7 km	**No** – The Proposed Development is located outside of River Shannon Callows SAC. No works associated with the Proposed Development will result in the significant decline in the extent of freshwater river habitat area for otter within the SAC.
Couching sites and holts	No significant decline	**No** – The Proposed Development is located outside of River Shannon Callows SAC and will therefore have no impact on couching sites and holts within the SAC. There will be no additional works outside of the Proposed Development site which may affect potential couching sites or holts within the River Shannon Callows SAC.
Fish biomass available	No significant decline	**Yes** – The Proposed Development has the potential to result in downstream water quality deterioration, which has the potential to result in decreased available fish biomass.
Barriers to connectivity	No significant increase. For guidance, see map 9	**No** – The Proposed Development is located outside of River Shannon Callows SAC and will therefore cause no significant increase in barriers to connectivity for otter within the SAC. There will be no additional works outside of the Proposed Development site which may affect connectivity within the River Shannon Callows SAC.

5.1.2.3.2 *Alkaline fens [7230]*

The conservation objective for this QI is:

> 'To maintain the favourable conservation condition of Alkaline fens in River Shannon Callows SAC'

The attributes and targets for this habitat are provided in Table 5-10.

Table 5-10. Targets and attributes associated with nominated site-specific conservation objectives for Alkaline fens in River Shannon Callows SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes	**Yes –** The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may result in a reduction in area of this QI habitat within the River Shannon Callows SAC.
Habitat distribution	No decline, subject to natural processes	**Yes –** The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may result in a reduction in distribution of this QI habitat within the River Shannon Callows SAC.
Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	**Yes** – The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, hydrocarbon, petrochemical, construction material, dust, construction phase silt-laden run-offs or wastewater run-offs arising from the Proposed Development have the potential to result in impacts on soil nutrient ranges in areas of habitat within the River Shannon Callows SAC.
Hydrological regime	Appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	**No** – No works associated with altering hydrological regime are proposed as part of the Proposed Development. The Proposed Development will not impact the maintenance of hydrological regime necessary to support the structure and functioning of this habitat within River Shannon Callows SAC, downstream of the Proposed Development Site.
Ecosystem function: Peat formation	Active peat formation, where appropriate	**No** – The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site. The Proposed Development will not result in impacts on active peat formation within the River Shannon Callows SAC.
Ecosystem function: hydrology - groundwater levels	Maintain, or restore where necessary, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	**No –** The Proposed Development Site is located outside of the SAC and is underlain by a separate groundwater body. The Proposed Development will not alter the groundwater hydrological regime necessary to support the natural structure and functioning of the habitat within the River Shannon Callows SAC.
Ecosystem function: hydrology - surface water flow	Maintain, or restore where necessary, as close as possible to natural or seminatural drainage conditions	**No –** The Proposed Development Site is located outside of the SAC. The Proposed Development will not alter the surface water hydrological regime necessary to support the natural or semi-natural drainage conditions of the habitat within the River Shannon Callows SAC.
Ecosystem function: water quality	Maintain appropriate water quality, particularly	**Yes –** The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed

	pH and nutrient levels, to support the natural structure and functioning of the habitat	Development Site. However, taking a precautionary approach and in the absence of mitigation, the Proposed Development have the potential to result in downstream water quality deterioration impacts on this habitat within the River Shannon Callows SAC.
Vegetation composition: community diversity	Maintain variety of vegetation communities, subject to natural processes	**Yes** – The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may impact the vegetation composition in terms of community diversity within this habitat within the River Shannon Callows SAC.
Vegetation composition: typical brown mosses	Maintain adequate cover of typical brown moss species	**Yes** – The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may impact the vegetation composition in terms of typical brown mosses within this habitat within the River Shannon Callows SAC.
Vegetation composition: typical vascular plants	Maintain adequate cover of typical vascular plant species	**Yes** – The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may impact the vegetation composition in terms of typical vascular plants within this habitat within the River Shannon Callows SAC.
Vegetation composition: negative indicator species	Cover of native negative indicator species at insignificant levels	**No**– The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site, and the Proposed Development will not impact the typical composition of vegetation communities within in terms of negative indicator species within this habitat in the River Shannon Callows SAC.
Vegetation composition: non-native species	Cover of non-native species less than 1%	**No** – The Proposed Development Site is located outside of the SAC and the Proposed Development will not impact the typical composition of vegetation communities in terms of non-native species within this habitat in River Shannon Callows SAC.
Vegetation composition: trees and shrubs	Cover of scattered native trees and shrubs less than 10%	**No –** The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site. The Proposed Development will not impact the maintenance of hydrological regime necessary to support the structure and functioning of this habitat within the River Shannon Callows SAC. Therefore, the Proposed Development will not influence hydrological conditions that might encourage the growth of trees and shrubs.
Vegetation composition: algal cover	Cover of algae less than 2%	**Yes** – The Proposed Development is located outside of the SAC, and this habitat was not recorded within the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development has the potential to result in downstream water quality deterioration impacts and resulting increase algal cover within this habitat in the downstream River Shannon Callows SAC.

Vegetation structure: vegetation height	At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type	**No** – The Proposed Development Site is located outside of the SAC and the Proposed Development will not impact the vegetation structure in terms of vegetation height of this habitat within the River Shannon Callows SAC. The Proposed Development has no potential to give rise to grazing or disturbance pressures that may affect this target.
Physical structure: disturbed bare ground	Cover of disturbed bare ground not more than 10%	**No** – The Proposed Development Site is located outside of the SAC and this habitat was not recorded within the Proposed Development Site. The Proposed Development does not have the potential to result in any alteration to the physical structure of any fen habitat within the SAC in terms of disturbed bare ground.
Physical structure: tufa formations	Disturbed proportion of vegetation cover where tufa is present is less than 1%	**No** – The Proposed Development Site is located outside of the SAC and this habitat was not recorded within the Proposed Development Site. The Proposed Development does not have the potential to result in any alteration to the physical structure of any fen habitat in terms of disturbed vegetation cover where tufa is present within the SAC.
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	**Yes –** The Proposed Development Site is located outside of the SAC and this habitat was not recorded within the Proposed Development Site. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration associated with the Proposed Development may result in a decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat within the River Shannon Callows SAC.
Transitional areas between fen and adjacent habitats	Maintain adequate transitional areas to support/protect the alkaline fen habitat and the services it provides	**No** – The Proposed Development Site is located outside of the SAC and the Proposed Development does not have the potential to impact transitional areas between fen and adjacent habitats.

5.1.2.3.3 *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]*

The conservation objective for this QI is:

> 'To maintain the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)* in River Shannon Callows SAC'

The attributes and targets for this habitat are provided in Table 5-11.

Table 5-11. Targets and attributes associated with nominated site-specific conservation objectives for Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) in River Shannon Callows SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes.	**Yes** – The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact

		the area of this habitat within the River Shannon Callows SAC.
Habitat distribution	No decline, subject to natural processes.	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact the distribution of this habitat within the River Shannon Callows SAC.
Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact the woodland size of this habitat within the River Shannon Callows SAC.
Woodland structure: cover and height	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact the woodland structure in terms of cover and height of this habitat within the River Shannon Callows SAC.
Woodland structure: community diversity and extent	Maintain diversity and extent of community types	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact the woodland structure in terms of community diversity and extent of this habitat within the River Shannon Callows SAC.
Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact the woodland structure in terms of natural regeneration of this habitat within the River Shannon Callows SAC.
Hydrological regime: flooding depth/height of water table	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	**No** – The Proposed Development Site is located outside of the SAC and will not impact the maintenance of hydrological regime necessary for maintenance of alluvial vegetation the River Shannon Callows SAC.
Woodland structure: dead wood	At least 19 stems/ha of dead wood at least 20cm diameter	**No** – The Proposed Development Site is located outside of the SAC. No works associated with the Proposed Development have the potential to result in any effect relating to deadwood structure within this habitat in the River Shannon Callows SAC.
Woodland structure: veteran trees	No decline	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact the woodland structure in terms of veteran trees within this habitat in the River Shannon Callows SAC.
Woodland structure: indicators of local distinctiveness	No decline in distribution and, in the case of red listed and other rare or localised species, population size	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact the woodland structure in terms of indicators of local

		distinctiveness within this habitat in the River Shannon Callows SAC.
Woodland structure: indicators of overgrazing	All five indicators of overgrazing absent	**No** – The Proposed Development Site is located outside of the SAC. No works associated with the Proposed Development have the potential to result in an increase in grazing pressures and as such, the Proposed Development will not undermine this Conservation Objective of this habitat within the River Shannon Callows SAC.
Vegetation composition: native tree cover	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact vegetation composition in terms of native tree cover within this habitat in the River Shannon Callows SAC.
Vegetation composition: typical species	At least one target species for 91E0* woodlands present; at least six positive indicator species for 91E0* woodlands present	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact vegetation composition in terms of typical species within this habitat in the River Shannon Callows SAC.
Vegetation composition: negative indicator species	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development has the potential to impact vegetation composition in terms of negative indicator species by changing nutrient conditions within this habitat in the River Shannon Callows SAC. Gowevr, there is no potential for direct introduction of negative indicator species to any area of this habitat within the River Shannon Callows SAC.
Vegetation composition: problematic native species	Cover of common nettle (Urtica dioica) less than 75%	**Yes –** The Proposed Development Site is located outside of the SAC. However, taking a precautionary approach and in the absence of mitigation, water quality deterioration arising from the Proposed Development may result in increased nutrient load within the habitat which has the potential to impact vegetation composition in terms of problematic native species within this habitat in the River Shannon Callows SAC.

5.1.3 Lough Ree SPA

The potential for impacts on this SPA were identified in Section 4.1 above. In the absence of mitigation, the identified pathways for effect include the following:

- Potential for disturbance, displacement, and mortality effects on the SCI species of Lough Ree SPA as a result of the Proposed Development
- Potential for water quality deterioration effects on the supporting wetland and freshwater habitats of Lough Ree SPA and all associated potential effects on SCI species of the SPA as a result of the Proposed Development
- Potential loss/ disturbance of SCI supporting habitat within the SPA as a result of the Proposed Development
- Potential for spread of aquatic invasive species found within the Proposed Development Site within Lough Ree SPA

Table 5-12 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any potential by which adverse effects may occur.

Areas of Lough Ree SPA within the Proposed Development Site consist of areas subject to high levels of existing disturbance, and habitats within the Proposed Development Site are largely of a disturbed and already developed nature. Therefore, SCI species which utilise Lough Ree SPA within the Proposed Development site are likely accustomed to ongoing disturbance in the form of boating (fishing, cruisers and tourist ferries), fishing, water sports, swimming, as well as walkers, runners, dog walking and existing traffic along the L2020 road and associated carparks adjacent to Lough Ree.

Suitable habitats utilised by SCI species associated with Lough Ree SPA such as **Reed and large sedge swamp (FS1)** and areas of **Wet willow-alder-ash woodland (WN6)** will be retained within and surrounding the Proposed Development Site.

5.1.3.1 Identification of Special Conservation Interest (SCI) Species and Habitat with the Potential to be Affected

Table 5-12. Assessment of Qualifying features potentially affected

Qualifying feature	Conservation Objective (NPWS, Version 1.0, April 2025[7]),	Rationale	Potential for Adverse Effects Y/N
[A004] Little Grebe *Tachybaptus ruficollis*	To maintain the Favourable conservation condition of Little Grebe in Lough Ree SPA,	As outlined within Section 3.3, the I-WeBS peak count for little grebe within the Hodson Bay survey subsite between the 2018/19 – 23/24 seasons was 9 individuals. Little grebe were observed during both the breeding and wintering bird surveys conducted in support of the application for Proposed Development, within and in the vicinity of the Proposed Development Site. Little grebe were primarily heard (and occasionally seen) within reedbeds to the north and south of the Proposed Development Site. A possible breeding little grebe was identified foraging near reedbed habitat adjacent to the Proposed Development Site. The majority of habitats within the Proposed Development Site consisted of artificial and highly managed amenity grassland, scattered trees and parkland and buildings and artificial surfaces. The site also encompasses a small area of Lough Ree and its fringing lakeside habitats such as reed beds and woodland. Areas of Lough Ree and its fringing habitats provided suitable habitat for little grebe, although SCI species which utilise the area of Lough Ree within or adjacent to the Proposed Development Site are likely accustomed to high levels of existing disturbance. The Proposed Development is located partially within the boundary of Lough Ree SPA. As little grebe were observed utilising the area of Lough Ree within and surrounding the Proposed Development Site during dedicated breeding and wintering bird surveys, the potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of little grebe, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake and lake-fringing habitats utilised by little grebe. This SCI is assessed further in this NIS.	**Yes**

[7] *NPWS (2025) Conservation Objectives: Lough Ree SPA 004064. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Qualifying feature	Conservation Objective (NPWS, Version 1.0, April 2025),	Rationale	Potential for Adverse Effects Y/N
[A038] Whooper Swan *Cygnus cygnus*	To restore the Favourable conservation condition of Whooper Swan in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. Whooper swan were not observed utilising the area of Lough Ree within or adjacent to the Proposed Development Site during dedicated breeding or wintering bird surveys. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of whooper swan, while NBDC showed records of the species within the same hectad. 2023/2024 I-WeBS counts showed a total count of 4 whooper swans at the Hodson Bay subsite, with no whooper swans recorded in the years 2018/19 – 2022/23. It is likely that the Hodson bay area is not a significant area for whooper swan, given the overall paucity of records for the species. High levels of ongoing activity within the Proposed Development Site likely act as an existing disturbance deterrent to SCI species within the vicinity of the Proposed Development. Taking a precautionary approach, potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of whooper swan, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**
[A050] Wigeon *Anas penelope*	To restore the Favourable conservation condition of Wigeon in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. Wigeon were not observed utilising the area of Lough Ree within or adjacent to the Proposed Development Site during dedicated breeding or wintering bird surveys. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of wigeon, while NBDC showed records of the species within the same hectad. I-WeBS counts for the 2018/19 – 23/24 seasons showed a peak count of 43 individuals for the Hodson Bay subsite. While areas of lake habitat within the Proposed Development Site provide suitable foraging and commuting habitat for wigeon, high levels of ongoing activity within the Proposed Development Site likely act as an existing disturbance deterrent to SCI species within the vicinity of the Proposed Development. Taking a precautionary approach, potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of wigeon, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1.0, April 2025),	Rationale	Potential for Adverse Effects Y/N
[A052] Teal *Anas crecca*	To restore the Favourable conservation condition of Teal in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. Teal were not observed utilising the area of Lough Ree within or adjacent to the Proposed Development Site during dedicated breeding or wintering bird surveys. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of teal, while NBDC showed records of the species within the same hectad. I-WeBS counts for the 2022/2023 and 2023/2024 seasons showed a count of 2 individuals in both seasons respectively. While areas of lake habitat within the Proposed Development Site provide suitable foraging and commuting habitat for teal, high levels of ongoing activity within the Proposed Development Site likely act as an existing disturbance deterrent to SCI species within the vicinity of the Proposed Development. Taking a precautionary approach, potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of teal, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**
[A053] Mallard *Anas platyrhynchos*	To restore the Favourable conservation condition of Mallard in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. Mallard were observed frequently utilising the area of Lough Ree within and surrounding the Proposed Development Site during dedicated breeding and wintering bird surveys. Observed activity including flying over the lake, swimming and foraging, particularly along areas of reed bed outside of the Proposed Development. Mallard were also observed foraging and resting along the shoreline at points within the Proposed Development Site. No mallard nests were observed within the Proposed Development, although one possible breeding pair and one probable breeding pair were observed foraging along reed beds outside of the Proposed Development Site. The potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of mallard, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1.0, April 2025),	Rationale	Potential for Adverse Effects Y/N
[A056] Shoveler *Anas clypeata*	To maintain the Favourable conservation condition of Shoveler in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. Shoveler were not observed utilising the area of Lough Ree within or adjacent to the Proposed Development Site during dedicated breeding or wintering bird surveys. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of shoveler, while NBDC showed records of the species within the same hectad. I-WeBS counts for the 2018/19 – 23/24 seasons at the Hodson Bay subsite showed no records of Shoveler. While areas of lake habitat within and in the vicinity of the Proposed Development Site provide suitable foraging and commuting habitat for shoveler, high levels of ongoing activity within the Proposed Development Site likely act as an existing disturbance deterrent to SCI species within the vicinity of the Proposed Development. Taking a precautionary approach, potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of shoveler, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**
[A061] Tufted Duck *Aythya fuligula*	To maintain the Favourable conservation condition of Tufted Duck in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. Tufted duck were observed frequently utilising the area of Lough Ree within and surrounding the Proposed Development Site during dedicated wintering bird surveys. Tufted duck were largely observed in rafts (alongside coot) outside of the Proposed Development Site, up to approx. 735 m from the shoreline. Tufted duck were also frequently recorded during the I-WeBS surveys of the Hodson Bay subsite, with varying records each year between the 2018/19 – 23/24 seasons. The potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of tufted duck, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1.0, April 2025),	Rationale	Potential for Adverse Effects Y/N
[A065] Common Scoter *Melanitta nigra*	To restore the Favourable conservation condition of Common Scoter in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. Common scoter were not observed utilising the area of Lough Ree within or adjacent to the Proposed Development Site during dedicated breeding or wintering bird surveys. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of common scoter, while NBDC showed records of the species within the same hectad. I-WeBS counts for the 2018/19 – 23/24 seasons showed no common scoter at the Hodson Bay subsite. While areas of lake habitat within the Proposed Development Site provide suitable foraging and commuting habitat for shoveler, no significant suitable breeding habitat was identified within or in the vicinity of the Proposed Development. In addition, high levels of ongoing activity within the Proposed Development Site likely act as an existing disturbance deterrent to SCI species within the vicinity of the Proposed Development. Taking a precautionary approach, potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of common scoter, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**
[A067] Goldeneye *Bucephala clangula*	To restore the Favourable conservation condition of Goldeneye in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of goldeneye, while NBDC showed records of the species within the same hectad. I-WeBS counts for the 2020/2021 season showed 12 goldeneye at the Hodson Bay I-WeBS subsite. A small group of remnant wintering goldeneye were observed on a single occasion during breeding bird surveys (15/05/2025) utilising lake habitat surrounding the Proposed Development Site. While areas of lake habitat within the Proposed Development Site provide suitable foraging and commuting habitat for goldeneye, high levels of ongoing activity within the Proposed Development Site likely act as an existing disturbance deterrent to SCI species within the vicinity of the Proposed Development. The potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of goldeneye, potential disturbance of supporting wetland habitat,	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1.0, April 2025),	Rationale	Potential for Adverse Effects Y/N
		and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	
[A125] Coot *Fulica atra*	To maintain the Favourable conservation condition of Coot in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of Coot, while NBDC showed records of the species within the same hectad. I-WeBS counts for the Hodson Bay subsite between the 2018/19 – 23/24 seasons showed great variety in coot numbers. The peak number being 541 and the lowest being 12. Coot were observed frequently utilising the area of Lough Ree within and surrounding the Proposed Development Site during dedicated breeding and wintering bird surveys. Observed activity including swimming and foraging, particularly along areas of reed bed to the north and south of the site, outside of the Proposed Development. No confirmed coot nests were identified within the Proposed Development Site, although a possible breeding pair of coot were identified foraging in and out of reedbeds outside of the Proposed Development during the breeding season. Large rafts of coot and tufted duck were often observed during wintering bird surveys outside of the Proposed Development Site, up to 735 m from the shoreline. Areas of reed bed habitat to the north and south of the Proposed Development Site offered suitable supporting breeding and wintering habitat for coot, with suitable commuting and foraging habitat throughout sheltered areas of lake bays and in front of Temple Island. High levels of ongoing activity within the Proposed Development Site likely act as an existing disturbance deterrent to SCI species within the vicinity of the Proposed Development. The potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of coot, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**
[A140] Golden Plover *Pluvialis apricaria*	To restore the Favourable conservation condition of Golden Plover in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of golden plover, while NBDC showed records of the species within the same hectad. I-WeBS counts for the 2020/2021 season showed 100 golden plover at the I-WeBS Hodson Bay subsite, with no records with the seasons 2018/19, 19/20, 22/23, 23/24. No golden plover were observed within or surrounding the Proposed Development Site across any	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1.0, April 2025),	Rationale	Potential for Adverse Effects Y/N
		breeding or wintering bird surveys conducted for the Proposed Development. No significant suitable undisturbed grassland or shoreline habitat for wintering golden plover was present within the Proposed Development Site. Terrestrial and shoreline habitats within the Proposed Development site are largely urbanised and developed, with high levels of existing disturbance throughout as a result of boating, fishing, watersports and swimming within the adjacent lake habitat, as well as walkers, runners and dog walkers along the shoreline. Both the L2020 road and existing carparks are also subject to ongoing traffic throughout the day. Taking a precautionary approach, the potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of golden plover, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	
[A142] Lapwing *Vanellus vanellus*	To restore the Favourable conservation condition of Lapwing in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of lapwing, while NBDC showed records of the species within the same hectad. Peak I-WeBS lapwing records for the 2018/19 – 23/24 season was 300, with zero lapwing recorded in one season during this period. No lapwing were observed within or surrounding the Proposed Development Site across any breeding or wintering bird surveys conducted for the Proposed Development. No significant suitable undisturbed grassland or shoreline habitat for wintering lapwing was present within the Proposed Development Site. Terrestrial and shoreline habitats within the Proposed Development site are largely urbanised and developed, with high levels of existing disturbance throughout as a result of boating, fishing, watersports and swimming within the adjacent lake habitat, as well as walkers, runners and dog walkers along the shoreline. Both the L2020 road and existing carparks are also subject to ongoing traffic throughout the day. Taking a precautionary approach, the potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of lapwing, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1.0, April 2025),	Rationale	Potential for Adverse Effects Y/N
[A193] Common Tern *Sterna hirundo*	To restore the Favourable conservation condition of Common Tern in Lough Ree SPA	The Proposed Development is located partially within the boundary of Lough Ree SPA. NPWS data for the 10 km hectad N04 (in which the Proposed Development Site is located) had no records of common tern, while NBDC showed records of the species within the same hectad. Common terns were observed on four separate dates within and surrounding the Proposed Development Site during dedicated breeding bird surveys. Activity observed included flying over the Proposed Development Site, foraging in shallow waters and perching on inflatable apparatus associated with the Baysports facility. No breeding activity for common tern was observed within or surrounding the Proposed Development Site. Common tern are likely accustomed to the high levels of existing disturbance associated with Lough Ree SPA within the Proposed Development site during spring-summer. Taking a precautionary approach, the potential for adverse effects on this SCI species was identified in the form of disturbance/displacement of commuting and foraging common tern, potential disturbance of supporting wetland habitat, and water quality deterioration of supporting lake habitat. This SCI is assessed further in this NIS.	**Yes**
[A999] Wetland and Waterbirds	To maintain the Favourable conservation condition of Wetland habitats in Lough Ree SPA as a resource for the regularly-occurring migratory waterbirds that utilise these areas.	The Proposed Development is located partially within the boundary of Lough Ree SPA. Therefore, the potential for adverse effects on this SCI-supporting habitat was identified in the form of direct disturbance of wetland habitat and water quality deterioration of supporting lake habitat. This SCI-supporting habitat is assessed further in this NIS. Invasive plant and faunal species are abundant and widespread within the Proposed Development Site. The further spread of non-native invasive species could deteriorate the quality of this SCI habitat.	**Yes**

5.1.3.1 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Development. These are provided in Table 5-13 .

Table 5-13. Site-specific threats, pressures and activities

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Low	B	Sylviculture, forestry	Outside
Medium	I01	Invasive non-native species	Inside
Medium	A08	Fertilisation	Outside
High	G01.01	Nautical sports	Inside
Medium	F02.03	Leisure fishing	Inside
Medium	F03.01	Hunting	Inside
Medium	G01.02	Walking, horseriding and non-motorised vehicles	Outside
Medium	A04	Grazing	Outside

Baseline conditions within the Proposed Development Site in its current state are that of an area subject to existing high levels of disturbance, including nautical sports (Baysports facility), leisure fishing from the marina area and frequent walking alongside the lake edge near the marina area and along the northern area of the site. Existing dense colonisation of invasive species, including quagga mussel, zebra mussel, Nuttall's waterweed and Canadian waterweed are present within the Proposed Development Site within Lough Ree SPA.

However, taking a precautionary approach, potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to Proposed Development include the ongoing nautical sports and leisure fishing within the SPA. Additionally, the potential for adverse effect via further spread of invasive non-native species throughout the SPA was identified.

5.1.3.2 SCI Specific Information

5.1.3.2.1 *Little grebe Tachybaptus ruficollis [A004]*

The conservation objective for this SCI is:

'To maintain the Favourable conservation condition of Little Grebe in Lough Ree SPA'
The attributes and targets for this species are provided in Table 5-14.

Table 5-14. Targets and attributes associated with nominated site-specific conservation objectives for Little Grebe in Lough Ree SPA'

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with little grebe observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. In the absence of mitigation, disturbance to little grebe, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with little grebe observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. In the absence of mitigation, disturbance to little grebe as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine the winter spatial distribution of this SCI species.
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with little grebe observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. In the absence of mitigation, direct disturbance to little grebe arising from the construction phase, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential cause disturbance at wintering sites for this SCI species.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – In the absence of mitigation, direct disturbance to little grebe arising from the construction phase of the Proposed Development has the potential to temporarily impact use of foraging areas and available biomass to support the population of little grebe within and in the vicinity of the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – In the absence of mitigation, direct disturbance to little grebe arising from the construction phase, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to adversely impact the locations, area and availability of suitable roosting habitat for little grebe within and in the vicinity of the Proposed Development Site.

5.1.3.2.2 *Whooper Swan Cygnus cygnus [A038]*

The conservation objective for this SCI is:

'To restore the Favourable conservation condition of Whooper Swan in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-15.

Table 5-15. Targets and attributes associated with nominated site-specific conservation objectives for Whooper Swan in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to whooper swan, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to whooper swan, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter spatial distribution.
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to whooper swan, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine this conservation objective target.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to whooper swan, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of whooper

		swan within areas of Lough Ree SPA surrounding the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to whooper swan, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact locations, area and availability of suitable roosting habitat to support the population of whooper swan within areas of Lough Ree SPA surrounding the Proposed Development Site.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the area and quality of utilisable habitat for whooper swan in ecologically important sites outside the SPA.

5.1.3.2.3 *Wigeon Anas penelopegnus [A050]*

The conservation objective for this SCI is:

'To restore the Favourable conservation condition of Wigeon in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-16.

Table 5-16. Targets and attributes associated with nominated site-specific conservation objectives for Wigeon in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to wigeon utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends for wigeon.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to wigeon utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine winter spatial distribution.

Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to wigeon utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine this conservation objective target.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to wigeon utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of wigeon within areas of Lough Ree SPA surrounding the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to wigeon utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact locations, area and availability of suitable roosting habitat to support the population of wigeon within areas of Lough Ree SPA surrounding the Proposed Development Site.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the area and quality of utilisable habitat for wigeon in ecologically important sites outside the SPA.

5.1.3.2.4 *Teal Anas crecca [A052]*

The conservation objective for this SCI is:

'To restore the Favourable conservation condition of Teal in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-17.

Table 5-17. Targets and attributes associated with nominated site-specific conservation objectives for Teal in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No teal were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to teal utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends for teal.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No teal were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to teal utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine winter spatial distribution.
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No teal were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to teal utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine this conservation objective target.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No teal were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to teal utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to

		impact use of foraging areas and available biomass to support the population of teal within areas of Lough Ree SPA surrounding the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No teal were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, disturbance to teal utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact locations, area and availability of suitable roosting habitat to support the population of teal within areas of Lough Ree SPA surrounding the Proposed Development Site.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No teal were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to significantly impact the area and quality of utilisable habitat for teal in ecologically important sites outside the SPA.

5.1.3.2.5 *Mallard Anas platyrhynchos [A053]*

The conservation objective for this SCI is:

'To restore the Favourable conservation condition of Mallard in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-18.

Table 5-18. Targets and attributes associated with nominated site-specific conservation objectives for mallard in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA, with mallard observed during the wintering season within and surrounding the Proposed Development Site. Mallard were also recorded throughout breeding surveys. In the absence of mitigation, disturbance to mallard as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with mallard observed during the wintering season within and surrounding the Proposed Development Site. Mallard were also recorded throughout breeding surveys. In the absence of mitigation, disturbance to mallard as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine the winter spatial distribution of this SCI species.

Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with mallard observed during the wintering season within and surrounding the Proposed Development Site. Mallard were also recorded throughout breeding surveys. In the absence of mitigation, disturbance to mallard as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to cause disturbance at wintering sites for this SCI species.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with mallard observed during the wintering season within and surrounding the Proposed Development Site. Mallard were also recorded throughout breeding surveys. In the absence of mitigation, disturbance to mallard as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of mallard within and in the vicinity of the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with mallard observed during the wintering season within and surrounding the Proposed Development Site. Mallard were also recorded throughout breeding surveys. In the absence of mitigation, disturbance to mallard as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the locations, area and availability of suitable roosting habitat for mallard within and in the vicinity of the Proposed Development Site.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with mallard observed during the wintering season within and surrounding the Proposed Development Site. Mallard were also recorded throughout breeding surveys. In the absence of mitigation water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the area and quality of utilisable habitat for mallard in ecologically important sites outside the SPA.

5.1.3.2.6 *Shoveler Anas clypeata [A056]*

The conservation objective for this SCI is:

'To maintain the Favourable conservation condition of Shoveler in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-19.

Table 5-19. Targets and attributes associated with nominated site-specific conservation objectives for shoveler in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No shoveler were observed during bird surveys within or surrounding the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to shoveler utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends for shoveler.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No shoveler were observed during bird surveys within or surrounding the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to shoveler utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine winter spatial distribution.
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No shoveler were observed during bird surveys within or surrounding the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to shoveler utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine this conservation objective target.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No shoveler were observed during bird surveys within or surrounding the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to shoveler utilising Lough Ree SPA in the wider vicinity of the Proposed

		Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of shoveler within areas of Lough Ree SPA surrounding the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No shoveler were observed during bird surveys within or surrounding the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to shoveler utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to significantly impact locations, area and availability of suitable roosting habitat to support the population of shoveler within areas of Lough Ree SPA surrounding the Proposed Development Site.

5.1.3.2.7 *Tufted Duck Aythya fuligula [A061]*

The conservation objective for this SCI is:

'To maintain the Favourable conservation condition of Tufted Duck in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-20.

Table 5-20. Targets and attributes associated with nominated site-specific conservation objectives for Tufted Duck in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA, with tufted duck observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. In the absence of mitigation, disturbance to tufted duck, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with tufted duck observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. In the absence of mitigation, disturbance to tufted duck, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine the winter spatial distribution of this SCI species.
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with tufted duck observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. In the absence of mitigation, disturbance to tufted duck, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the

		potential to cause disturbance at wintering sites for this SCI species.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with tufted duck observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. In the absence of mitigation, disturbance to tufted duck, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of tufted duck within and in the vicinity of the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with tufted duck observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. In the absence of mitigation, disturbance to tufted duck, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the locations, area and availability of suitable roosting habitat for tufted duck within and in the vicinity of the Proposed Development Site.

5.1.3.2.8 *Common Scoter Melanitta nigra [A065]*

The conservation objective for this SCI is:

'To restore the Favourable conservation condition of Common Scoter in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-21.

Table 5-21. Targets and attributes associated with nominated site-specific conservation objectives for Common Scoter in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Breeding population trend	Long term trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No common scoter were observed during bird surveys within or surrounding the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to common scoter utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term breeding population trends within Lough Ree SPA.
Productivity rate	Sufficient productivity to maintain the population trend as stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No common scoter were observed during bird surveys within or surrounding the

		Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to common scoter utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the productivity rate required to maintain the population of common scoter within Lough Ree SPA.
Distribution of nesting habitat	No significant loss of distribution in the long term, other than that occurring due to natural patterns of variation	**No –** There are no significant suitable nesting areas within or in the vicinity of the Proposed Development Site. The Proposed Development will not result in a change to extent to suitable nesting habitat throughout the SPA.
Extent and condition of nesting habitat	Sufficient area of high-quality habitat to support the population target	**No –** There are no significant suitable nesting areas within or in the vicinity of the Proposed Development Site. The Proposed Development will not result in a change to extent or condition of high-quality suitable nesting habitat throughout the SPA.
Disturbance at breeding site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and distribution	**No –** There is no significant suitable habitat for breeding common scoter within or in the vicinity of the Proposed Development. No common scoter were recorded during bird surveys across 2025-2026. As such the Proposed Development does not have the potential to result in disturbance at breeding sites within Lough Ree SPA.
Barriers to connectivity and site use	Barriers do not significantly impact the breeding population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the breeding population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No common scoter were observed during bird surveys within or surrounding the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to common scoter utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of common scoter within areas of Lough Ree SPA surrounding the Proposed Development Site.

5.1.3.2.9 *Goldeneye Bucephala clangula [A067]*

The conservation objective for this SCI is:

> 'To restore the Favourable conservation condition of Goldeneye in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-22.

Table 5-22. Targets and attributes associated with nominated site-specific conservation objectives for Goldeneye in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation

Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA, with a small number of remnant wintering goldeneye observed during one breeding bird survey (15/05/2025). In the absence of mitigation, disturbance to goldeneye, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with a small number of remnant wintering goldeneye observed during one breeding bird survey (15/05/2025). In the absence of mitigation, disturbance to goldeneye, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine the winter spatial distribution of this SCI species.
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with a small number of remnant wintering goldeneye observed during one breeding bird survey (15/05/2025). In the absence of mitigation, disturbance to goldeneye, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential cause disturbance at wintering sites for this SCI species.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – In the absence of mitigation, disturbance to goldeneye, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of goldeneye within and in the vicinity of the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – In the absence of mitigation, disturbance to goldeneye, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the locations, area and availability of suitable roosting habitat for goldeneye within and in the vicinity of the Proposed Development Site.

5.1.3.2.10 *Coot Fulica atra [A125]*

The conservation objective for this SCI is:

'To maintain the Favourable conservation condition of Coot in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-23.

Table 5-23. Targets and attributes associated with nominated site-specific conservation objectives for Coot in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA, with coot observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. Coot were also recorded utilising the Proposed Development Site during breeding surveys. In the absence of mitigation, disturbance to coot, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with coot observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. Coot were also recorded utilising the Proposed Development Site during breeding surveys. In the absence of mitigation, disturbance to coot, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine the winter spatial distribution of this SCI species.
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with coot observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. Coot were also recorded utilising the Proposed Development Site during breeding surveys. In the absence of mitigation, disturbance to coot, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to cause disturbance at wintering sites for this SCI species.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with coot observed during wintering bird surveys conducted within and surrounding the Proposed Development Site. Coot were also recorded utilising the Proposed Development Site during breeding surveys. In the absence of mitigation, disturbance to coot, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of coot within and in the vicinity of the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA, with coot observed during wintering bird surveys conducted within and surrounding the

	roosting habitat to support the population target	Proposed Development Site. Coot were also recorded utilising the Proposed Development Site during breeding surveys. In the absence of mitigation, disturbance to coot, or water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the locations, area and availability of suitable roosting habitat for coot within and in the vicinity of the Proposed Development Site.

5.1.3.2.11 *Golden Plover Pluvialis apricaria [A140]*

The conservation objective for this SCI is:

'To restore the Favourable conservation condition of Golden Plover in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-24.

Table 5-24. Targets and attributes associated with nominated site-specific conservation objectives for Golden Plover in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for golden plover was identified within the Proposed Development Site. However, in the absence of mitigation, disturbance to golden plover utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for golden plover was identified within the Proposed Development Site. However, in the absence of mitigation, disturbance to golden plover utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine winter spatial distribution.
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for golden plover was identified within the Proposed Development Site. However, in the absence of mitigation, disturbance to golden plover utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impacts the achievement of targets for population trend and spatial distribution.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.

Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for golden plover was identified within the Proposed Development Site. However, in the absence of mitigation, disturbance to golden plover utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of golden plover within areas of Lough Ree SPA surrounding the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes -** The Proposed Development Site is partially located within the boundary of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for golden plover was identified within the Proposed Development Site. However, in the absence of mitigation, disturbance to golden plover utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact locations, area and availability of suitable roosting habitat to support the population of golden plover within areas of Lough Ree SPA surrounding the Proposed Development Site.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – In the absence of mitigation, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the area and quality of utilisable habitat for golden plover in ecologically important sites outside the SPA.

5.1.3.2.12 *Lapwing Vanellus vanellus [A142]*

The conservation objective for this SCI is:

'To restore the Favourable conservation condition of Lapwing in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-25.

Table 5-25. Targets and attributes associated with nominated site-specific conservation objectives for Lapwing in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for lapwing was identified within the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to lapwing utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed

		Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for lapwing was identified within the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to lapwing utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine winter spatial distribution.
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for lapwing was identified within the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to lapwing utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the achievement of targets for population trend and spatial distribution.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for lapwing was identified within the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to lapwing utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of lapwing within areas of Lough Ree SPA surrounding the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes -** The Proposed Development Site is partially located within the boundary of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. Additionally, no significant suitable habitat for lapwing was identified within the Proposed Development Site. However, taking a precautionary approach, in the absence of mitigation, disturbance to lapwing utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well

		as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact locations, area and availability of suitable roosting habitat to support the population of lapwing within areas of Lough Ree SPA surrounding the Proposed Development Site.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – In the absence of mitigation, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to significantly impact the area and quality of utilisable habitat for lapwing in ecologically important sites outside the SPA.

5.1.3.2.13 *Common Tern Sterna hirundo [A193]*

The conservation objective for this SCI is:

'To restore the Favourable conservation condition of Common Tern in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-15 below:

Table 5-26. Targets and attributes associated with nominated site-specific conservation objectives for Common tern in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Breeding population trend	Long term SPA population trend is stable or increasing	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. Common tern were observed flying over, foraging or resting within or surrounding the Proposed Development Site during breeding bird surveys. No breeding common tern activity was observed during surveys. In the absence of mitigation, disturbance to common tern utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term breeding population trends within Lough Ree SPA.
Productivity rate	Sufficient to maintain a stable or increasing population	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. Common tern were observed flying over, foraging or resting within or surrounding the Proposed Development Site during breeding bird surveys. No breeding common tern activity was observed during surveys. In the absence of mitigation, disturbance to common tern utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the productivity rate required to maintain the population of common tern within Lough Ree SPA.
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	**No –** There are no suitable nesting areas within or in the vicinity of the Proposed Development Site. The Proposed Development will not result in a change to extent to suitable nesting habitat throughout the SPA.

Forage spatial distribution, extent, abundance and availability	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is partially located within the boundary of the SPA. Common tern were observed flying over, foraging or resting within or surrounding the Proposed Development Site during breeding bird surveys. No breeding common tern activity was observed during surveys. In the absence of mitigation, disturbance to common tern utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging locations and areas and available biomass to support the population of common tern within areas of Lough Ree SPA surrounding the Proposed Development Site.
Disturbance at breeding site	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	**No –** There is no suitable habitat for breeding common tern within or in the vicinity of the Proposed Development. No breeding activity was observed by common tern during breeding bird surveys undertaken within 2025. As such the Proposed Development does not have the potential to result in disturbance at breeding sites within Lough Ree SPA, those primarily being islands within the lake north of the Proposed Development Site.
Disturbance at areas ecologically connected to the colony	Disturbance occurs at levels that do not significantly impact on breeding population	**Yes –** The Proposed Development Site is partially located within the boundary of the SPA. Common tern were observed flying over, foraging or resting within or surrounding the Proposed Development Site during breeding bird surveys. No breeding common tern activity was observed during surveys. While no colonies of common tern are located within the vicinity of the proposed Development, the proposed Development Site surrounding area was utilised by common tern for commuting and feeding during the 2025 breeding season. In the absence of mitigation, disturbance to common tern utilising Lough Ree SPA in the wider vicinity of the Proposed Development Site, as well as water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to cause disturbance at areas which are ecologically connected to common tern colonies within Lough Ree SPA.
Barriers to connectivity	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.

5.1.3.2.14 *Wetlands [A999]*

The conservation objective for this SCI is:

'To maintain the Favourable conservation condition of Wetland habitats in Lough Ree SPA'

The attributes and targets for this species are provided in Table 5-27.

Table 5-27. Targets and attributes associated with nominated site-specific conservation objectives for Wetland habitat in Lough Ree SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation

Wetland habitat area	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation	**Yes** – In the absence of mitigation, the Proposed Development has the potential to result in loss/ disturbance of wetland habitat as a result of the construction phase of the Proposed Development.
Wetland habitat quality and functioning	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation	**Yes**– In the absence of mitigation, the Proposed Development has the potential to result in adverse effect on the quality or functioning of habitat within the SPA, as a result of water quality deterioration arising from the construction and operational phases.

5.1.4 Middle Shannon Callows SPA

The potential for likely significant effects on this SPA were identified in Section 4.1 above. In the absence of mitigation, the identified pathways for effect include the following:

- Potential for ex-situ disturbance of SCI species of the SPA during the construction and operational phases of the Proposed Development
- Potential for water quality deterioration of supporting wetland habitat for SCI species within the SPA during the construction and operational phases of the Proposed Development
- Potential increase in the spread of aquatic invasive species found within the Proposed Development Site to the Middle Shannon Callows SPA

Table 5-28 below lists the Special Conservation Interests of this European Site and determines, in the light of their Conservation Objectives, whether there is any potential by which adverse effects may occur.

5.1.4.1 Identification of Special Conservation Interest (SCI) Species and Habitat with the Potential to be Affected

Table 5-28. Assessment of Special Conservation Interests potentially affected

Special Conservation Interest	Conservation Objective (NPWS, Version 1, November 2022[8])	Rationale	Potential for Adverse Effects Y/N
[A038] Whooper Swan (*Cygnus cygnus*)	To maintain the favourable conservation condition of whooper swan in Middle Shannon Callows SPA	The Proposed Development is located outside of the SPA, approximately 5.3 km north of the European Designated Site. No whooper swan were recorded during breeding or wintering bird surveys conducted for the Proposed Development. According to Scottish Natural Heritage (2016), the core foraging range of whooper swan is less than 5 km. Taking a precautionary approach and in the absence of mitigation, the potential for adverse effects on this SCI species was identified in the form of water quality deterioration of supporting downstream wetland habitat. This SCI is assessed further in this NIS.	**Yes**

[8] *NPWS (2022) Conservation Objectives: Middle Shannon Callows SPA 004096. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Special Conservation Interest	Conservation Objective (NPWS, Version 1, November 2022[8])	Rationale	Potential for Adverse Effects Y/N
[A050] Wigeon (*Anas penelope*)	To restore the favourable conservation condition of wigeon in Middle Shannon Callows SPA	The Proposed Development is located outside of the SPA, approximately 5.3 km north of the European Designated Site. No wigeon were recorded during breeding or wintering bird surveys conducted for the Proposed Development. According to Johnson et al. (2014), the max foraging range of wigeon is 2.8 km. Taking a precautionary approach and in the absence of mitigation, the potential for adverse effects on this SCI species was identified in the form of water quality deterioration of supporting downstream wetland habitat. This SCI is assessed further in this NIS.	**Yes**
[A122] Corncrake (*Crex crex*)	The status of corncrake as a Species of Conservation Interest for the Middle Shannon Callows SPA is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species	The Proposed Development is located approximately 5.3 km from the SPA. No corncrake were recorded during breeding bird surveys conducted for the Proposed Development. The max foraging range of breeding corncrake in Ireland is typically very localised to the field in which they breed. In addition, there is no significant suitable habitat within or adjacent to the Proposed Development for this species. No ex-situ disturbance effects are anticipated for this species. No potential for adverse effect on this species as a result of the Proposed Development was identified. No further assessment is required.	No
[A140] Golden Plover (*Pluvialis apricaria*)	To maintain the favourable conservation condition of golden plover in Middle Shannon Callows SPA	The Proposed Development is located outside of the SPA, approximately 5.3 km north of the European Designated Site, and is therefore within the max foraging range of golden plover (11 km). No golden plover were recorded during breeding or wintering bird surveys conducted for the Proposed Development, and the Proposed Development does not provide significant suitable habitat for this species. However, I-WeBS counts for the 2020/2021 season showed 100 golden plover at the I-WeBS Hodson Bay subsite, with no records with the seasons 2018/19, 19/20, 22/23, 23/24. Therefore, taking a precautionary approach and in the absence of mitigation, the potential for adverse effects on this SCI species was identified in the form of water quality deterioration of downstream supporting wetland habitat and ex-situ disturbance. This SCI is assessed further in this NIS.	**Yes**

Special Conservation Interest	Conservation Objective (NPWS, Version 1, November 2022[8])	Rationale	Potential for Adverse Effects Y/N
[A142] Lapwing (*Vanellus vanellus*)	To restore the favourable conservation condition of lapwing in Middle Shannon Callows SPA	The Proposed Development is located outside of the SPA, approximately 5.3 km north of the European Designated Site. Peak I-WeBS lapwing records for the 2018/19 – 23/24 season was 300, with zero lapwing recorded in one season during this period. No lapwing were recorded during breeding or wintering bird surveys conducted for the Proposed Development, and no significant suitable habitat for this species was identified within the Proposed Development. Taking a precautionary approach and in the absence of mitigation, the potential for adverse effects on this SCI species was identified in the form of water quality deterioration of supporting wetland habitat and ex-situ disturbance. This SCI is assessed further in this NIS.	**Yes**
[A156] Black-tailed Godwit (*Limosa limosa*)	To restore the favourable conservation condition of Black-tailed godwit in Middle Shannon Callows SPA	The Proposed Development is located approximately 5.3 km from the SPA and is therefore within the max foraging range of black-tailed godwit (40 km). No black-tailed godwit were recorded during surveys undertaken for the Proposed Development and no black-tailed godwit were recorded during the 2018/19 – 23/24 I-WeBS surveys of the Hodson Bay subsite. Taking a precautionary approach, the potential for adverse effect on this SCI species was identified in the form of water quality deterioration of supporting wetland habitat and ex-situ disturbance, and it is assessed further in this NIS.	**Yes**
[A179] Black-headed Gull (*Chroicocephalus ridibundus*)	To restore the favourable conservation condition of black-headed gull in Middle Shannon Callows SPA	The Proposed Development is located approximately 5.3 km from the SPA and is therefore within the max foraging range of black-headed gull (40 km). Black headed gull were recorded during wintering and breeding surveys undertaken for the Proposed Development and commonly utilised the Proposed Development site and surrounding area during these surveys. Therefore, the potential for adverse effect on this SCI species was identified in the form of water quality deterioration of supporting wetland habitat and ex-situ disturbance, and it is assessed further in this NIS.	**Yes**
[A999] Wetland and Waterbirds	To maintain the favourable conservation condition of wetlands in Middle Shannon Callows SPA	The Proposed Development site is located approx. 5.3 km upstream of this SPA and there is a direct surface water connection. Therefore, the potential for adverse effect on SCIs of this SPA via the deterioration of supporting wetland habitat was identified and it is assessed further in	**Yes**

Special Conservation Interest	Conservation Objective (NPWS, Version 1, November 2022[8])	Rationale	Potential for Adverse Effects Y/N
		this NIS. Invasive plant and faunal species are abundant and widespread within the Proposed Development Site. The further spread of non-native invasive species from the Proposed Development Site to this downstream SCI habitat could deteriorate the quality of this SCI habitat.	

5.1.4.1 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Development. These are provided in Table 5-29.

Table 5-29. Site-specific threats, pressures and activities

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Low	A04.03	Abandonment of pastoral systems, lack of grazing	Inside
High	A04	Grazing	Inside
High	E01	Urbanised areas, human habitation	Outside
Low	D01.01	Paths, tracks, cycling tracks	Inside
High	D01.05	Bridge, viaduct	Inside
High	G01.01	Nautical sports	Inside
Medium	A08	Fertilisation	Outside
Low	A08	Fertilisation	Inside
Medium	G01.02	Walking, horse-riding and non-motorised vehicles	Inside
Low	F03.01	Hunting	Inside
Medium	F02.03	Leisure fishing	Inside

Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to urbanised areas associated with the Proposed Development, which is located outside of and hydrologically upstream of the SPA. It should be noted that the Proposed Development baseline condition is an existing urbanised area, dominated by artificial and heavily modified habitats, and subject to high levels of activity and disturbance.

5.1.4.2 SCI Specific Information

5.1.4.2.1 *Whooper Swan Cygnus cygnus [A038]*

The conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of whooper swan in Middle Shannon Callows SPA'

The attributes and targets for this species are provided in Table 5-30.

Table 5-30. Targets and attributes associated with nominated site-specific conservation objectives for Whooper Swan in in Middle Shannon Callows SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter spatial distribution.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**No** – The Proposed Development does not have the potential to cause disturbance at the wintering site of this species.
Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact use of foraging areas and available biomass to support the population of whooper swan.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising

		from the construction or operational phases of the Proposed Development has the potential to impact locations, area and availability of suitable roosting habitat to support the population of whooper swan.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No whooper swan were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to impact the area and quality of utilisable habitat for whooper swan in ecologically important sites outside the SPA.

5.1.4.2.2 *Wigeon Anas penelopegnus [A050]*

The conservation objective for this SCI is:

'To restore the favourable conservation condition of wigeon in Middle Shannon Callows SPA'

The attributes and targets for this species are provided in Table 5-31.

Table 5-31. Targets and attributes associated with nominated site-specific conservation objectives for Wigeon in Middle Shannon Callows SPA'

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to undermine long term winter spatial distribution.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**No** – The Proposed Development does not have the potential to cause disturbance at the wintering site of this species.

Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to significantly impact use of foraging areas and available biomass to support the population of wigeon.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to significantly impact locations, area and availability of suitable roosting habitat to support the population of wigeon.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No wigeon were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development has the potential to significantly impact the area and quality of utilisable habitat for wigeon in ecologically important sites outside the SPA.

5.1.4.2.3 *Golden Plover Pluvialis apricaria [A140]*

The conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Golden Plover in Middle Shannon Callows SPA'

The attributes and targets for this species are provided in Table 5-32.

Table 5-32. Targets and attributes associated with nominated site-specific conservation objectives for Golden Plover in Middle Shannon Callows SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation

Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to undermine winter spatial distribution.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**No** – The Proposed Development does not have the potential to cause disturbance at the wintering site of this species.
Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to impact use of foraging areas and available biomass to support the population of golden plover within areas of Lough Ree SPA surrounding the Proposed Development Site.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to impact locations, area and availability of suitable roosting habitat to support the population of

		golden plover within areas of Lough Ree SPA surrounding the Proposed Development Site.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No golden plover were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to impact the area and quality of utilisable habitat for golden plover in ecologically important sites outside the SPA.

5.1.4.2.4 *Black-tailed Godwit Limosa limosa [A156]*

The conservation objective for this SCI is:

> 'To restore the favourable conservation condition of Black-tailed godwit in Middle Shannon Callows SPA'

The attributes and targets for this species are provided in Table 5-33.

Table 5-33. Targets and attributes associated with nominated site-specific conservation objectives for Black-tailed godwit in Middle Shannon Callows SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No black-tailed godwit were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No black-tailed godwit were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to undermine winter spatial distribution.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**No** – The Proposed Development does not have the potential to cause disturbance at the wintering site of this species.

Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No black-tailed godwit were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to impact use of foraging areas and available biomass to support the population of black-tailed godwit.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No black-tailed godwit were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to impact locations, area and availability of suitable roosting habitat to support the population of black-tailed godwit.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No black-tailed godwit were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to significantly impact the area and quality of utilisable habitat for black-tailed godwit in ecologically important sites outside the SPA.

5.1.4.2.5 *Black-headed Gull Chroicocephalus ridibundu [A179]*

The conservation objective for this SCI is:

> 'To restore the favourable conservation condition of Black-headed Gull in Middle Shannon Callows SPA'

The attributes and targets for this species are provided in Table 5-34.

Table 5-34

Table 5-34. Targets and attributes associated with nominated site-specific conservation objectives for Black-headed Gull in Middle Shannon Callows SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is located entirely outside of the SPA. Black-headed gull were observed during wintering bird surveys within and surrounding the Proposed Development Site. Black headed gull were also recorded utilising the same areas during breeding bird surveys. In the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance has the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is located entirely outside of the SPA. Black-headed gull were observed during wintering bird surveys within and surrounding the Proposed Development Site. Black headed gull were also recorded utilising the same areas during breeding bird surveys. In the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to undermine long term winter spatial distribution.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**No** – The Proposed Development does not have the potential to cause disturbance at the wintering site of this species.
Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. Black-headed gull were observed during wintering bird surveys within and surrounding the Proposed Development Site. Black headed gull were also recorded utilising the same areas during breeding bird surveys. In the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to impact use of foraging areas and available biomass to support the population of black-headed gull.

Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. Black-headed gull were observed during wintering bird surveys within and surrounding the Proposed Development Site. Black headed gull were also recorded utilising the same areas during breeding bird surveys. In the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to impact locations, area and availability of suitable roosting habitat to support the population of black-headed gull.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is located entirely outside of the SPA. Black-headed gull were observed during wintering bird surveys within and surrounding the Proposed Development Site. Black headed gull were also recorded utilising the same areas during breeding bird surveys. In the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to significantly impact the area and quality of utilisable habitat for black-headed gull in ecologically important sites outside the SPA.

5.1.4.2.1 *Lapwing Vanellus vanellus [A142]*

The conservation objective for this SCI is:

'To restore the favourable conservation condition of lapwing in Middle Shannon Callows SPA'

The attributes and targets for this species are provided in

Table 5-35. Targets and attributes associated with nominated site-specific conservation objectives for Lapwing in Middle Shannon Callows SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Winter population trend	Long term winter population trend is stable or increasing	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to undermine long term winter population trends.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	**Yes –** The Proposed Development Site is located entirely outside of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-

		situ disturbance have the potential to undermine winter spatial distribution.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	**No** – The Proposed Development does not have the potential to cause disturbance at the wintering site of this species.
Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	**No –** The Proposed Development does not have the potential to create a barrier to connectivity or site use. No significant impact to the wintering population's access to the SPA or other ecologically important sites outside the SPA will be caused by any phase of the Proposed Development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to impact use of foraging areas and available biomass to support the population of lapwing.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to impact locations, area and availability of suitable roosting habitat to support the population of lapwing.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	**Yes** – The Proposed Development Site is located entirely outside of the SPA. No lapwing were observed during bird surveys within or surrounding the Proposed Development Site. However, in the absence of mitigation, and taking a precautionary approach, water quality deterioration of supporting habitat arising from the construction or operational phases of the Proposed Development and ex-situ disturbance have the potential to significantly impact the area and quality of utilisable habitat for lapwing in ecologically important sites outside the SPA.

5.1.4.2.2 Wetlands [A999]

The conservation objective for this SCI is:

> 'To maintain the Favourable conservation condition of Wetland habitats in Middle Shannon Callows SPA'

The attributes and targets for this species are provided in Table 5-15 below:

Table 5-36. Targets and attributes associated with nominated site-specific conservation objectives for Wetland habitat in Middle Shannon Callows SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Wetland habitat area	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation	**No** – Due to the Proposed Development being located entirely outside of the SPA and this SCI habitats boundary, the Proposed Development does not have the potential to undermine this conservation objective in the context of wetland habitat area.
Wetland habitat quality and functioning	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation	**Yes**– in the absence of mitigation, the Proposed Development has the potential to result in impact on the quality or functioning of habitat within the SPA, as a result of water quality deterioration.

6. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

This section of the NIS assesses the potential effects of the Proposed Development on the identified relevant Qualifying Interests/Special Conservation Interests. This assessment is undertaken in the absence of any mitigation and in respect of the conservation objectives of the European Sites. The Conservation Objectives each of the European Sites assessed were reviewed most recently on 17th June 2026. The Conservation Objectives for these sites are available at the following locations:

- Lough Ree SAC Conservation Objectives: NPWS (2026) Conservation Objectives: Lough Ree SAC 000440. Version 2. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
- River Shannon Callows SAC Conservation Objectives: NPWS (2022) Conservation Objectives: River Shannon Callows SAC 000216. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
- Lough Ree SPA Conservation Objectives: NPWS (2025) Conservation Objectives: Lough Ree SPA 004064. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
- Middle Shannon Callows SPA Conservation Objectives: NPWS (2022) Conservation Objectives: Middle Shannon Callows SPA 004096. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

Following the initial impact assessment, mitigation is prescribed where necessary to avoid adverse effects on the Conservation Objectives of the relevant QIs/SCIs.

6.1 Potential for Direct and Indirect Effects on European Designated Sites

6.1.1 Disturbance of Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] and Wetlands [A999] habitats

The following QI habitats of Lough Ree SAC and SCI supporting wetland habitat associated with Lough Ree SPA were identified as having the potential for loss and/or disturbance effects arising from the Proposed Development, and are discussed in the following sections:

- Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] QI habitat associated with Lough Ree SAC
- Supporting Wetlands [A999] habitat associated with Lough Ree SPA

The marina redevelopment and extension is located within lake habitat within Lough Ree SAC and Lough Ree SPA. This will include in-lake works including installation of 42 no. piles. The 42 no. individual piles will be installed into the lacustrine substrate. The area occupied by each of these piles will be approximately 1 m^2. Therefore, approximately 42 m^2 (0.0042 ha) of lacustrine substrate habitat will be lost within Lough Ree SAC/SPA.

In addition, an area of sheet-piled cofferdam is proposed to be installed along the existing concrete hardstand boundary with the lake at the location of the Proposed Water-sports Pavillion. Cofferdam installation is required as a measure to prevent water quality impacts on Lough Ree during construction works.

No other areas of in-lake works are proposed as part of the Proposed Development.

Lough Ree has a total area of approximately 10,500 ha, while the proposed marina redevelopment and extension phase of the Proposed Development will cover approximately 0.0042 ha of lake habitat, representing approximately 0.00004% of Lough Ree surface area. Cofferdam installation as part of the Proposed Water Sports Pavillion construction will be installed along the existing concrete hardstand and margins of reedbed habitat. As wetland habitat designated for SCI species within Lough Ree encompasses the [3150] lake habitat, both habitats will be considered in the proceeding sections of this report. Loss of lakebed habitat equating to 0.0004% is not considered significant. As such there will be no significant loss of QI lake habitat or supporting habitat for SCI species as part of the Proposed Development. However, temporary disturbance effects to these habitats is considered further below.

The potential for disturbance of the following habitats were identified:

- Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] QI habitat associated with Lough Ree SAC
- Supporting Wetlands [A999] habitat associated with Lough Ree SPA

6.1.1.1 Construction Phase

While the entire lake habitat within Lough Ree is mapped as Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation, aquatic drone transects surveys in the location of the proposed marina extension showed an absence of macrophytes between the first 10–20 m, with disturbed silt, sand and gravel substrates. High levels of siltation and algal coverage *(Cladophora sp.)* were also evident along aquatic drone transects extending from the existing marina, indicating potentially degraded lakebed habitat throughout the location of the proposed marina redevelopment and extension. (see macrophyte survey results in Appendix 4).

The proposed marina redevelopment and extension was specifically designed to avoid loss of fringing reedbed habitat associated with the lake. This was a guiding consideration for the design of the Proposed Development.

Works to the lakebed will be limited to the driving of 42 steel piles, with the attachment of a floating breakwater, floating jetties and gangways connected to the shoreline which will not interact directly with the lakebed or macrophyte communities present there. No in-lake vegetation removal is proposed as part of the marina redevelopment and extension phase of the Proposed Development.

Double-lined silt curtains will be installed around the pile locations prior to the commencement of pile installation, in order to limit siltation impacts on lakebed vegetation in the wider vicinity. Silt curtains will be connected to the floating construction pontoon, with weights used to ensure the silt curtain sits flush to and remains on the lakebed around each of the pre-specified piling locations. Piles will be installed using vibration piling, with this lower-impact piling technique anticipated to help limit sediment disturbance and suspension on the lakebed, preventing additional siltation throughout macrophyte communities which are already subject to high levels of siltation.

Piles will be installed in stages (sequentially one after another using a floating pontoon), with installation of steel piles anticipated to take 4–6 weeks. Floating jetties, breakwaters, gangway and canoe step will be installed following piling, with these components constructed off-site to minimise in-lake works duration. Installation of these floating components will occur via floating pontoon. Mooring anchors of the floating pontoon will be placed precisely on the lakebed and not dragged, to avoid disturbance to lakebed habitat. Pre-defined access routes will be used by the floating pontoon and Movax for the installation of piles and all other floating marina components, to limit the area of lakebed disturbance. Total works duration for the marina redevelopment and extension is anticipated to take approx. 6 months (including the 4–6 weeks of piling), with all invasive in-lake works (piling works) to be undertaken between August–September (months inclusive) during periods of lower lake water levels and outside of ecological sensitive time periods (e.g., core breeding bird season, core wintering bird season).

Marina redevelopment and extension works will be temporary in duration, phased in nature and isolated in area, taking place in the immediate vicinity of the existing marina, around which, lakebed habitat and supporting SCI wetland habitat is already subject to high levels of disturbance.

The cofferdam location has been designed to minimise interaction with lake waters and marginal habitats of Lough Ree. An isolated, linear area of reed bed (approx. 50 m in length) fringing the existing Baysports facility concrete hardstand will be temporarily disturbed during the installation of the sheet piled cofferdam around this area. Linear areas of reedbed fringing the existing hardstand area will naturally reinstate following the completion of construction works, with no permanent net loss of this habitat. No other disturbance of any area of fringing reedbed habitat will occur as a result of the Proposed Development.

6.1.1.2 Operational Phase

The operational phase of the Proposed Development will not result in any additional physical disturbance or loss of Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] QI habitat or SCI supporting Wetlands [A999] habitat within Lough Ree SAC and Lough Ree SPA.

6.1.1.3 Residual Effects Following Mitigation

Following the implementation of mitigation measures and appropriate design of the Proposed Development, there is no potential for residual adverse effects on 'Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] QI habitat associated with Lough Ree SAC

or Supporting Wetlands [A999] habitat associated with Lough Ree SPA with respect to habitat loss or disturbance within Lough Ree SAC or SPA as a result of the Proposed Development.

6.1.2 Disturbance of Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]

In the absence of mitigation, the following QI habitat of Lough Ree SAC was identified as having the potential for temporary disturbance effects arising from the Proposed Development, and is discussed in the following sections:

- Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] associated with Lough Ree SAC.

According to the SSCOs for Lough Ree SAC, Annex I alluvial forest habitat is mapped along the lakeshore at St John's wood, approx. 8.8 km north of the Proposed Development Site. Following dedicated alluvial forest relevé and condition assessment surveys, fragmented areas of Wet willow-alder-ash woodland (WN6) set back from the shoreline of Lough Ree were shown to conform to the habitat *91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*, listed in Annex I of the EU Habitats Directive and included as a QI of Lough Ree.

Incidences of this QI habitat were largely identified outside of the Proposed Development Site, except for fringing areas of this habitat located to the north of the existing Baysports building, which were located partially within the Proposed Development Site. Further information on condition assessment is provided within Appendix 5.

Construction measures to avoid water quality impacts during construction phases of the Proposed Development will include the installation cofferdam around the lake edge in the area of the Water Sports Pavilion. The cofferdam will be comprised of sheet piles and earthen berms. (See Section 4.6.2 of Appendix 1 (Chapter 4 Description)). In the absence of mitigation or appropriate design, construction phase works within the above-described area of the Proposed Development Site may result in loss/ disturbance to Alluvial forest habitat. Therefore, alternative mitigation measures were identified as being required to avoid loss of alluvial forest habitat within this location.

6.1.2.1 Construction Phase

During the design of the Proposed Development, any potential walking trails or paths were designed to avoid areas of alluvial forest habitat.

No removal of NPWS mapped habitat which conformed to Annex I alluvial forest is proposed as part of the Proposed Development. With the exception of cofferdam and earth bund water quality protection measures, no other works associated with the construction phase of the Proposed Development are proposed to take place within areas of habitat identified as conforming to 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae).

Prior to the commencement of works, all areas of habitat which conformed to Annex I Alluvial Forest habitat which are located adjacent and in close proximity to areas of Proposed Development, will be fenced off with Heras fencing (or similar) to prevent access of machinery or unauthorised access from public areas, thus preventing disturbance and direct degradation of this habitat, as well as preventing the introduction of negative indicator species, problematic native species or non-native species into areas of habitat conforming to *91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae).*

Sheet piling works are not proposed in areas of alluvial forest, and instead an earth bund structure will be installed in the vicinity of the alluvial forest. Works will take place outside of the identified root protection zone, as advised by an arboriculturist. In order to avoid disturbance of root structures, the dam structure will be constructed above ground, with an earth bund installed on top of the existing concrete hardstand. The earth bund will connect to the sheet piling at a point outside of the identified areas of alluvial forest. The top-level of the cofferdam will be installed to a minimum of 37.5 mAOD to ensure that the cofferdam is not breached during flooding. As with the cofferdam, the top-level of the bund will be installed to a minimum of 37.5 mAOD to ensure that the bund is not breached during flooding (for further description of these works see Section 8.3.5 of Chapter 8 of the EIAR, included as Appendix 6 of this NIS).

Concrete removal under the earth bund will be undertaken in a sensitive manner using hand tools where practical to ensure no tree roots are damaged. Concrete removal in this area will be conducted in the dry. Around the areas of concrete removal and prior to the commencement of works, a sandbag dam will be instated with an impermeable geomembrane to minimise any potential lake water penetration. Should any water penetrate the sandbag dam, water will be pumped from the area to the surface water drainage system (Section 8.5.3.2 of Chapter 8 of the EIAR; Chapter 8 and its appendices are included as Appendix 6 of this NIS). Weather and flood forecasting will be continuously monitored, with concrete removal in this area taking place only during periods of dry weather and low lake levels. Silt curtains will be installed in front of areas of reed bed within the lake, to the north of the existing Baysports facility.

Similarly, concrete pouring will be carried out during periods of dry weather and low lake levels, using water-tight shuttering and form works. Impermeable geomembrane sealing, sandbags and silt curtains will all be retained for the duration of concrete pouring and will be removed following the completion of works. Should rain be forecasted, or lake levels anticipated to rise, any concrete removal or concrete reinstatement works will cease until rain stops and lake levels return to a suitable level.

Sheet piling and concrete removal works will be undertaken in August-September (inclusive) to avoid the main breeding and winter bird seasons, and to coincide with a time when water levels are at their lowest.

Dewatering will be provided as relevant to specific requirements with dewatered discharge pumped using a pump equipped with a silt bag on the discharge outlet. The pumped water will be discharged to either the existing surface water drainage system or to a suitably vegetated area within the site boundary. Where discharge to a vegetated area is required, the area will be enclosed with silt fencing, as necessary, to prevent sediment-laden runoff and ensure compliance with best practice environmental controls.

6.1.2.2 Operational Phase

The operational phase of the Proposed Development will not result in any additional physical disturbance or loss of 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) habitat within Lough Ree SAC.

No walking paths or board walks are proposed within woodland, with areas of proposed footpaths avoiding these areas of habitat, with these features removed from the project during design to prevent any disturbance of this habitat.

6.1.2.3 Residual Effects Following Mitigation

Following the implementation of mitigation measures, there is no potential for adverse effects on Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] associated with Lough Ree SAC or any other European Designated Site with respect to habitat loss, disturbance or degradation as a result of the Proposed Development. Therefore, no residual adverse impacts on any of

the SSCOs for this QI habitat, including habitat area, habitat distribution, woodland size, woodland structure in terms of cover and canopy height, community diversity and extent, species composition, natural regeneration, dead wood or veteran trees, are not anticipated.

6.1.3 Water Quality Deterioration

Potential pathways for both water quality deterioration effects on the QI and SCI-supporting habitats of Lough Ree SAC and SPA, respectively, arising from the construction and operational phases of the Proposed Development were identified in the absence of best practice construction methodology and mitigation measures.

Additionally, taking a precautionary approach, potential pathways for water quality deterioration of the following downstream European Designated Sites were identified, arising from the construction and operational phases of the Proposed Development:

- River Shannon Callows SAC [000216]
- Middle Shannon Callows SPA [004096]

On a precautionary basis, the below QI and SCI habitats and species of the following EU designated sites all have the potential to be adversely affected by the construction and operational phases of the Proposed Development via water quality deterioration, in the absence of mitigation and best practice design:

- Lough Ree SAC [000440]:
  - Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]
  - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
  - [7230] Alkaline fens
  - Supporting habitat for the QI species otter
- Lough Ree SPA [004064]:
  - A004 Little Grebe *Tachybaptus ruficollis*
  - A038 Whooper Swan *Cygnus cygnus*
  - A050 Wigeon *Anas penelope*
  - A052 Teal *Anas crecca*
  - A053 Mallard *Anas platyrhynchos*
  - A056 Shoveler *Anas clypeata*
  - A061 Tufted Duck *Aythya fuligula*
  - A065 Common Scoter *Melanitta nigra*
  - A067 Goldeneye *Bucephala clangula*
  - A125 Coot *Fulica atra*
  - A140 Golden Plover *Pluvialis apricaria*
  - A142 Lapwing *Vanellus vanellus*
  - A193 Common Tern *Sterna hirundo*
  - A999 Wetlands
- River Shannon Callows SAC [000216]:
  - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
  - Supporting habitat for the QI species otter
- Middle Shannon Callows SPA [004096]:
  - A038 Whooper Swan *Cygnus cygnus*
  - A050 Wigeon *Anas penelope*
  - A140 Golden Plover *Pluvialis apricaria*
  - A142 Lapwing *Vanellus vanellus*
  - A156 Black-tailed Godwit *Limosa limosa*

- A179 Black-headed Gull *Chroicocephalus ridibundus*
- A999 Wetlands

The Proposed Development will not contribute to any alteration of the hydrological regime of Lough Ree SAC or SPA or of any downstream European Designated Sites.

6.1.3.1 Construction

Proposed construction methodologies for the construction phase of the Proposed Development are outlined in Section 2.3, and are assessed below.

Standard best practice environmental control measures have been incorporated in the design of the development and are detailed in the CEMP appended to Chapter 4 of the EIAR which has been submitted as part of this planning application (Chapter 4 and its appendices are included as Appendix 1 of this NIS). These and additional measures have been outlined in the following subsections.

The pathways that would allow potentially adverse impacts to occur were considered in the design of the Proposed Development. The sections below set out the environmental management framework to be adhered to during the Proposed Development and incorporate the mitigating principles to ensure there is no adverse effect on the integrity of European Sites. These include comprehensive detail regarding site set up, pollution prevention including pollution, hydrocarbon management, disturbance limitation, construction monitoring and biosecurity.

The following best practice mitigation and environmental control measures have been incorporated into the Proposed Development.

6.1.3.1.1 *Mitigation*

Environmental Monitoring

- The appointed contactor will be fully briefed by an ecologist as to the sensitive nature of the site and the required mitigation measures.
- The contractor will assign a member of the site staff as the environmental officer with the responsibility for ensuring the environmental measures prescribed in this document are adhered to. Any environmental incidents or non-compliance issues will immediately be reported to the project team.
- In addition, a suitably qualified ecologist will be appointed as an Ecological Clerk of Works (ECoW) to supervise the works undertaken during all construction phases, particularly where works within and adjacent to the Lough Ree are required.

Site Set-up

- All working areas will be fenced off prior to construction using Heras fencing and/or other hard barrier. All works will be undertaken within the confines of the fencing and fencing will restrict access to adjacent habitats.
- A silt fence will be erected between all works areas and Lough Ree, including around areas of cofferdam installation at the site of construction for the Proposed Watersports Pavillion.
    - Silt fencing will protect Lough Ree from runoff of pollutants and siltation during all stages of construction.
    - Silt fencing will comprise wooden posts with geotextile membrane buried approximately 250mm below ground level. This fence will be kept in good repair and will be inspected at the start of each construction day
    - Silt fences will be left in place throughout construction and until any areas of exposed soil have revegetated.

- Two site compounds (a primary compound to the north of Hodson Bay Hotel and a secondary compound within the existing carpark and amenity grassland area to the north of the site) will be established within the site boundary. The primary compound, located further from excavation works and at least 100 m from Lough Ree, will be used for storage of material, machinery, fuel, and workers facilities.

Timing of works

The Proposed Development are temporary and phased in nature, with construction work being conducted in phases. All in-lake works will take place in July–September (months inclusive) during periods of lower lake water levels and outside of ecological sensitive time periods (e.g., breeding bird season), conducted in line with Inland Fisheries Ireland (IFI, 2016) – *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.* Temperature checks will be carried out before and during all instream works, with cessation of instream works if water temperatures reach 20°C.

Weather forecasting

Prior to, and during the course of the Proposed Development, accurate short and long-term rainfall forecast will be obtained from Met Eireann and forecasts will be regularly checked by construction staff. If a heavy rainfall event is forecasted by Met Eireann within the Upper Shannon catchment area that has the potential to result in a flood event at The Proposed Development , the works shall be postponed. All potentially polluting materials and machinery will be removed from the site prior to any flood event.

Works shall not take place at periods of high rainfall and shall be scaled back if or suspended if heavy rain is forecast during excavation works.

- High rainfall' is defined as follows:
  - >10 mm/hr (i.e. high intensity local rainfall events);
  - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day);
  - Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week).

Site inspections to ensure that mitigation measures are in good condition will be carried out by the Environmental Officer after the above listed rainfall events.

Measures to mitigate potential surface water quality deterioration arising from in-lake or lake shoreline construction phases

In the absence of mitigation, works associated with the construction phases of the Proposed Development, including Marina Redevelopment and Extension and construction of the Water Sports Pavillion Building, are identified as having the potential to adversely impact surface water quality of Lough Ree SAC and SPA, as well as the surface water quality downstream European Designated Sites within the ZoI (River Shannon Callows SAC and Middle Shannon Callows SPA). No rivers, streams or significant drainage ditches were identified within the Proposed Development Site.

Cofferdam installation

The combination of a cofferdam and earth bund will be constructed around the boundary of the Proposed Water Sports Pavilion area prior to the commencement of demolition and construction works.

A double-lined, floating silt curtain will be installed around the main works area and in front of reed beds before any near-shore or in-water works commence.

Although a mitigation measure for larger-scale works, cofferdams require in-water percussive and/or vibrative machinery for installation, which is likely to cause disturbance to the lacustrine substrate. This will result in an increase in the suspended sediment load of the water and affect the water quality of Lough Ree.

Non-intrusive or low-intrusive cofferdam systems are encouraged where possible; accordingly, percussive hammers will be minimised, and vibrative hammers will be utilised when installing sheet piles.

Disturbance of the lake substrate will be minimised through careful positioning of plant and adoption of low-impact construction methodologies. Equipment will not be dragged across the lakebed, avoiding additional sediment disturbance. Piles will not be advanced into bedrock, to avoid any potential bridging to the karstified aquifer below the lakebed.

The silt curtain will remain in place after cofferdam installation and for the duration of the construction stage and will only be removed once monitored suspended solids concentrations are observed at baseline levels. The silt curtain will be inspected regularly for defects and adjusted as necessary.

The top-level of the cofferdam will be installed to a minimum of 37.5m OD to ensure that the cofferdam is not breached during flooding. As with the cofferdam, the top-level of the bund will be installed to a minimum of 37.5m OD to ensure that the bund is not breached during flooding (Section 8.3.5 of Chapter 8 of the EIAR, included as Appendix 6 to this NIS).

Installation of the cofferdam will take place using machinery operating from the existing concrete hardstand, with no tracking of machinery into surrounding reedbed or woodland. It is anticipated that sheet piling will take place via vibration piling to limit sedimentation effects and disturbance effects on lake habitat and surrounding reedbed and fringing alluvial forest habitat. Linear areas of reed bed (approx. 50 m in length) fringing the existing Baysports facility concrete hardstand will be temporarily disturbed during the installation of the sheet piled cofferdam. Linear areas of fringing reedbed will naturally reinstate following the completion of construction works, with no permanent net loss of this habitat.

This barrier created by the cofferdam and earth bund is a critical component of the site's water management strategy, serving to prevent uncontrolled runoff and siltation from entering the lake. This measure will provide a water-tight, physical isolation zone between the construction footprint and Lough Ree, as well as sensitive fringing habitats associated with Lough Ree such as reedbeds and riparian woodland with affinities for Annex I alluvial forest. By creating a dry working environment, surface water and any encountered groundwater can be managed effectively within the dry works area, without entering Lough Ree. All water collected behind the barrier will be subject to rigorous treatment and filtration processes to ensure that any discharge back into the environment meets the required water quality standards. These are outlined in the proceeding sections.

As described in Section 6.1.2, concrete removal under the earth bund will be undertaken sensitively using hand tools and conducted in the dry. Around the areas of concrete removal, and prior to the commencement of works, a sandbag dam will be instated with an impermeable geomembrane to minimise any potential lake water penetration. Should any water penetrate the sandbag dam, water will be pumped from the area to the Site drainage network.

Similarly, concrete pouring will be carried out during periods of dry weather and low lake levels, using water-tight shuttering and formwork. Impermeable geomembrane sealing, sandbags and silt curtains will all be retained for the duration of concrete pouring and will be removed following completion of works. Should rain be forecast, or lake levels anticipated to rise, any concrete removal or reinstatement works will cease until rain stops and lake levels return to a suitable level.

Sheet piling and concrete removal works will be undertaken in August and September (inclusive), aligning with IFI guidelines (2016).

The cofferdam will remain in place throughout all construction phases and will not be removed until the Proposed Watersports Pavilion has been fully constructed.

Marina Redevelopment and Extension

A double-lined, floating silt curtain will be installed around the works area before any works commence, encompassing all 42 no. piling locations as a whole. Differing drilling techniques cause differing levels of ground disturbance and pulverised drill spoil; accordingly, percussive hammers will be minimised, and vibrative hammers will be utilised when drilling. Disturbance of the lake substrate will be minimised through careful positioning of plant and adoption of low-impact construction methodologies, and equipment will not be dragged across the lakebed.

Following completion of piling works, disturbed sediments will be allowed to consolidate under natural hydrological conditions. The silt curtain will be inspected regularly for defects and adjusted as necessary, will remain in place for the duration of the works, and will only be removed once monitored suspended solids concentrations are observed at baseline levels.

Full measures to mitigate potential surface water quality deterioration arising from in-lake works associated with the Proposed Marina Redevelopment and Extension are provided in Section 6.1.1.

Full water quality mitigation measures are provided in Section 8.5 of Chapter 8 of the accompanying EIAR (which is included as Appendix 6 to this NIS), as well as in the CEMP, which is included as an appendix of Chapter 4 of the accompanying EIAR (which is included as Appendix 1 to this NIS).

Drainage and surface water discharge routes control

Construction stage activities including landscaping, site levelling, construction activities, service trench construction, and foundation excavation will require earthworks resulting in removal of vegetation cover and excavation of any minor local pockets of organic soil/subsoils and bedrock. The main risk is from sediment-laden surface water runoff from bare soil and soil storage areas during construction works.

Much of the surface water generally percolates to ground or enters the stormwater network through gullies, and this will be allowed to continue during the construction stage.

Management of surface water runoff will be undertaken during construction work as follows:

- Source controls for any sources of surface water runoff will include:
  - Interceptor drains, diversion drains, flume pipes, erosion and velocity control measures such as sandbags, oyster bags filled with gravel, and filter fabrics or similar/equivalent systems
  - Covering work areas, small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas or other similar/equivalent or appropriate measures.
- In-line controls for any sources of surface water runoff will include:
  - Interceptor drains, straw bales, sand or oyster bags, weirs, baffles, and check dams. Flow limiters and sump pumping systems may be employed where needs arise in order to maintain the hydraulic functioning of the existing drain system.
- Treatment systems for any sources of surface water runoff will include:
  - Temporary sumps and attenuation ponds to allow for diffuse discharge to ground.
- Adjacent drainage systems/groundwater need to be protected from sedimentation due to direct surface water runoff generated onsite during the construction phases. To

prevent this from occurring, surface water discharge from site will be managed and controlled within the site boundary for the duration of the construction works until the permanent surface water drainage system of the proposed site is complete. There will be no temporary uncontrolled discharges to surface water from the Proposed Development Site during the construction phase.

- As construction advances there may be a requirement to collect and treat surface water within the site. This will be completed using perimeter filter drains around the construction areas and discharged to the existing oil separator/petrol interceptor, which in turns discharges to Lough Ree. Sumps can be installed periodically along the perimeter filter drains to allow for collection of sediments.
- All works shall be undertaken in accordance with the CIRIA document, 'Control of Water Pollution from Construction Sites, guidance for consultants and contractors'.
- All stockpiles will be damped down or covered, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.
- Silt fencing will be installed around these stockpiles. Material stockpiles will be kept at least 10 m from any manholes and >50 m from lake shore where possible.
- Preventative measures during construction have been incorporated into the Construction and Environmental Management Plan (CEMP, Appendix 4-2 of the EIAR which accompanies this NIS; Appendix 1), which will be updated upon grant of permission and to provide any additional measures required pursuant to planning conditions and agreements with the planning authority.

It should be noted for this site, that a network of stormwater drains already exists, and these will be integrated and enhanced as required and used within the Site drainage system. The main elements of interaction with existing drains will be as follows:

- Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the proposed Site drainage into the existing drainage network where possible. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion.
- Drains running parallel to the existing roads where footway widening is required will be upgraded. Velocity and silt control measures such as check dams, sand bags, oyster bags, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters;
- Silt fences will be emplaced within drains downgradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to watercourses of sand and gravel sized sediment, released from the excavation of subsoils, and entrained in surface water runoff. Inspection and maintenance of these structures during construction stage is critical to their functioning to stated purpose. They will remain in place throughout the entire construction stage. Double silt fences will be emplaced within drains downgradient of all construction areas; and
- Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters.

Dust suppression methods

Airborne dust will be generated from excavation and concrete cutting across the Site. The most efficient method of reducing dust particles is to remove at source. Accordingly, all excavation and cutting sites will require the suppression of dust through the use of water and sprinkler systems.

A double-lined, floating silt curtain will be installed around the main works area (the WSP) before any near-shore or in-water works commence. The silt curtain will only be removed following the completion of the construction stage. This will allow residual dust particles to be captured and settle out within the silt curtained area of Lough Ree, close to the Site.

Excavation spoil may be deposited on road surfaces via the wheels of construction vehicles. To minimise the amount of excavation material leaving the Site in this way, wheel washes will be installed at the exit of each work area and temporary construction compound. Residual material from wheels and airborne dust may still become deposited on the Site road network, potentially impacting the water quality of the stormwater drainage network or allowing for airborne dust to be mobilised from here in dry conditions. Therefore, dust suppression vehicles will be used throughout the year during the construction stage, routinely traversing the Site road network as required; this may be continuous during the summer months.

Measures to mitigate potential surface water or encountered groundwater quality deterioration during groundworks associated with the Construction Phase.

Earth works, including vegetation and tree removal, excavations, stripping of soils or subsoils and stock piling associated with the construction phases of the Proposed Development, are proposed throughout the Proposed Development Site, including:

- Along the existing L2020 access road and footpaths
- Within areas of proposed new car parking construction
- Within areas of public realm update
- Within the temporary areas of Baysports operation
- Demolition of the existing Baysports building and construction of the new Proposed Water Sports Pavillion Building

Earthworks are identified as having the potential to adversely impact both surface water quality of Lough Ree SAC and SPA, as well as the water quality of any potential groundwater encountered during excavation works.

Best practice construction methodology and mitigation measures for the prevention of surface water quality or groundwater quality deterioration of Lough Ree SAC or SPA, as well as any downstream European Designated sites during excavation works are as follows:

- Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall, as well as the prevention of nuisance dust
- Silt fencing will be installed around stockpiles
- Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised
- Excavated spoil will be stockpiled and contained entirely within the confines of the site boundaries.
- Material stockpiles will be kept at least 10 m from Lough Ree, as well as from any manholes.
- Depending on the nature of the excavated material, the stockpiles of excavated materials will be sealed with a digger bucket to reduce the potential for sediment runoff.
- Stock piles will be surrounded with silt fencing to prevent run-off to surface waters (Lough Ree SAC and SPA)
- The minimum number of soil/subsoils and bedrock material should be removed from site. Soil may be reused for landscaping elsewhere on the site. However, any excess construction material shall be removed from the area and sent to an authorized waste recovery facility

- Stockpiles will also be covered with plastic sheeting during high rainfall to prevent runoff.

- In the event of encountering groundwaters during excavation, the excavation will be de-watered using a pump equipped with a silt bag on the discharge outlet. The pumped water will be discharged to either the existing surface water drainage system or to a suitably vegetated area within the site boundary. Where discharge to a vegetated area is required, the area will be enclosed with silt fencing, as necessary, to prevent sediment-laden runoff and ensure compliance with best practice environmental controls
- Trenches will be backfilled as soon as possible after excavation. When practically possible, excavation depths and volumes will be kept to a minimum
- Surfaces will be reinstated as per original specification or to the requirements of the site layout/Local Authority as appropriate.
- Mitigation measures to avoid hydrocarbons encountering groundwaters onsite are outlined in subsequent sections.

Measures to mitigate potential release of hydrocarbons or hazardous materials during Construction Phases).

- No wastewater will be discharged on-site during the construction phase.
- The construction phases of the Proposed Development will adhere to The Construction Industry Research and Information Association (CIRIA) guidance will adhere to the 'Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRlA, 2001).
- If any contaminated material is encountered, it will be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' using the HazWasteOnline application (or similar approved classification method). The material will then be classified as clean, inert, non-hazardous or hazardous in accordance with the EC Council Decision 2003/33/EC, which establishes the criteria for the acceptance of waste at landfills.
- Any waste materials will be disposed of appropriately

Pumping from open pits

It is expected that open excavations for foundation works will have to be temporarily pumped to keep the excavations free of seepage water. Water will enter directly from rainfall and via subsurface seepage when the groundwater table is intersected. In bedrock, groundwater may ingress from fractures and a 'transition zone' that may be present at the contact between subsoils and bedrock.

The quantities to be pumped are not known at this time but may be small considering the low permeability of the bedrock, unless a high groundwater conduit intercepted which is not expected at shallow depths, and the moderate permeability of subsoils across most of the Site. The pumping from excavations will only be needed for short periods of time. For most components, the time frame is measured in days to weeks. The pumped water, which is expected to contain suspended solids, will be pumped to a discharge manhole before rejoining the network of filter drains. The filter drains will be discharged to the existing oil separator/petrol interceptor, which in turns discharges to Lough Ree. Sumps will be installed periodically along the perimeter filter drains to allow for collection of sediments.

The excavation-related water will be discharged periodically, on an as-needed basis. It is not a continuous process, and the volumes pumped will vary from location to location. Discharges from sump pumping can affect the water quality of watercourses, especially with regard to suspended sediments.

Mitigation by Avoidance: An upslope interceptor drain will be established upslope of the excavation area to prevent greenfield runoff into the excavations. Berms will also be used, as necessary.

Mitigation by Design: Dewatering will be provided as relevant to specific requirements with dewatered discharge pumped using a pump equipped with a silt bag on the discharge outlet. As the water passes through the silt bags, the majority of sediment and organic matter is retained by geotextile fabric. The silt bags will be used with natural vegetation filters or sedimats. The sedimats will be secured to the ground surface using stakes/pegs. They will extend to the full width of the outfall to ensure that all water passes through this treatment measure.

The pumped water will be discharged to either the existing stormwater drainage system or to a suitably vegetated area within the Proposed Development Site Boundary. Where discharge to a vegetated area is required, level spreaders will be installed for each outfall, and the area will be enclosed with silt fencing to prevent sediment-laden runoff and ensure compliance with best practice environmental controls. Prior to the outset of works a silt fence will be erected along the lakeshore perimeter of the proposed construction area to prevent run-off to potentially floodable areas and into Lough Ree at the boundaries of the development site.

Measures to mitigate potential release of hydrocarbons or hazardous materials during Construction Phases

Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows:

- The highest standards of site management will be maintained, with the utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during construction;
- An Emergency Response Plan for accidental spillages will be implemented as part of the CEMP. All construction staff will be familiar with the emergency procedures and the use of the relevant equipment;
- A named person will be given the task of overseeing the pollution prevention measures agreed for the Site to ensure that they are operating safely and effectively as well as having responsibility for the implementation of Emergency Procedures for spill control measures.
- All plant and machinery will be serviced before being mobilised to site;
- All site plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed.
- No plant maintenance will be completed on site; any broken-down plant will be removed from site to be fixed;
- Wherever possible during construction, vehicles will be refuelled off-site. This will be the case for regular, road-going vehicles. However, for construction machinery that will be based on-site continuously, a limited amount of fuel will have to be stored on site in appropriately bunded containers.
    - All on-site refuelling of construction machinery will be completed in the dedicated refuelling area within the primary site compound located within the Proposed Development Site, to the north of the Hodson Bay Hotel, for the duration of the construction phases.
        - The dedicated refuelling and fuel storage area will be located a suitable distance from excavation works associated with the construction phases, and over 30 m from Lough Ree, within an area that is not mapped as a flood zone.
        - The refuelling area will be underlain by concrete hard standing
        - Drainage from refuelling areas will be diverted for collection and not discharged into waterbodies without treatment and/or other best management practices.
    - Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away within the primary site compound;

- Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored;
- Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores;
- Ancillary equipment such as hoses and pipes will be contained within the bund;
- Taps, nozzles or valves will be fitted with a lock system;
- Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage;

- Refuelling will be conducted in a controlled manner; vehicles will never be left unattended when refuelling
- Drip-trays will be used for fixed or mobile plant such as pumps, generators and construction machinery in order to retain oil leaks and spills;
- Only designated, trained and competent operatives will be authorised to refuel plant on site;
- Procedures and contingency plans will be set up to deal with emergency accidents or spills;
- An emergency spill kit with oil boom, absorbers etc. will be kept on-site within the refuelling area for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment.
- Any materials with high potential to cause contamination will be stored in the primary construction compound to minimise potential for runoff or pollution to Lough Ree. Any storage of construction materials in the secondary construction compound will only occur if flood risk is minimal. Given the proximity of the secondary construction compound to Lough Ree, materials stored here will also be subject to bespoke pollution mitigation measures as detailed in Section 3.3 of the CEMP appended to Chapter 4 of the accompanying EIAR, which is included as Appendix 1 with this NIS.

Measures to mitigate potential release of cement-based products during Construction Phases

Mitigation measures proposed to avoid release of cement-based products at the site are as follows:

- Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in sealed concrete delivery trucks.
  - The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching.
- When concrete is delivered to Site, only the chute of the delivery truck will be cleaned, using the smallest volume of water necessary, before leaving the Site. Concrete trucks will be washed out fully at the batching plant, where facilities are already in place.
- The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area. Where temporary lined impermeable containment areas are used, such containment areas are typically built using straw bales and lined with an impermeable membrane, examples of which are shown in Plate 9-1
- Concrete wash-out areas will be covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents will be tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste.
- Alternatively, a Siltbuster-type concrete wash unit or equivalent may be used, which will catch solid concrete and filters and hold wash liquid for pH adjustment and further solids separation. The residual liquids and solids can be disposed of off-site at an appropriate waste facility.

The risks of pollution arising from concrete deliveries will be further reduced by the following:

- Concrete trucks will not be washed out on the site but will be directed back to their batching plant for washout.

- Site roads will initially be constructed with a subgrade and compacted with the use of a roller to allow concrete delivery trucks access all areas where the concrete will be needed. No concrete will be transported around the Site in open trailers or dumpers so as to avoid spillage while in transport. All concrete used in the construction of foundations will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete to the location where it is needed.
- The arrangements for concrete deliveries to the Site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout and discussing emergency procedures.
- Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the Site.



Plate 6-1. Examples of concrete washout area

The following procedures will be adopted in advance of and during all concrete pours to minimise the risk of pollution to Lough Ree:

- Weather forecasting will be used to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast.
- Excavations will be sufficiently dewatered before concreting begins, with continued dewatering continues while concrete sets.
- Covers will be used for freshly placed concrete to avoid surface washing away in heavy rain events
- Surplus concrete will be disposed of following completion of a pour in an agreed suitable location, location away from areas of excavation, waterbodies (i.e. Lough Ree) or other sensitive habitats

Potential Groundwater and Surface Water Deterioration from Wastewater Disposal

- Self-contained port-a-loos with an integrated water holding tank will be used at the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works; and
- Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewaters being tankered off site by permitted waste collector to wastewater treatment plants
- No wastewater will be discharged on-site during either the construction or operational phase.

Temporary water sports facilities

The mitigation measures outlined through Sections 6.1.2 will similarly be implemented in the area for temporary water sports facilities operated by Baysports.

6.1.3.2 Operational Phase

6.1.3.2.1 *Site drainage*

The Proposed Development will result in the generation of additional foul and surface water, but due to the project design, described fully in the CEMP appended to Chapter 4 of the accompanying EIAR (Appendix 1 of this NIS), and the connection into the Irish Water Foul network, the operational phase will have no significant effect on Lough Ree SAC and SPA, or on other downstream European Designated Sites.

Areas of the existing Proposed Development Site, such as the existing Baysports water sports facility is already serviced with both foul and storm sewage networks, to which the new proposed water sports pavilion and marina facilities (including potable water and foul water pump-out facilities) will be connected. Location of all existing services and delineating between drainage systems will be conducted prior to the commencement of any works

This is summarised in the subsequent sections below:

Surface Water

With the close proximity of Lough Ree to the Site, the operational stormwater drainage strategy has been developed with water quality as a primary consideration alongside NBS and SuDS hierarchy. The natural hydrological cycle will be emulated as far as reasonably practicable, involving grading of the Site, reducing stormwater runoff entering any conventional drainage systems, and attenuating runoff in proposed SuDs features prior to discharge to Lough Ree.

Where possible, Site catchments will be routed to a nature-based attenuation solution. Select areas of the Proposed Development which cannot be routed in this manner due to the tight levels and falls for gravity outfall to Lough Ree, below ground attenuation measures will not be introduced. All stormwaters will be routed through a hydrocarbon and integrated silt separation interceptor, in line with policy requirements.

The Site stormwater drainage network will be routinely inspected and maintained.

The surface water drainage network for the site will collect runoff from roofs, roads and other hard standing areas. The drainage strategy will follow a SuDS treatment train approach to manage water quality. This will involve intentional grading of the site, reducing surface water runoff entering any conventional drainage systems and attenuating the runoff in proposed SuDS features, prior to discharge to Lough Ree. There are select areas of Proposed Development that cannot be routed to attenuation, and all appropriate areas will be routed through a hydrocarbon interceptor.

The SuDS strategy has been developed with the Landscape Architect to maximise nature-based drainage solutions including the below:

- Permeable/porous surfacing for car parking and shared surface areas.
- Tree pits with structural cells, providing interception, attenuation storage.
- Rain gardens and bioretention systems/depressions, providing surface ponding storage, filtration and passive treatment prior to discharge. Treatment is provided in the form of engineered media to remove certain urban pollutants.
- Integrated filter strips along boundaries and promenade edge.

The Active Travel corridor within the Proposed Development site will retain its existing network and drainage regime, with no material alteration to runoff behaviour from these areas. Existing gullies along the active travel corridor will be relocated to the carriageway to accommodate proposed footway widening.

Foul Water

It is anticipated that no upgrade to the surrounding infrastructure is required. Foul water will be collected from the Water Sports Pavilion buildings (WSP) and marina facilities and will connect to the existing on-site pumping station operated by UE. A pre-connection enquiry has been submitted to Uisce Éireann by CIVIC Engineers to confirm network capacity and the receiving Wastewater Treatment Plant.

Uisce Éireann sewer network records show an existing foul water network near the vicinity of the site, but no public sewers within the Proposed Development Site. The gravity sewer in the vicinity serves the Hodson Bay area, which drains southward toward the N61 National Road to a wastewater treatment plant. An existing Uisce Éireann Wastewater Pump Station is located within the Proposed Development Site. Existing foul water infrastructure for the Hodson Bay Hotel Athlone Spa/Leisure Centre shows a connection to this Wastewater Pump Station.

Foul water generated from the proposed WSP will be collected and discharged to an existing foul water manhole MHF34, which connects to the pumping station operated by Uisce Éireann. A sewerage pump out system is proposed on the marina which will convey via a pressure network to a break chamber at the marina washroom facilities. The foul water from the marina washroom facilities will be collected and is proposed to connect via gravity to an existing foul water manhole, MHF33. A survey of the existing foul water network is required to confirm the location, condition and capacity. The proposed foul water layout plans are included in the Drainage Strategy (Appendix 4-4 of Appendix 1).

6.1.3.3 Residual Effect Following Mitigation

Following the implementation of mitigation measures, there is no potential for adverse effects on any aquatic or aquatically influenced QI habitats or species, including Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150], Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0], Alkaline fens [7230] and supporting habitat for commuting and foraging otter associated with Lough Ree SAC and River Shannon Callows SAC, or Supporting Wetlands [A999] habitat associated with Lough Ree SPA or Middle Shannon Callows SPA, with respect to water quality deterioration in these, or any other downstream European Designated Sites as a result of the Proposed Development.

6.1.4 Disturbance and Displacement of Otter

Whilst, no otter signs, including spraint, prints holts or couches were identified within the Proposed Development Site, otter spraint was found along the shoreline approx. 100 m south of the existing marina, as well as on the island approx. 100 m east of the shoreline at Baysports. Therefore, lake habitat in the vicinity of the Proposed Development supports commuting and foraging habitat for the species. As such, a precautionary approach has been taken with respect to the potential for disturbance or displacement of the species.

Taking a precautionary approach and in the absence of mitigation, potential for temporary, effects on otter were identified in the form of displacement/disturbance effects on foraging and commuting otter during the construction phase of the proposed Development.

The following sections also account for the fact that an otter may migrate into the area prior to the works commencing (given the abundance of available habitat) and set up a holt.

Additionally lighting associated with the construction and operational phases of the Proposed Development have the potential to cause adverse effects in terms of the disturbance and displacement of otter.

6.1.4.1 Mitigation during construction phases

Prior to the commencement of construction works associated with the Proposed Development Works, the following measures will be undertaken for the avoidance of potential impacts on Otter. The following measures are in line with '*Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes* (TII 2006), and all works will be carried out in accordance with these guidelines.

- A pre-commencement survey for otter will be carried out prior to the commencement of any works. No holts or couches were recorded during ecological surveys conducted in March 2025.
    - If evidence of a newly established breeding holt or other otter breeding signs is recorded during pre-commencement surveys, construction works will not proceed until a derogation license is obtained from NPWS.
- A tool-box talk will be given by the onsite ECoW to notify the contractors of the presence of any otter signs and outline the mitigation measures that will be followed to prevent disturbance to the species.
- In order to limit disturbance to commuting and foraging otter, the following measures to control noise and vibration will be implemented:
    - All plant will be maintained in satisfactory condition, and in accordance with manufacturer requirements. Regular maintenance and lubrication of bearings and other moving parts will be undertaken as specified by the manufacturer. Particular attention will be paid to the lubrication of bearings and the integrity of silencers.
    - All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works. Defective silencers will be immediately replaced.
    - Compressors will be of the "sound reduced" models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
    - Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected.
    - Equipment not in active use will be shut down.
    - Use of horns will be prohibited on-site. Communication between operators (e.g. between excavator and dumper operators) will be by visual methods only.

- Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation. Heavy Goods Vehicle (HGV) drivers will be instructed to extend care and courtesy to other road users, and to avoid unnecessary revving of engines.
- All construction plant used on-site will be required to comply with maximum sound power levels set out in Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors, implemented in Ireland by the European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001 (S.I. 632 of 2001), as amended by the European Communities (Noise Emission by Equipment for Use Outdoors) (Amendment) Regulations, 2006 (S.I. 241 of 2006).
- All plant and equipment for use will comply with Statutory Instrument No. 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996" to minimise disturbance via noise emissions.
- Where reasonably practicable, low vibration working methods should be employed. Consideration should be given to use of the most suitable plant, reasonable hours of working for operations which might give rise to perceptible vibrations, and economy and speed of operations.
- Vibration should be controlled at source and the spread of vibration should be limited.
- Where reasonably practicable, plant and/or methods of work causing significant levels of vibration at sensitive premises should be replaced by other less intrusive plant and/or methods of working.
- Off-site fabrication of construction components should be utilised wherever possible to limit vibration levels.
- Best practice vibration control measures will be employed by the contractor, as outlined in the following documents:
    - British Standard BS 7385: 1993: Evaluation and Measurement for Vibration in Buildings Part 2: Guide to Damage Levels from Ground Borne Vibration .
    - British Standard BS 5228: 2009+A1 2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2: Vibration .

Operating machinery will be restricted within the Proposed Construction Areas only. Given the largely crepuscular nature of otter, all work associated with the Proposed Development will be completed during daylight hours.

The proposed construction working hours are as follows:

- 07:00 – 19:00 Monday to Friday.
- 08.00 – 17.00 Saturday
- Closed Sundays and public holidays.
- No works will be conducted at night

Deviation from these times will only be allowed in exceptional circumstances where written approval has been received from the Planning Authority.

Any construction phase lighting associated with the Proposed Development will not shine directly on Lough Ree to ensure disturbance to biodiversity is minimised.

- All lighting should include the following specifications
    - 2700 Kelvins (warm white)

- Directional attachments to prevent upward light spill, as well as to prevent light spill on any sensitive habitats (e.g., light shields in the vicinity of woodland (alluvial or otherwise) and treelines)
- Where possible, lighting should include timing options, either through motion sensor lighting or dimming. Construction phase lighting will only remain on during the outlined hours of construction.
- Light spill from all lighting will fall below 1 lux on hedgerow, woodland or lake habitat (including marina lighting).

- In line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations:
  - Every light needs to be justifiable,
  - Limit the use of light to when it is needed,
  - Direct the light to where it is needed,
  - Reduce the light intensity to the minimum needed,
  - Use light spectra adapted to the environment,
  - When using white light, use sources with a "warm" colour temperature (less than 2700K).'

6.1.4.2 Operational phase

Otters designated to Lough Ree SAC (or other ex-situ otters from downstream European Designated Sites such as River Shannon Callows SAC) within the vicinity of the Proposed Development Site are likely accustomed to high levels of existing disturbance from boating (including fishing, cruisers and tourist ferries), water sports (including those conducted by Baysports), fishing, and swimming with lake-habitat. Additionally, shoreline and terrestrial habitats are subject to high levels of disturbance from walkers, runners, dog walking and traffic from the L2020 access roadway, as well as throughout busy existing carparks throughout the Proposed Development Site. While the southern carpark is used primarily for the Hodson Bay Hotel, the northern existing carpark is also frequently highly utilised, and often includes over-night campers in caravans, campervans or other mobile homes.

Disturbance levels associated with the operational phase of the Proposed Development are anticipated to similarly reflect those of the site in its current operational state.

There will be no loss or interaction with alluvial forest habitat or other lake-shore habitats where areas of sprainting was recorded outside of the Proposed Development Site.

Operational phase lighting has been designed to take into account potential for effects on biodiversity. Lighting design drawings and a description of the proposed lighting design is located with Appendix 3.

Operational phase lighting has been designed with the following principles:

- Luminaires to be of 2700 Kelvin colour temperature or less and with a warm white light,
- The minimum number of luminaires required should be incorporated,
- Light spill to be minimised within the Site and directed away from all sensitive habitats,
- Luminaires to be of 0-degree tilt with no upward light spill.

All external luminaires have been specified with a correlated colour temperature of 2700 K. Warm white light sources emit a lower proportion of short wavelength (blue) light than higher colour temperature sources and as such are a more appropriate choice where lighting is in proximity to ecologically sensitive environments.

The lighting installation has been designed using precision optical distributions that direct light towards the intended task areas while reducing illumination of adjacent vegetation, habitat corridors and boundary features. Rear light shields have been incorporated where required to further reduce spill light beyond the operational areas of the Proposed Development.

A U23 lighting control profile, which progressively reduces light output during periods of reduced activity will be implemented. This approach reduces the duration and intensity of artificial lighting during the hours when many nocturnal and crepuscular species are most active and when SCI species may utilise adjacent lakeside habitats for roosting.

The lighting design of the marina has been designed to reduce light spill, with the majority of light spill located on floating platforms or within berths, and with lux levels falling quickly below 1 lux beyond the marina extension footprint. Use of louvres with a clear or opaque lens, that prevent upward light spill and luminaires with a colour temperature of 2700 Kelvin or lower with a warm-white light will be incorporated within lighting of the marina extension to minimise any potential light spill.

Therefore, no significant impacts arising from the operational phase of the Proposed Development on Otter designated to Lough Ree SAC or other downstream European Designated Sites is anticipated.

6.1.4.3 Residual Effects Following Mitigation

Following the implementation of best practice and preventative mitigation measures, together with measures already incorporated in the project design, there is no potential for residual adverse effects on otter designated under Lough Ree SAC or River Shannon Callows SAC. The Proposed Development will not prevent otter from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

6.1.5 Disturbance, displacement and mortality of SCI Species

In the absence of mitigation, potential pathways exist for the potential mortality, displacement and disturbance of SCI species designated under Lough Ree SPA, and precautionarily, potential pathways for ex-situ disturbance and displacement exist for SCI species designated to the downstream Middle Shannon Callows SPA. Table 4-1 outlines whether an SCI species is listed as a wintering or breeding species of a given SPA.

Full details of SCI bird species observed during breeding and wintering bird surveys is provided in Sections 3.6.2.1 and 3.6.2.2 of this NIS. Section 3.6.2.4 of this report provides findings of the Desk Study (I-WeBS data, NPWS Conservation Objectives and population estimates) and how these compare to survey results gathered for the Proposed Development.

No evidence of breeding activity for breeding SCI species associated with Lough Ree SPA (common tern and common scoter) was observed within the Proposed Development Site. Common tern were observed foraging in, resting within, and flying over the Proposed Development Site. No common scoter were observed within or in the vicinity of the Proposed Development Site. No significant suitable breeding habitat for common tern or common scoter was identified within or in the vicinity of the Proposed Development.

Coot, little grebe, and mallard, all SCI species of Lough Ree SPA, were recorded utilising habitats within and in the vicinity of the site year-round, showing resident populations of these species within the wider area. During the winter season tufted duck was the most numerous SCI species recorded utilising the waters in the vicinity of the Proposed Development, but with larger numbers of tufted duck generally at a significant distance from the Proposed Development Site (approx. 250-700m).

A number of wintering SCI species associated with Lough Ree SPA (coot, little grebe and mallard) have the potential to breed within or adjacent to the Proposed Development Site. Black-headed gull were recorded utilising the Proposed Development Site intermittently throughout the wintering season, with higher numbers utilising the Proposed Development Site during the breeding season surveys. This trend was also noted for mallard. There will be no significant loss of suitable habitat for these species as a result of the Proposed Development.

The highest peak count of any SCI species recorded during the wintering or breeding season was coot at 208 individuals on the 7th of November 2025. While this peak number of coot recorded during wintering surveys represent a significant proportion of the SPA population attributed to Lough Ree SPA (33.6%), these numbers were only recorded on one date, at the start of the wintering season. Furthermore, the majority of coot recorded on this date (182 of 206 birds) were located in a large raft at a significant distance from the Proposed Development Site (approx. 700m). Numbers of coot declined steeply across further surveys with numbers of coot recorded during surveys not exceeding 10 individuals on any given survey from December 2025 to March 2026. The lowest numbers of coot recorded on any survey date was two individuals on the 18th of November 2025.

Section 3.6.2.4 further discusses trends in other SCI species over the course of surveys carried out for the Proposed Development. Tufted duck followed a similar trend to coot, but with higher overall numbers across the majority of survey dates. These species often occurred together in rafts and when in large congregations tended to utilise waters at considerable distance from the Proposed Development Site (approx. 250m – 700m). Little Grebe numbers were generally lower than other bird species, but were recorded within or in close proximity to the Proposed Development Site in all months but December. Little grebe were typically associated with reedbed habitat. Mallard were recorded during all 12 wintering bird surveys with a peak count of 27 and a minimum count of three. Black-headed gull

were not recorded on six of the 12 wintering bird surveys undertaken. All black-headed gulls, excluding two individuals were recorded within January, February, and March of 2026.

To summarise, none of the SCI species designated as breeding species of these SPAs were found to be breeding at the Proposed Development Site. Some of the wintering species of these SPAs were resident at and in the vicinity of the Proposed Development Site during the breeding season and have the potential to utilise the wider area for breeding activity. A number of the wintering species of the above SPAs were found to utilise the Proposed Development Site and surrounding area during the wintering bird season. However, the majority of these were recorded utilising waters at a significant distance from the Proposed Development Site. Small numbers of wintering SCI species utilised the Proposed Development Site and surrounding habitats during the wintering bird season. Habitats adjacent to the Proposed Development Site are considered to support small populations of SCI species associated with the above SPAs year-round.

As previously discussed, the Proposed Development Site is subject to high levels of human related disturbance year-round. Boating, water sports activities, kayaking, swimming, walking, dog-walking, fishing, driving, and camping occur throughout the year resulting in a baseline condition of high human activity, which local bird populations have likely grown accustomed to. While some nesting habitat is available within/ immediately adjacent to the Proposed Development Site, this is also the habitat subject to the most human disturbance, being located adjacent to the existing Baysports buildings or in close proximity to the existing marina. However, considering the nature of construction works within and in close proximity to Lough Ree (Described within Sections 6.1.1 and 6.1.2), the potential for effects on SCI species were identified in the form of displacement/disturbance effects during the construction phase of the Proposed Development. Additionally lighting associated with the construction phases of the Proposed Development has the potential to cause effects in terms of the disturbance and displacement of SCI bird species.

Operational phase usage of the site is predicted to be commensurate with baseline conditions in terms of the types of activity on the site. Appendix 5-1 of Chapter 5 outlines the predicted yearly increase of visitors to the area from all activities associated with the Proposed Development (e.g. boating, use of the Water Sports Pavilion, swimming, walking and general use of public realm). An increase has been predicted from approximately 80,000 visitors per annum (at baseline) to approximately 168,000 visitors per annum (post completion of all phases of the Proposed Development). This constitutes an approximate doubling in usage of the Proposed Development Site by visitors per annum. While the Proposed Development aims to provide a space to be utilised year-round, intensity of usage is likely to remain similar to baseline conditions, with the summer months attracting peak visitor numbers and the winter months attracting the lowest visitor numbers. Similar to baseline conditions, winter activities will also have a lower capacity for disturbance than summer activities within the Proposed Development Site. Areas proposed for development that will concentrate activity (water sports pavilion, marina extension) are already highly disturbed areas within the Proposed Development Site. In addition, from early in the design process, the Proposed Development was designed to avoid developing any areas of sensitive bird habitat (reedbeds, woodland). The northern area of the Proposed Development has been designed to be utilised in a low intensity way, keeping this area of the Proposed Development Site as a comparatively low usage area. There will be no loss of any supporting habitat for SCI species during the operational phase of the Proposed Development. Therefore, considering the above bird survey findings (regarding SCI species usage of the site), as well as the nature of the operational phase of the Proposed Development, there will be no significant increase in disturbance of SCI species that may give rise to adverse effects. Operational phase lighting is considered separately below.

The Proposed Development is a developed area with existing lighting located along the entire length of the Proposed Development Site mainly associated with the road network, carparks, and the existing marina. Some areas (lake habitats adjacent to the Baysports building) currently have no lighting. Although, it is likely that local populations of SCI species are accustomed to disturbance from existing baseline lighting. Operational phase lighting has been incorporated within the design of the Proposed Development. Taking a precautionary approach, though the baseline condition of the Site has existing lighting throughout, in the absence of appropriate biodiversity sensitive design principles, operational

phase lighting has the potential to result in impacts on SCI species which utilise habitats adjacent to the Proposed Development for nighttime roosting or nesting.

6.1.5.1 Construction phase

All reedbed habitat within and in the vicinity of the Proposed Development Site will be retained (excluding minor temporary disturbance to an approx. 50m length of reedbed adjoining the Baysports area hardstand.

All in-lake works including marina extension construction and erection of the cofferdam adjacent to reedbed habitat will take place outside the core breeding season (March – July) and core wintering season (October – March) for waterbirds and will therefore be limited to the months August - September of any given year.

The cofferdam once installed will provide a screening buffer between the construction area and retained reedbed and lake habitat. This will aid in minimising disturbance effects to birds throughout the duration of the Water Sports Pavilion construction phase.

Construction works in the vicinity of sensitive habitats for breeding waterbirds (i.e. reedbeds) will be conducted outside of the breeding bird season (1st March – 31st August, dates inclusive) where possible. If works must be carried out that continue into the breeding bird season, then these works will commence at a minimum in the weeks prior to 1st March. This will allow for existing levels of disturbance arising from construction works commencing prior to the breeding bird season to act as a disturbance buffer to ensure that waterbird species do not build nests within the Proposed Development Site, but prioritise sites within the wider vicinity, of which there are significant suitable areas to the north and south of the Proposed Development. This would be done to prevent nest abandonment by waterbirds.

The proposed construction working hours are as follows:

- 07:00 – 19:00 Monday to Friday.
- 08.00 – 17.00 Saturday
- Closed Sundays and public holidays.
- No works will be conducted at night

These measures will be implemented to prevent disturbance to nighttime roosting SCI waterbirds.

All mitigations outlined above in Section 6.1.4 relating to prevention of disturbance and displacement of otter will be applied for the prevention of disturbance/ displacement of SCI species, including construction phase lighting measures. Therefore, these measures have not been repeated here.

In addition, activities relating to the temporary relocation of Baysports to the North of the Proposed Development during the construction phase of the Water Sports Pavillion will be set back a minimum of 10m from lakeshore woodland habitat and 5m from reedbed habitat. This will be done to ensure no damage or loss of these valuable lakeshore habitats for SCI species, many of which were recorded utilising this Northern area of the Proposed Development year-round.

6.1.5.2 Operational phase

No mitigation measures are required regarding disturbance of SCI species of SPAs within the ZoI arising from general usage of the Proposed Development Site during the operational phase. As outlined above, the operational phase of the Proposed Development is not considered to have the potential to cause a significant increase in disturbance to SCI species or any related potential for adverse effects. In addition, during the design of the Proposed Development, all high-quality supporting habitat for these

species (lakeshore reedbeds and alluvial forest habitat) was retained. There will be no loss of any reedbed or woodland habitat as a result of the Proposed Development during its operational phase.

Operational phase lighting has been designed to take into account potential for effects on biodiversity. The operational lighting plan (Appendix 3 of the NIS) is outlined in Section 6.1.4 and is not repeated in this section.

6.1.5.3 Residual Effects Following Mitigation

Following the implementation of best practice and preventative mitigation measures, together with measures already incorporated in the project design, there is no potential for residual adverse effects on any of the SCI species of Lough Ree SPA or Middle Shannon Callows SPA. The Proposed Development will not prevent any the SCIs of Lough Ree SPA or Middle Shannon Callows SPA from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

6.1.6 Invasive Species

The following aquatic invasive species were identified during ecological surveys of Lough Ree:

- Quagga mussel (First and Third Schedule Invasive)
- Zebra mussel (First and Third Schedule Invasive)
- Nuttall's waterweed (First and Third Schedule Invasive)
- Canadian waterweed (Third Schedule Invasive)
- Starry stonewort

These species are well established within Lough Ree and the Shannon system, and in the absence of any development would continue to proliferate.

Additionally, incidences of the non-scheduled invasive species butterfly bush were identified throughout the Proposed Development Site.

6.1.6.1 Construction

Taking a precautionary approach, in the absence of best practice biosecurity measures, the construction phases of the Proposed Development within Lough Ree have the potential to result in the further spread of invasive species throughout Lough Ree SAC and SPA, as well as the River Shannon Callows SAC and Middle Shannon Callows SPA.

Given the extent of colonisation of invasive aquatic species within Lough Ree, invasive species biosecurity measures and management focuses on containment and control, prevention of further spread and minimisation of impacts on the project works, as opposed to removal or eradication of invasive species. Indeed, invasive species are pervasive throughout Lough Ree and the Upper Shannon Catchment.

6.1.6.1.1 *Mitigation during construction phases*

The following best practice measures will be implemented during the construction phases of the Proposed Development:

- Prior to the commencement of any construction activities, all equipment must be cleaned, disinfected and dried prior to entering the Proposed Development Site.
- A dedicated biosecurity point shall be established within the Proposed Development Site for the disinfection and cleaning of all equipment, plant machinery or vehicles used during construction phases.
    - All machinery and plant, including the floating pontoon boat and Movax, will be subject to Check–Clean–Dry protocol, and inspected regularly:
        - Check: Inspect all equipment for plant material, mud, mussels
        - Clean: Pressure wash with hot water (>60°C where possible)
        - Dry: Allow to dry completely before reuse elsewhere
- A tool-box talk will be given by the onsite ECoW to notify the contractors of the presence of any terrestrial or aquatic invasive species, how to identify invasive species, and the biosecurity measures that will be followed to prevent further spread of invasives.
- Clear signage should be erected around the Proposed Development site to alert and remind all workers of the presence of invasive species and the importance of biosecurity measures.
- During periods of in-lake works, silt curtains and fragment barriers should be used around areas of marina extension, in order to limit the spread of invasive species.
- Where any removal of invasive plant species is necessary, cut-and-collect systems should be used, with deployment of collection booms down-current of the works area.
    - Any removed invasive plant material should be removed from Lough Ree immediately and disposed of at a licensed waste facility.

- Where invasive mussel management is required from infrastructure, boats or machinery, mussels or mussel fragments should be removed mechanically via scraping or pressure washing
- Any removed invasive species should be transported to a licensed waste facility located away from Lough Ree, surface water, groundwater or any drainage pathways.
- Where possible, fixed moorings should be used for the floating pontoon boat and Movax, as opposed to dragging anchors and disturbing sediment and vegetation beds which include invasive species.
- Evidence of cleaning and disinfection of all equipment will be fully logged and recorded, with the designated ECoW ensuring biosecurity compliance on site each day. The Construction Environmental Management Plan (CEMP) will fully outline all biosecurity methods for the cleaning and disinfection of all plant machinery, equipment/tools and PPE.

6.1.6.2 Operation phase

Taking a precautionary approach, in the absence of best practice biosecurity measures, there exists the potential for further spread of the above identified aquatic invasive alien species arising from activities during the operational phase of the Proposed Development. This would result in the spread of invasive species throughout Lough Ree SAC and SPA, River Shannon Callows SAC, and Middle Shannon Callows SPA.

6.1.6.2.1 *Mitigation during Operation*

Given the extent of colonisation of invasive aquatic species within Lough Ree, the objective of operational biosecurity measures is to limit the further spread of invasives throughout Lough Ree and other waterbodies. The operational phase of the Proposed Development will be commensurate with the current baseline in terms of activities and use of the Site. Operational phase biosecurity measures will be in line with national policy for the prevention of spread of invasive species in line with the Recreational Boating and Watercraft Pathway Action Plan 2022-2027.

Biosecurity signage outlining the presence of invasive aquatic species and the mandatory Check–Clean–Dry protocol will be installed at several locations on and around the Proposed Marina Redevelopment and extension, including launching points and mooring areas. This will aid in awareness of the issue of invasive species within the area and provide guidance to the public on how to minimise the spread of invasive alien species.

6.1.6.3 Residual Effects Following Mitigation

Following the implementation of the above mitigation measures, there is no potential for adverse effects on Lough Ree SAC and SPA, Middle Shannon Callows SAC or SPA, or other downstream European Designated Sites in terms of further spread of aquatic invasive species as a result of the Proposed Development.

7. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The potential for residual adverse effects on each of the individual relevant Qualifying Features of the Screened In European Sites following the implementation of mitigation, is assessed in this section of the report.

Based on the above, in view of best scientific knowledge, on the basis of objective information, there is no potential for adverse effect on the identified QIs/SCIs and their associated targets and attributes, or on any European Site. Potential pathways for effect have been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures into the Proposed Development design.

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the project design which are considered in the preceding section, the Proposed Development will not have an adverse effect on the integrity of any European Site.

The Proposed Development will not prevent the QIs/SCIs of European Sites from achieving/maintaining favourable conservation status in the future as defined in Article 1 of the EU Habitats Directive.

A definition of Favourable Conservation Status for habitats is provided below:

'conservation status of a natural habitat means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2; The conservation status of a natural habitat will be taken as 'favourable' when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structures and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable (as defined below).

A definition of Favourable Conservation Status for species is as follows:

'conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2; The conservation status will be taken as 'favourable' when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.'

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the Proposed Development will not adversely affect the Qualifying Interests/Special Conservation Interests associated with any European Site.

8. ASSESSMENT OF CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified in Section 4 of this report. This included a review of online Planning Registers, Development Plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects.

A list of the plans and projects considered is provided in Appendix 7.

8.1 Plans

The following Development Plans have been reviewed and taken into consideration as part of this assessment:

- Roscommon County Council Development Plan 2022-2028
- 4th National Biodiversity Action Plan 2023-2027
- Regional Spatial and Economic Strategy for the Northern and Western Regional Assembly (2020-2032)

A review of the objectives of the Plans relating to European Designated Sites has been carried out and is provided in Appendix 7 of the NIS. No potential for cumulative effects when considered in-combination with the Proposed Development has been identified, and the Proposed Development is in compliance with the relevant objectives of the Plan.

In addition, the Appropriate Assessment carried out for these Plans have been reviewed. The relevant Natura Impact Report (NIR) for the Roscommon County Council Development Plan 2022-2028 is found on the Roscommon County Council website at the following link:

https://www.rosdevplan.ie/roscommon-county-development-plan-2022-2028/

The Appropriate Assessment carried out for the Development Plan has concluded that there is no potential for Residual Adverse Effect as a result of implementation of the Plan. Therefore, there is no potential for cumulative effect as a result of the Proposed Development in-combination with the Plan.

8.2 Projects

Assessment material for this in-combination impact assessment was compiled on the relevant developments within the vicinity of the Proposed Development. The material was gathered through a search of relevant online Planning Registers, reviews of relevant documents, planning application details and planning drawings, and served to identify past and future projects, their activities and their environmental impacts. All relevant projects were considered in relation to the potential for in-combination effects. All relevant data was reviewed (e.g. individual NISs, layouts, drawings etc.) for all relevant projects where available. Projects which were cumulatively assessed are provided in Appendix 7 of this NIS. Large-scale projects, or those of a hydrological nature, are also considered in Section 8.2 below.

The cumulative assessment boundaries considered from an ecological perspective were as following:

- The cumulative assessment boundary for terrestrial ecology included 1 km around the Proposed Development Site
- The cumulative boundary for aquatic receptors and hydrological effects reflect that outlined in Appendix 6 (Developments within the Shannon[Upper]_SC_090 WFD Sub Catchment)
- The cumulative assessment boundary for ornithological receptors includes all of Lough Ree SPA, including a 500 m buffer of Lough Ree shoreline.

The dominant land uses in the area were also considered in the assessment, these included amenity grassland, pastoral agriculture, roads and individual residential developments.

8.2.1 Projects within the Hodson Bay Area

- Permission for development of a sustainable eco-tourism project at Yew Point, Hodson Bay. (Roscommon County Council Planning Ref.: 2360204). The NIS[9] for Yew Point Eco Tourism Village was reviewed as part of this assessment. Potential for adverse effects in the absence of mitigation was identified on the Lough Ree SAC, Lough Ree SPA, River Shannon Callows SAC, River Shannon Callows SPA, and Lough Croan Turlough SPA. These reports identified potential for effects through surface water run-off and percolation of polluting materials through the karsified bedrock underlying the site and disturbance/displacement to otter and SCI species during the construction and operational phases of the development. As such, the potential for cumulative effects with the Proposed Development specifically in relation to aquatic receptors and designated sites were initially identified (construction related impacts on water quality, disturbance to fauna). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for Yew Point Eco Tourism Village, no potential for residual cumulative effects were identified. Furthermore, this development is currently under construction, and as such the construction phases are not likely to overlap.
- Permission for minor amendments to the sustainable eco-tourism project Yew Point, Hodson Bay previously approved under Planning Ref. No. PD/23/6020410. This application is supported by an addendum Natura Impact Statement (NIS) to the original NIS submitted under Ref. No. PD/23/60204 (Roscommon County Council Planning Ref.: 2560020). The addendum NIS for this project identified no further potential for significant likely effects. With the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the addendum NIS and original NIS for Yew Point Eco Tourism Village, no potential for residual cumulative effects were identified.
- Permission for development of recreational facilities at Baysports, Hodson Bay (Roscommon County Council Planning Ref.: 2262)11. The NIS for this project was reviewed as part of this assessment. The NIS for the project identified potential for adverse effects on Lough Ree SAC and Lough Ree SPA. As such the potential for in-combination effects with the Proposed Development specifically in relation Lough Ree SAC/SPA were initially identified (operational phase related impacts on water quality, habitat loss/ fragmentation, disturbance to fauna). However, with the implementation of mitigation measures outlined within this report and the mitigation

[9] https://roscommoncoco.eplanning.ie/iDocsWebDPSS/ViewFiles.aspx?docid=332635&format=djvu

[10] https://roscommoncoco.eplanning.ie/iDocsWebDPSS/ViewFiles.aspx?docid=365785&format=djvu

[11] https://roscommoncoco.eplanning.ie/iDocsWebDPSS/ViewFiles.aspx?docid=298294&format=djvu

measures outlined within the NIS for the development of recreational facilities at Baysports, no potential for residual cumulative effects were identified.

8.2.2 Projects surrounding Lough Ree

- Permission for Lanesborough Outdoor Theatre, a 500-seat outdoor community amphitheatre at Former Council Depot at Commons North Lime Quarry, Lanesborough, Co. Longford (ACP Case Ref.: JP14.318314)12. The NIS for this project was available and so was reviewed as part of this assessment. The NIS for the project identified potential for adverse effects on Lough Ree SAC and Lough Ree SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Development specifically in relation Lough Ree SAC/SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS, and the mitigation measures outlined within the NIS for the Lanesborough Outdoor Theatre, no potential for residual cumulative effects were identified.
- Permission for extension of Lough Ree Yacht Club including the construction of an open-sided boat shelter building, the expansion of internal circulation road within the site and all ancillary works (Westmeath County Council Planning Ref.: 21474)13. The AA Screening for this project was reviewed as part of this assessment. The AA Screening for the project did not identify any potential for likely significant effects on Lough Ree SAC and Lough Ree SPA. As such there is no potential for in-combination effects with the Proposed Development specifically in relation Lough Ree SAC/SPA. With the implementation of mitigation measures outlined within this NIS and the lack of potential for significant effects on the Natura 2000 network as outlined within the AA Screening for the Lough Ree Yacht Club, no potential for residual cumulative effects were identified.
- Permission to construct a fisheries base at Portrun, Co. Roscommon (Roscommon County Council Planning Ref.: 2560258)14. The NIS for this project was available and was reviewed as part of this assessment. The NIS for the project identified potential for effects on Lough Ree SAC and Lough Ree SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Development specifically in relation Lough Ree SAC/SPA were initially identified. However, with the implementation of mitigation measures outlined within this NIS, and the mitigation measures outlined within the NIS for the project, no potential for residual cumulative effects were identified.

8.2.3 Other Large-scale Projects

8.2.3.1 Seven Hills Windfarm (ACP Case Ref: PA20.313750)

This proposed wind farm consists of 20 no. turbines and is approx. 8.7 km from the Proposed Development[15]. The site of the Seven Hills Wind Farm and that of the Proposed Development are not

[12] https://www.pleanala.ie/publicaccess/FurtherInformation/318314/05%20NIS%20(incl%20AASR).pdf?r=210217193014

[13] https://westmeathcoco.eplanning.ie/idocswebdpss/ViewFiles.aspx?docid=177537&format=djvu

[14] https://roscommoncoco.eplanning.ie/iDocsWebDPSS/ViewFiles.aspx?docid=375893&format=djvu

[15] https://www.pleanala.ie/publicaccess/EIAR-NIS/313750/Seven%20Hills%20WF%20SID/Volume%201%20-%20NTS%20and%20EIAR%20Chapters/Ch.6%20-%20Biodiversity%20-%20F%20-%202022.06.03%20-%20190907.pdf?r=061866975728

hydrologically linked. The NIS for the Seven Hills Wind Farm project[16] was reviewed as part of this assessment. These reports identified potential for adverse effects on Ballynamona Bog and Corkip Lough SAC, Killeglan Grassland SAC, Four Roads Turlough SAC, River Shannon Callows SAC, Lough Croan Turlough SPA, River Suck Callows SPA, Four Roads Turlough SPA, Middle Shannon Callows SPA, and Lough Ree SPA. As such the potential for cumulative effects with the Proposed Development were identified. However, with the implementation of mitigation measures outlined within this NIS, and the mitigation measures outlined within the NIS for the Seven Hills Wind Farm, no potential for residual cumulative effects were identified.

8.3 Conclusion of Assessment of Cumulative Effects

Following the detailed assessment provided in the preceding sections, it is concluded that, the Proposed Development will not result in any residual adverse effects on any of European Sites, their integrity or their conservation objectives when considered on its own.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative residual effects was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Development. Taking into consideration the reported residual effects from other plans and projects and the lack of any predicted adverse effects with the current proposal, no residual cumulative effects have been identified with regard to any European Site.

9. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites. It has also assessed the potential for in-combination effects on European site with other plans and projects.

Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction and operation of the Proposed Development does not adversely affect the integrity of European sites.

Therefore, it can be objectively concluded that the Proposed Development, individually or in-combination with other plans or projects, will not adversely affect the integrity of any European Site.

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APPENDIX 1:
CHAPTER 4 OF THE EIAR (INCLUDING CHAPTER 4 APPENDICES)

4. DESCRIPTION OF THE PROPOSED DEVELOPMENT

4.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) describes the Proposed Development and its component parts. This chapter also describes the key features of the environmental controls that will be used within the development during the construction phase and the management of site operations. This description sets the basis against which the EIAR has been carried out.

The Proposed Development being applied for under this current planning application includes for the development of a waterfront park and marina redevelopment measuring approximately 9 hectares (ha) in area. The Proposed Development description for the purpose of this EIAR is outlined below.

4.2 Site Setting

4.2.1 Site Location

The site is located within the townland of Barrymore and is 4 Kilometres (km) to the northwest of Athlone, Co. Roscommon. Irish Transverse Mercator (ITM) coordinates for the centre of the site are X 600814, Y 746366.

4.2.2 Site Description

The Proposed Development site measures approximately 9 ha and currently comprises the existing Waterways Ireland-operated marina facility, the Baysports water sports facility, areas of land currently owned by Roscommon County Council, Athlone Golf Club, the Hodson Bay Hotel, Inland Properties Ltd and other parties as outlined in the Planning Statement, car parking, landscaped public realm areas and an Uisce Éireann pumping station. The site forms part of an established recreational and tourism hub on the shores of Lough Ree. The Proposed Development is located both adjacent to and partially within the Lough Ree Special Area of Conservation (SAC) and the Lough Ree Special Protection Area (SPA).

The various elements of the current site include the following areas. Site photos are included within Appendix 4-1.

Water Sports Operations

Baysports operates out of an existing Roscommon County Council (RCC)-owned water sports building, with surrounding temporary marquee structures and uses an adjacent area for equipment storage. The operations also include an existing jetty structure on the lake.

Marina

The marina area comprises the Waterways Ireland-operated marina facility located within Lough Ree. A hardstanding area and slipway are located beside the marina to allow boat users to enter and exit the water with boats and trailers.

Parking Areas

The site currently provides a total of 353 parking spaces, with the breakdown of parking areas illustrated in Plate 4-1 below. These spaces are shared by visitors to the Hodson Bay Hotel, the marina, Baysports, and other visitors to the area, with no spaces designated specifically for any individual business. The car park surface is macadam.

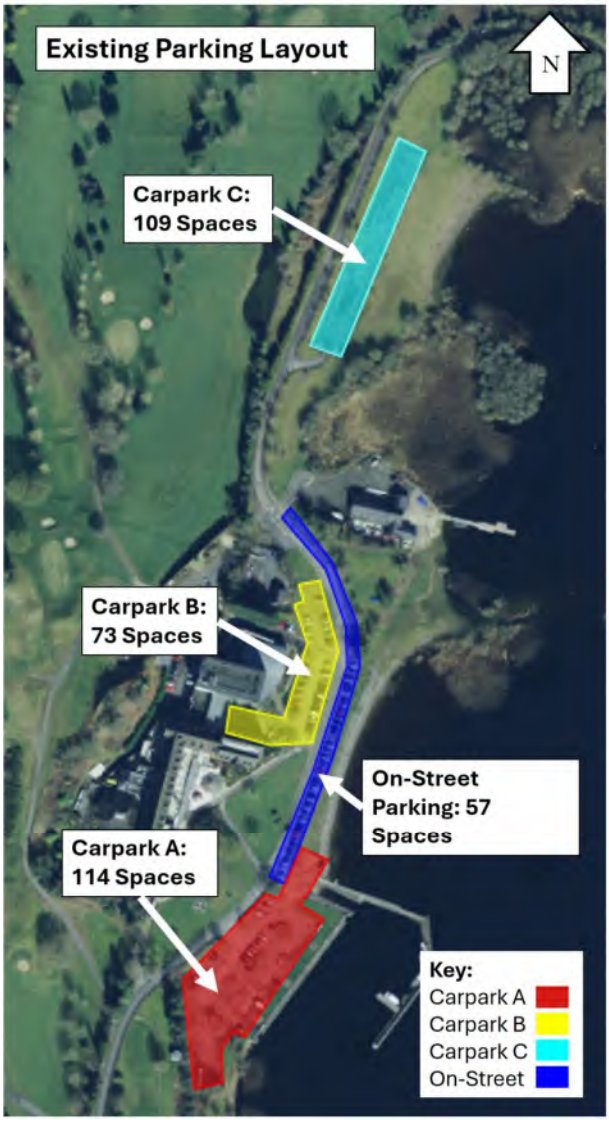


Plate 4-1 Existing Parking Areas at Hodson Bay

Site Access (L2020 Local Road)

The site is accessed via the L2020 Local Road from the N61 National Road which runs in a northwest-southeast direction to the southwest of the site. The N61 National Road travels between Athlone town and Roscommon town. There is a railway crossing on the L2020 Local Road approximately 270m from the junction with the N61 National Road in the south of the site. The existing footway along the L2020 Local Road is narrow & disjointed and does not provide sufficient width to facilitate safe shared use by pedestrians and cyclists accessing the site.

Vegetated Areas and Natural Spaces

The site contains small areas of alluvial forest, located adjacent to and in the vicinity of Proposed Development Site. Alluvial forest habitat is an Annex I habitat of Lough Ree SAC. Reedbed habitat is also located adjacent to and in the vicinity of Proposed Development site. Reedbed and alluvial forest habitat are associated (as fringing habitats) with the eutrophic lake Annex I habitat, which is a Qualifying Interest (QI) habitat of Lough Ree SAC. The entirety of Lough Ree, including areas of lake within the Proposed Development, are considered to conform to eutrophic lake Annex I habitat. The Proposed Development has been designed taking consideration of these ecological sensitivities. Other natural spaces on the site include scattered trees and parkland and amenity grassland in the north of the site near the lake shore, and sections of narrow beach areas along the waterfront. Please refer to Section 6.6.1 of Chapter 6 Biodiversity for full detail on habitats within the Proposed Development site.

4.3 Description of the Proposed Development

This section of the EIAR describes the components of the Proposed Development. Further details regarding Construction Methodologies (Section 4.6) and Construction Management (Section 4.7) are provided subsequently in this chapter.

The Proposed Development will consist of the following:

- **Water Sports Pavilion (WSP) Development:** The demolition of the existing water sports building on site, and temporary relocation of the water sports facility to provide for the construction of a new Water Sports Pavilion;
- **Marina Redevelopment and Extension:** The redevelopment of an existing Waterways operated marina including an upgraded breakwater and jetty to increase marina capacity to approximately 59 berths;
- **Public Realm Upgrades:** Construction of a playground, nature observation space, picnic areas, benches, bicycle storage & service areas, wellness meadow, outdoor changing shelter and events spaces including the development of a continuous promenade pathway along the lakeshore along with secondary connection path;
- **Active Travel and Site Access Improvements:** Alterations and upgrade to the L2020 Local Road to include to provide for a 3m wide shared cycle / pedestrian pathway along the length of the L2020 from the N61 National Road junction to the Hodson Bay Marina; Implementation of traffic calming measures along the L2020 Local Road accessing the site including vertical deflection ramps & raised crossings at key pedestrian crossing locations. Creation of a pedestrian priority environment resulting in the re-location of 57 no. car parking spaces from the lakefront areas to improve landscape and visual context of the site. Alterations to existing car parking & provision of new carparking at Hodson Bay; and
- The Proposed Development includes for all associated ancillary site development infrastructure including site clearance, boundary treatments, associated public lighting, electrical substation, bin storage, hard and soft landscaping, site drainage upgrades, connections to existing utilities to include foul and surface water drainage, water supply, electrical & telecommunications networks. Boundary treatments involve upgrades to the existing golf course boundary safety netting (between 3m to 20m in height) and fencing in sections where the boundary is altered to accommodate the proposed development and maintain public safety.

Planning Drawings HB-RKD-ZZ-ZZ-DR-A-1020 to HB-RKD-ZZ-ZZ-DR-A-1023 provide an overview of the Proposed Development site layout.

4.3.1 Water Sports Pavilion Development

The Proposed Development will include for the demolition of the existing 500m^2 water sports building and the adjacent 40m^2 public toilet facility. The marquees housing the Baysports reception, changing facilities, safety briefing, and café will be dismantled.

The WSP will be designed to incorporate three main buildings and a plaza canopy structure. The WSP will be constructed in the area where the existing water sports building and associated temporary structures are located. In order to mitigate against future flood risk, the new WSP buildings will be constructed at a finished floor level of 38 metres above ordnance datum (mAOD).

- The main WSP building will house the operations for the water sports providers consisting of a briefing/mixed use space, staff canteen, office, changing facilities and toilets with a gross floor area (GFA) of 683m^2 and will extend to a maximum height of 9.3m. The building will also contain a basement which will have a finished floor level of 34.5 mAOD.
- The café building will have a GFA of 171m^2 and will extend to a maximum height of 7.45m. A Variable Refrigerant Flow system and bin store will be located external to the café building.
- The maintenance building will have a GFA of 185m^2 and will extend to a maximum height of 6.26m. The maintenance building will include attic and basement space for storage, maintenance and an engine room. A staff and wash down area will be located external to the maintenance building.
- The plaza area includes a permanent plaza canopy structure and 10 no. temporary marque structures which will be a multifunctional open-air space. The permanent plaza building will cover an area of 323m^2. The temporary marque structures will cover an area of 636m^2.

The 3 no. Water Sports Pavilion buildings and the permanent Plaza Canopy Structure will be modular steel frame structures, or similar, with terracotta-coloured concrete tile cladding on concrete foundations. The three primary buildings will sit on a concrete plinth.

The temporary marquees will be constructed with timber-clad walls and tensile canvas roofs, or similar. The demountable marquees will be lightweight steel and fabric. They will be mounted on the concrete plaza to reinforced concrete foundations.

It is also proposed to install 45 no. solar panels on the WSP building and another 9 no. on the cafe building. The proposed panels will be erected at a 30-degree angle and orientated south facing to maximise generation. Maintenance requirement for the panels will be minor; the main requirement for maintaining panels consists of periodic cleaning of the panels.

4.3.2 Marina Redevelopment and Extension

The Proposed Development will include for the redevelopment of the existing Waterways Ireland-operated marina at Hodson Bay comprising an extension to the existing breakwater and the creation of a new jetty extension for boats to berth.

The existing marina structure will remain in place. A gangway will connect the existing breakwater structure to a new extended breakwater. The breakwater extension will be a floating breakwater of up to 6m in width and it will be secured in place by guided vertical piles. The new jetty will be comprised of a series of floating pontoons which will also be secured in place by guided vertical piles. A canoe step launch platform will be included in the new jetty design. The marina extension will have a footprint of approximately 130m x 110m in the lake. The length of the floating breakwater will total approximately 218m.

The new floating breakwater will comprise of a series of concrete platforms finished with timber or plastic and connected together by stainless steel wire rope and rubber buffers. The new jetty will be comprised of a series of steel and concrete floating pontoons likely finished in glass fibre reinforced concrete or glass fibre reinforced plastic. The vertical piles which will secure the floating breakwater and jetty in place will be made of steel.

The marina redevelopment and extension will provide approximately 29 no. additional boat berths, ensuring that the extended marina will be capable of hosting approximately 59 no. berths for cruisers and visiting watercraft. The redevelopment will also include for the provision of services for boat users including potable water, electricity and foul water pump-out facilities. A new marina service block building covering an area of 74m^2 will be constructed as part of the Proposed Development adjacent to the marina which will provide shower and toilet facilities for marina users. The marina service block building will be constructed with concrete and steel and finished with concrete terracotta tiles similar to the Water Sports Pavilion buildings.

The marina will be an integral part of the public realm and promenade design, and it will have adequate provision for drop off and short-term parking alongside the jetty.

4.3.3 Public Realm Upgrades

The Public Realm Upgrades will provide a flexible public space at the centre of the site, providing a space for programmed activity and events while serving as a functional amenity for marina activities. Public picnic areas, play areas, and benches and rest areas at viewpoints will also be incorporated into the design.

The upgrades along the lake shore aim to enhance the visitor experience through the development of a continuous promenade along the lakeshore. This element will also focus on the improvement and redevelopment of the shoreline and providing public access to the River Shannon, creating a pedestrian priority environment.

Amenities

The Public Realm Upgrades will include for the construction of a playground, nature observation space, picnic areas, benches, wellness meadow, changing shelter and events space including the development of a continuous promenade along the lakeshore.

The playground which will measure approximately 400m^2, will be located adjacent to the WSP and will be constructed largely with wood with surfacing using plastic Ethylene Propylene Diene Monomer (EPDM).

The swimming changing shelter will be a precast concrete structure and will cover an area of approximately 19m^2. The shelter will be constructed in the north of the Proposed Development site.

Landscaping

A key feature of the Public Realm Upgrades will be the provision of extensive natural landscaping to ensure that the Proposed Development assimilates with the natural environment. The Public Realm Upgrades will incorporate extensive planting of native trees and shrubs throughout the site.

The Proposed Development will result in the removal of approximately 239 no. trees throughout the site. A total of 240 trees will be planted as part of the replanting scheme, with all trees replanted being native species. Details of the tree replanting scheme across the site are found in Planning Drawing HBWP-ZZ-ZZ-DR-OKR-LA-001201.

The site landscaping will also include Sustainable Drainage Systems (SuDS) planting zones, integrated planter boxes with public seating, open grassed areas including the wellness meadow in the north of the site and green lake shore areas.

The Public Realm Upgrades will include a variety of finishes for pedestrian areas including promenade areas, steps and ramps finished in high quality concrete. The promenade along the marina quay will be constructed with timber decking. Sections of the Public Realm will include resin bound and self-bound gravel footpaths. Public Realm seating will include high quality concrete benches and timber insert benches.

Lighting

The Public Realm Upgrades will include a lighting scheme which is designed ensure visitor safety and to minimise disturbance to wildlife. Key principles in the lighting design included minimising disturbance to bats and preventing lighting from shining directly on to the lake. The existing lighting infrastructure on the site will be removed and disposed of in appropriate waste facilities.

Site lighting has been designed to the following principles:

- The lighting scheme includes the use of warm white 2700 Kelvin light emitting diode (LED) luminaires, precision optical control, shielding where required, careful luminaire orientation and an intelligent lighting control strategy that progressively reduces light output during periods of reduced site activity. Collectively, these measures seek to minimise obtrusive light, reduce sky glow and limit unnecessary illumination of surrounding habitats.
- The external lighting has been designed around the principle of providing the right level of light, in the right location, for the right duration. Lighting has been designed to ensure a minimum overall uniformity to the areas where illumination is required in principal circulation routes and external public spaces to support safe movement, accessibility and operational requirements, whilst avoiding excessive illumination or ornamental lighting that would increase disturbance through the lighting management system. This operating philosophy contributes to a reduction in operational energy consumption while also reducing the duration and intensity of artificial lighting during periods when ecological activity is generally greatest.
- The proposed lighting design has been prepared using recognised lighting design software together with manufacturer-verified photometric data and has been developed in accordance with the relevant industry standards and guidance applicable to external lighting installations.

4.3.4 Active Travel Site Access Improvements

With the Active Travel site access improvements, RCC aims to prioritise sustainability and to enable a safe environment for non-motorised visitors to the area. The Proposed Development includes for a 3m wide shared cycle / pedestrian pathway along the length of the L2020 Local Road from the N61 National Road junction to the Hodson Bay Marina. The upgrades to the L2020 Local Road and pathway will involve two elements.

1. Involves a widening of c. 900m of the existing footpath along the western side of the L2020 Local Road from the junction with the N61 National Road and the pedestrian crossing at the Athlone Golf Club lands. The L2020 Local Road will be narrowed to between 5.5m and 6m to facilitate space for the 3m wide pathway in this section.
2. The Active Travel corridor then crosses the L2020 Local Road and the existing footpath along the eastern side of the L2020 Local Road will be widened along a c. 415m section terminating at the Hodson Bay Marina. The existing carriageway widths in this section will be retained, and land acquisition from Athlone Golf Club is required to widen the pathway to 3m.

The Proposed Development will also see the implementation of traffic calming measures along the L2020 Local Road accessing the site including c. 6 no. speed humps at c. 150m spacing and 7 no. raised crossings at key pedestrian crossing locations. The creation of a pedestrian priority environment will include the re-location of car parking and creation of a low-speed driving environment around the waterfront area to prioritise safety.

4.3.5 Extension of Existing Parking Provision

The Proposed Development will allow for an increase in the overall parking provision from 353 to 504 no. spaces. In addition to increasing capacity, the parking layout has been redesigned to improve the operation and appearance of the waterfront area by relocating existing on-street parking away from the immediate lakeshore, thereby enhancing the visual amenity, landscape setting and pedestrian environment. The layout also seeks to improve the distribution of parking demand across the site through enhanced wayfinding and signage, encouraging greater utilisation of the northern car park, particularly by visitors accessing the water sports facilities and café. This will improve the overall efficiency of the parking provision and reduce vehicle congestion within the central waterfront area.

The parking provision also includes:

- 30 electric vehicle (EV) charging spaces;
- 28 accessible parking spaces;
- Three dedicated bus parking bays within the northern car park;
- Three dedicated boat trailer parking bays adjacent to the marina.

4.3.6 Site Drainage Design

This section provides details of the site drainage for the Proposed Development with regard to surface water drainage and foul water management. Further details are also provided in the Drainage Strategy Report prepared by CIVIC Engineers which is included as Appendix 4-4.

Surface Water

The Proposed Development site is located in close proximity to Lough Ree, the surface water drainage strategy has been developed with water quality as a primary consideration alongside Nature Based Solutions (NBS) and SuDS. The surface water drainage network for the site will collect runoff from roofs, roads and other hard standing areas. The drainage strategy will follow a SuDS treatment train approach to manage water quality. This will involve intentional grading of the site, reducing surface water runoff entering any conventional drainage systems and attenuating the runoff in proposed SuDS features, prior to discharge to Lough Ree. There are select areas of Proposed Development that cannot be routed to attenuation. All surface water runoff from car parking and other vehicular areas will be routed through hydrocarbon interceptors combined with a full retention silt/suspended solids trap prior to discharge.

The SuDS strategy has been developed with the Landscape Architect to maximise nature-based drainage solutions including the below:

- Permeable/porous surfacing for car parking and shared surface areas.
- Tree pits with structural cells, providing interception, attenuation storage.
- Rain gardens and bioretention systems/depressions, providing surface ponding storage, filtration and passive treatment prior to discharge. Treatment is provided in the form of engineered media to remove certain urban pollutants.
- Integrated filter strips along boundaries and promenade edge.

The Active Travel corridor within the Proposed Development site will retain its existing network and drainage regime, with no material alteration to runoff behaviour from these areas. Existing gullies

along the active travel corridor will be relocated to the carriageway to accommodate proposed footway widening.

Foul Water

A pre-connection inquiry has been submitted to Uisce Éireann on June 5th, 2026, to confirm capacity for the Uisce Éireann infrastructure to accept discharge from the site. The application reference number is CDS26004773.

Uisce Éireann sewer network records show an existing foul water network near the vicinity of the site, but no public sewers within the site boundary. The gravity sewer in the vicinity serves the Hodson Bay area, which drains southward toward the N61 National Road to a wastewater treatment plant. An existing Uisce Éireann Wastewater Pump Station is located within the site boundary. Existing foul water infrastructure for the Hodson Bay Hotel Athlone Spa/Leisure Centre shows a connection to this Wastewater Pump Station.

Foul water generated from the proposed WSP will be collected and discharged to an existing foul water manhole MHF34, which connects to the pumping station operated by Uisce Éireann. A sewerage pump out system is proposed on the marina which will convey via a pressure network to a break chamber at the marina washroom facilities. The foul water from the marina washroom facilities will be collected and is proposed to connect to an existing foul water manhole, MHF33. A survey of the existing foul water network is required to confirm the location, condition and capacity. The proposed foul water layout plans are included in the Drainage Strategy (Appendix 4-4 of this EIAR).

4.3.7 Electrical Substation, Generator and Control Building

It is proposed to construct an ESB substation to accommodate the Proposed Development. The footprint of the proposed ESB substation, which includes an MV switchroom and customer switchroom measures approximately 54m^2. The works will consist of the construction of a ESB substation, all associated electrical plant and apparatus, underground cabling and all ancillary works. The construction and electrical components of the substation will be to ESB specifications.

4.3.8 Other Ancillary Works

Golf Course Boundary Treatments

Upgrades to sections of the Athlone Golf Club golf course boundary will be required as part of the Proposed Development. The Active Travel site access improvements will see a 415m section of the L2020 Local Road widened involving a land acquisition from Athlone Golf Club. This will result in the removal of the existing boundary ball stop safety netting on the eastern side of this section of the L2020 Local Road and the construction of new ball stop safety netting. The extension and relocation of parking provision on the site will also result in the alteration of the existing golf course boundary in the north of the Proposed Development site.

The Proposed Development will include for the construction of the following ball stop netting and fencing along the site boundary with Athlone Golf Club:

- 272m of 3m-high ball stop netting
- 449m of 10m-high ball stop netting
- 158m of 20m-high ball stop netting

1.5m- high PVC post and rail fencing will be erected along other areas of the Proposed Development site boundary with the Athlone Golf Club grounds where the boundary will be moved.

4.4 Construction Programme

4.4.1 Construction Phasing and Timing

It is estimated that the construction phase of the Proposed Development will take approximately 30 months to complete. In the interest of minimising disturbance to breeding birds, construction will not commence during the bird breeding season which runs from the 1st of March to the 31st of August inclusive.

The construction schedule for the project will primarily depend on the availability of financial resources, with the assumption that full funding will be secured for the timeframe specified by RCC. RCC and Waterways Ireland will require funding from a variety of funding sources for construction of various elements of the Proposed Development and therefore completion of the construction phase may extend beyond 30 months. Given the sensitive nature of the site and its importance as a tourist attraction, it is expected that the construction works will be undertaken in a phased approach.

The construction phase can be divided into specific work elements:

1. *Upgrade and extension of existing parking spaces and site roads– 9 months;*
2. *Pedestrian Active Travel corridor enhancements – 5 months;*
3. *Demolition of existing water sports building and construction of new Water Sports Pavilion Buildings - 21 months;*
4. *Construction of Marina Redevelopment and Extension – 6 months;*
5. *Public Realm upgrades including landscaping – 9 months.*

Note that overlap is expected between the commencement of certain phases.

Construction operations will be confined to the period 0700—1900 h Monday-Friday and 0800-1700 h Saturday.

4.4.2 Construction Sequencing

The construction phase for the Proposed Development can be broken down into two main phases, 1) enabling works, and 2) construction works. The main task items under each of the two phases are outlined below.

Enabling Works (including demolition of existing structures)

- Ensure that all pre-construction environmental measures are implemented/conducted e.g. implement Archaeological recovery works that may be needed, surface water protection measures (including installation of cofferdam and silt fencing) or any specific pre-construction planning conditions;
- Clear and hardcore areas for temporary construction compounds and site offices. Install same;
- Provide bunded area for oil tanks for refuelling;
- Set up the construction site enclosures. Protective hoarding will be erected around the perimeter;
- Removal of trees and vegetation in areas for construction. This will be carried out outside of breeding bird season from March 1st to August 31st inclusive;
- The demolition of the existing building used by Baysports and the adjacent toilet block building will be undertaken. Temporary structures such as existing marquees on site will also be removed;
- Commence site clearance and topsoil stripping;
- Regrade to foundation and road formation levels;

- Installation of utilities and services;
- The proposed surface water drainage network will be installed. Further information can be found in Section 4.3.6.
- The proposed foul water collection system will be installed. Further information can be found in Section 4.3.6.

Construction Works

- Construct road and footpath upgrades
- Construct parking areas. Removal of waterfront parking spaces, realignment of Marina car park, extension of northern car park;
- Lay foundations;
- Construction of Water Sports Pavilion buildings;
- Construction of Marina extension and Marina services block building;
- Construction of swimming changing shelter;
- Connection to public services – public water supply, sewerage system and electricity network;
- Landscaping and Public Realm upgrade areas completed including installation of lighting scheme;
- Complete all site finishes; and
- Completion of any testing and commission services within the development.

The phasing and scheduling of the main construction task items are outlined in Figure 4-1 below, where an indicative timeline for construction works has been shown. This timeline may be subject to review and changes following the receipt of planning permission.

			Year 1		Year 2				Year 3			
ID	Task Name	Task Description	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Health and Safety	Ongoing health, safety, environmental and quality management throughout construction	■	■	■	■	■	■	■	■	■	■
2	Site Compounds	Establishment of contractor compounds, welfare facilities, temporary services, site access and security measures	■									
3	Enabling Works and Site Preparation	Demolition, site clearance, vegetation removal, utility diversions, earthworks, and preparation for construction activities	■	■								
4	Pedestrian Active Travel Works	Footway widening, signage, and associated works for active travel route along L2020		■	■							
5	Drainage and Utilities	Installation of drainage networks, utility services, ducting and service connections.		■	■							
6	Building Foundations and Substructure	Construction of foundations, retaining structures and associated below-ground works for the pavilion.		■	■							
7	Water Sports Pavilion	Construction of Water Sports Pavilion buildings, building frames, cladding, glazing			■	■	■	■	■			
8	Marina Extension	In-water piling works and installation of breakwater and pontoons strictly carried out between July–September					■	■				
9	Car Parks and Site Roads	Construction of car parking areas, site roads, traffic calming measures, drainage, lighting and associated infrastructure.							■	■	■	
11	Public Realm and Landscaping	Site reinstatement, landscaping, lighting and tree planting, public realm installations constructed								■	■	■
12	Commissioning and Testing	Preparation for Operational Readiness									■	■

Figure 4-1 Hodson Bay Waterfront Redevelopment Indicative Construction Timeline

4.4.3 Construction Phase Monitoring and Oversight

A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development and is included in Appendix 4-2 of this EIAR. The CEMP includes details of waste management and outlines clearly the mitigation measures and monitoring proposals that are required to be adhered to in order to complete the works in an appropriate manner. In the event that planning permission is granted for the Proposed Development, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for approval.

Routine inspections of construction activities will be carried out on a daily and weekly basis by the Senior Project Manager, Senior Engineers and Foremen to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place. Environmental inspections will ensure that the works are undertaken in compliance with this CEMP and all other planning application documents. Only suitably trained staff will undertake environmental site inspections.

4.5 Site Preparation

4.5.1 Hoarding

Hoarding will be installed around the temporary construction compound. During the various phases of construction, the construction site works areas will also be enclosed with hoarding, details of which are to be agreed with RCC. This will be comprised of Heras fencing or hoarding panels and will be a maximum of 2.4m in height including supports and appropriate anchoring (Designed by Temporary Works Engineer). Site hoarding will include external lighting, and Health and Safety warnings at appropriate intervals. and will be maintained and kept clean for the duration of the project. Any temporary lighting will be directed away from Lough Ree to minimise disturbance on wildlife. Where deemed necessary by the Main Contractor, additional security measures such as routine security patrols and/or CCTV systems may be implemented to further enhance site security.

4.5.2 Site Compound and Facilities

Site staff facilities will be provided including suitable washing and dry room facilities for construction staff, canteen, sanitary facilities, first aid room, office accommodation etc. Access to the compound will be security controlled and all site visitors will be required to sign in on arrival and sign out on departure. The compound will be constructed using a clean permeable stone finish and will be enclosed with hoarding/fencing. Any wastewater will be removed by vacuum tanker using an authorized waste collector.

The primary construction compound will be located within the Proposed Development site, to the north of the Hodson Bay Hotel, for the duration of the construction phase. A secondary construction compound (also located within the Proposed Development site) will also be used at times as works progress and while the primary construction compound is set up.

4.5.3 Pedestrian and Cyclist Safety

At various stages during construction phase different areas of the Proposed Development site will be enclosed as construction sites. When vehicles are entering or leaving the construction site, these movements will be supervised by road marshals. The construction site gates will be kept closed when not in use and monitored by security. Traffic cones and set-back signage will be put in place to warn and safely direct pedestrians and cyclists around obstructions. A network of footpaths throughout the

Proposed Development will provide a high rate of accessibility to the various visitor facilities within the area.

4.5.4 Proposed Hours in which Vehicles will Arrive and Depart

Working hours will be strictly in accordance with the granted planning conditions with no works on Sundays or Bank Holidays. If work is required outside of these hours, written approval will be sought by the contractor from the Local Authority (RCC).

In general, the hours in which vehicles will arrive and depart will coincide with the expected site working hours of 0700—1900 h Monday-Friday and 0800-1700 h Saturday. The construction phase of the Proposed Development is expected to last approximately 30 months in total, and construction of the Proposed Development will proceed in a sequential manner with some overlap expected between construction phases.

4.5.5 Access Arrangements for Vehicles

The access arrangements will be as specified in the statutory publications “Traffic Management Guidelines” manual and the “Traffic Signs Manual” and as agreed with RCC. A Traffic and Transportation Assessment has been prepared by CIVIC Engineers for the Proposed Development.

All deliveries and vehicles into site will access the site from the L2020 Local Road. The location of the construction entrance and access will be regularly reviewed during the construction to ensure that the pedestrian and vehicular access points are located and maintained appropriately.

4.5.6 Vehicles and Plant

It is anticipated that there will be numerous types of vehicles and machinery used for the construction of the Proposed Development and to bring material to and from the site. The site equipment to be used would be at the discretion of the appointed construction contractor. This is expected to include the following equipment:

- Skip lorries
- Ready mix concrete lorries
- Tracked 360-degree excavator
- Kango/demolition hammer
- Flatbed delivery vehicles for the delivery of various materials
- Vibrating roller
- Cranes
- Low loader
- Loadall / Manitu
- Hydraulic lifting equipment
- Cement mixer
- Drilling & cutting equipment
- Welding equipment
- Portable hand tools 110V
- Pumps for de-watering
- Generators
- Dumper truck
- Road paver
- Bitumen sprayer
- Mini piling rig
- Con saws

- Road sweeper
- Bulldozers
- Mobile Elevating Work Platforms (MEWPs)
- Air compressor units
- Pressure washers.
- Waterways Ireland Coill an Eo and Inis Muilinn workboats
- Pontoon with 36t excavator
- Movax hydraulic piling hammer
- Pioneer workboats.

4.5.7 Parking and Loading Arrangements

A "Just in Time" approach will be implemented for the delivery of particular building materials such as concrete formwork and large structural steels. The locations for the storage of materials will be within the site boundary, primarily within the primary construction compound. The secondary construction compound will also be used to store materials if required. Any materials with high potential to cause contamination will be stored in the primary construction compound to minimise potential for runoff or pollution to Lough Ree. Any storage of construction materials in the secondary construction compound will only occur if flood risk is minimal.

It is proposed to provide on-site car parking spaces within the site boundary for workers during the construction phase.

4.5.8 Temporary Water Sports Facilities

During the construction phase of the Proposed Development, a temporary water sports facility (Baysports) will be provided within the development site to ensure continuity of water sports activities and services throughout the construction works. The space available for the temporary water sports facilities covers an area of 3,510m^2 and a minimum buffer of 10m will be retained between temporary structures and both the lake shore and nearby alluvial woodland habitat to ensure there are no adverse effects on Lough Ree SAC/SPA during this time.

The temporary site will comprise the following elements:

- Marquees to provide temporary indoor space for equipment storage, changing facilities, and operational use;
- Perimeter fencing to secure the temporary compound and separate it from the active construction area;
- Access points to facilitate safe pedestrian and operational access to and from the temporary facility;
- A water access route to maintain safe and functional access to the water for water sports activities and craft launching during the construction period;
- A relocated footway, temporarily repositioned to maintain safe pedestrian connectivity and permeability around the site during construction, in place of the existing route which will be affected by the works.

To support the operational needs of the temporary facility, portable toilets and shower units will also be provided on site for the duration of the construction phase.

Temporary water and electrical connections to serve the Baysports facility will be required, and the specific details, capacity, and location of these connections will be subject to confirmation with Uisce Éireann (UÉ) and ESB Networks at post-planning / pre-construction stage. It is intended that these services will be provided in agreement with the relevant statutory undertakers to ensure the temporary facility can operate safely and effectively throughout the construction period. There will be minor excavations required to connect to the existing water supply network. These works will be undertaken in accordance with the methodologies outlined in Section 4.6.12.

Upon completion of the construction works, the temporary facility, including marquees, fencing, and associated temporary infrastructure, will be removed, and the site reinstated in accordance with the permanent scheme design.

4.6 Construction Methodologies

This section describes the construction methodologies that will be used for the Proposed Development. Further details are also provided in the CEMP included as Appendix 4-2 of this EIAR.

4.6.1 General Construction Measures

Communication with the public, local residents and businesses adjacent to the development will be an important responsibility of the Senior Project Manager and delegated persons. All parties will be always kept up to date and informed both shortly prior to, and during, the construction phase.

A Construction Traffic Management Plan (CTMP) will be issued to RCC for approval prior to works commencing on site. The approved CTMP and any revisions thereto will be set up and implemented on site. All necessary signage will be erected in the weeks prior to any works commencing along and on adjacent roads to the Proposed Development giving advance warning to traffic, pedestrians / members of the public. Every effort will be made to minimise the impact of the above works on local residences and traffic. A CTMP is included as Appendix 4-4 of this EIAR.

- All personnel will be inducted and made familiar with Risk Assessments / Method Statements (RAMS) and TMPs.
- All site-specific safety rules will be adhered to.
- All plant operators will have appropriate Construction Skills Certification Scheme (CSCS) training.
- All personnel will have SOLAS Safe Pass training
- Fire extinguishers and first aid supplies will be available in the work area.
- All adjacent roadways will be maintained in clean condition at all times.
- Helmets, high visibility clothing and safety footwear will be worn at all times.
- Secure access gates to be used to prevent unauthorized access to the site
- Competent foremen will be on site at all times.

4.6.2 Cofferdam Installation

Mitigation measures to avoid water quality impacts during construction phases will include the installation of sheet piled cofferdam around the lake edge following the boundary of the existing concrete hardstand at the Baysports facility.

However, to avoid any impacts on alluvial woodland, alternative water quality protection solutions are required in this area. Sheet piling works are not proposed in areas of alluvial woodland, and instead an earth bund structure will be installed in the vicinity of the alluvial woodland. Works will take place outside of the identified root protection zone, as advised by an arboriculturist. In order to avoid disturbance of root structures, the dam structure will be constructed above ground, with an earth bund installed on top of the existing concrete hardstand. The earth bund will connect to the sheet piling at a point outside of the identified areas of alluvial woodland. The top-level of the cofferdam will be installed to a minimum of 37.5mAOD to ensure that the cofferdam is not breached during flooding. As with the cofferdam, the top-level of the bund will be installed to a minimum of 37.5mAOD to ensure that the bund is not breached during flooding (Section 8.3.5 of Chapter 8 of the EIAR).

Concrete removal under the earth bund will be undertaken in a sensitive manner using hand tools where practical to ensure no tree roots are damaged. Concrete removal in this area will be conducted in the dry. Around the areas of concrete removal and prior to the commencement of works, a sandbag dam will be instated with an impermeable geomembrane to minimise any potential lake water

penetration. Should any water penetrate the sandbag dam, water will be pumped from the area to the surface water drainage system (Section 8.5.3.2 of Chapter 8 of the EIAR). Weather and flood forecasting will be continuously monitored, with concrete removal in this area taking place only during periods of dry weather and low lake levels. Silt curtains will be installed in front of areas of reed bed within the lake, to the north of the existing Baysports facility.

Similarly, concrete pouring will be carried out during periods of dry weather and low lake levels, using water-tight shuttering and form works. Impermeable geomembrane sealing, sandbags and silt curtains will all be retained for the duration of concrete pouring and will be removed following the completion of works. Should rain be forecasted, or lake levels anticipated to rise, any concrete removal or concrete reinstatement works will cease until rain stops and lake levels return to a suitable level.

Sheet piling and concrete removal works will be undertaken in August-September (inclusive) to avoid the main breeding and winter bird seasons, and to coincide with a time when water levels are at their lowest.

Dewatering will be provided as relevant to specific requirements with dewatered discharge pumped using a pump equipped with a silt bag on the discharge outlet. The pumped water will be discharged to either the existing surface water drainage system or to a suitably vegetated area within the site boundary. Where discharge to a vegetated area is required, the area will be enclosed with silt fencing, as necessary, to prevent sediment-laden runoff and ensure compliance with best practice environmental controls.

Planning Drawing 31022-DR-CIV-CE-50001 shows the location and design of the cofferdam to be installed prior to commencement of demolition works and Water Sports Pavilion construction works. The final detailed design of the cofferdam is to be confirmed by the Contractor prior to commencement of construction works following further detailed ground investigations in the area.

4.6.3 Soil Stripping & Temporary Stockpiling

The excavation and stripping of soils and subsoils will be required across much of the site, and this soil will need to be redistributed and temporarily stockpiled around the site as the Proposed Development progresses. Approximately 2,150 m^3 of soil and other overburden will require management during the construction phase. During these works, topsoil from the development area of the site will be stripped and stored in a designated storage area in the construction compounds for reuse as shown in Figure 4-2. Where these works occur, the following will apply:

- Temporary stockpile areas will be located in areas that are a minimum of 50m away from any water bodies / watercourses where possible.
- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, RCC etc. will be contacted and all drawings for all existing services sought.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- All plant operators and general operatives will be inducted and informed as to the identification of invasive species.
- A tracked 360-degree excavator will be used to strip the topsoil, and a dumper will be used to move the excavated materials to the temporary stockpile location.
- All excavated material which is not required for future landscaping works or for backfill of excavations will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site.
- All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.

- Silt fencing will be installed around these stockpiles.
- Trenches will be backfilled as soon as possible after excavation. When practically possible, excavation depths and volumes will be kept to a minimum.

4.6.4 Material Management

The quantity of soil and overburden, requiring management on the site of the Proposed Development has been calculated, as presented in Table 4-1 below.

Table 4-1 Summary of Soil Volumes Requiring Management.

Infrastructure Element	Soil Volume to be Excavated (m^3)	Fill Volume Requirement (m^3)	Soil Volume to be Imported (m^3)
Water Sports Pavilion, Public Realm and Promenade	470	5,250	4,780
L2020 Upgrades	210	470	260
Car Parking	1,420	700	-720
Embankment	50	400	350
Total Cut / Fill Volumes to be Managed	**2,150**	**6,820**	**4,670**

4.6.5 Temporary Construction Compound

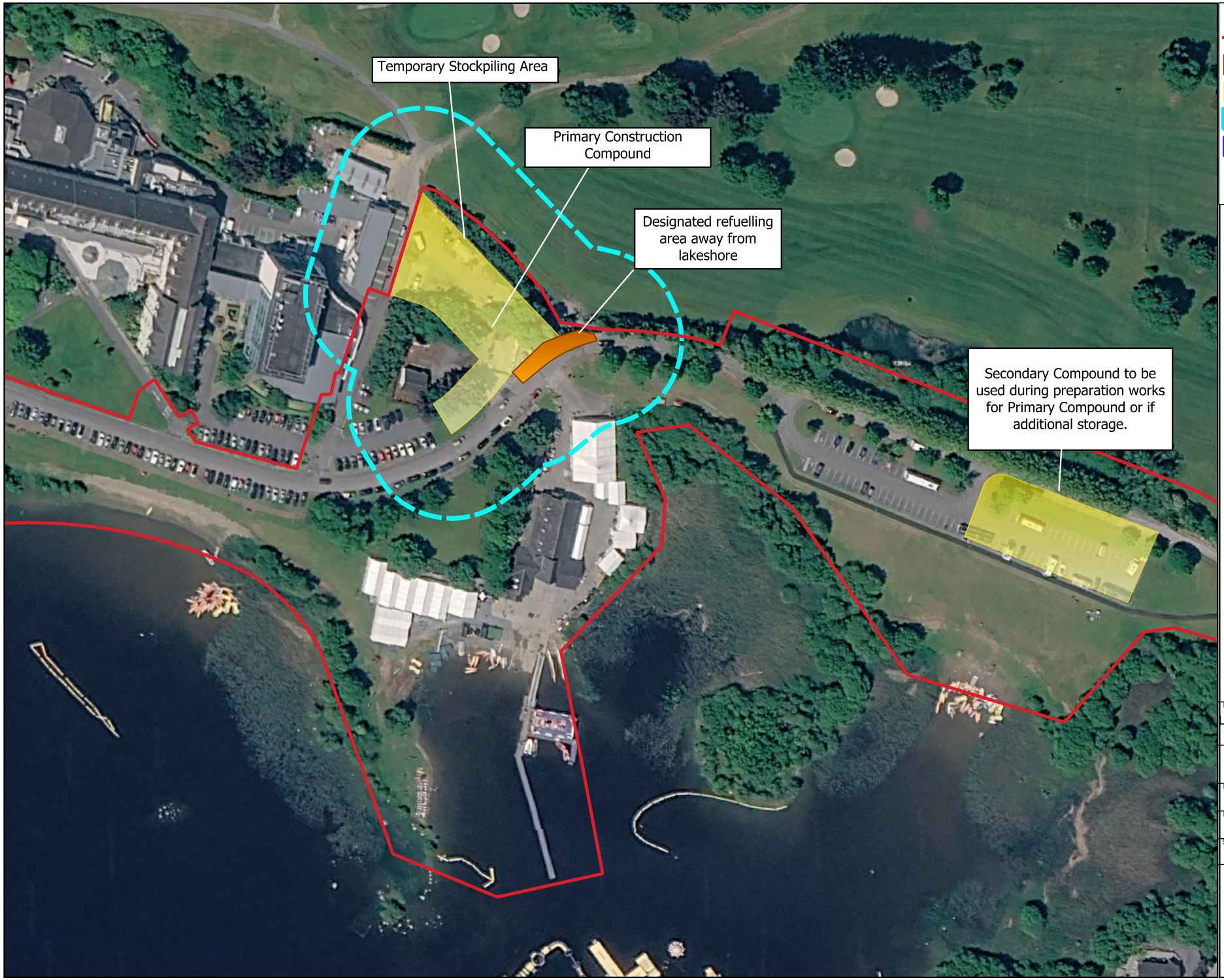
The primary construction compound area will cover an area of 1,920m^2 and incorporate temporary site offices, a refuelling area, staff facilities and car-parking areas and will be located within the red line boundary of the site to the north of the Hodson Bay Hotel. A secondary construction compound location will be required during the preparation of the primary construction compound and at various times throughout the construction phase as works progress. Tree and vegetation removal will be required to allow the primary construction compound to be prepared. The secondary construction compound will be located to the northeast of the site and cover an area of 1,660m^2.

A dedicated waste management area will be located within the primary construction compound, with waste to be sorted and collected from site by permitted collectors. Temporary lighting will be installed for the construction compounds. Lighting will not shine directly on Lough Ree to ensure disturbance to biodiversity is minimised.

Temporary port-a-loo toilets located within portacabins will be used by workers during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewaters being tankered off site by permitted waste collector to wastewater treatment plants. Power will be supplied by a diesel generator located within the compound. Potable water will be provided in the form of bottled water for staff use.

The construction compounds will be used for temporary storage of some construction materials, prior to their delivery to the required area of the site. Any materials with high potential to cause contamination will be stored in the primary construction compound to minimise potential for runoff or pollution to Lough Ree.

Figure 4-2 below shows the locations of the primary and secondary construction compounds.



Map Legend

- Application Site Boundary
- Designated Refuelling Area
- Temporary Construction Compounds
- 30m Buffer
- Temporary Stockpiling Area

N

Drawing Title
Location of Temporary Compounds & Refuelling Zone

Project Title
Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Drawn By	Checked By
KM	FL
Project No.	Drawing No.
241220	Figure 4-2
Scale	Date
1:1,750	14.08.2026

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4.6.6 Active Travel Improvement Works

The L2020 Local Road which provides access to the Proposed Development site will be narrowed to between 5.5m and 6m to facilitate space for a 3.0m wide shared cycle / pedestrian pathway as part of the Active Travel upgrades. The upgrades to the L2020 Local Road and pathway will involve two elements.

Southern Section of the L2020 Local Road

Involves a widening of approximately 900m of the existing footpath to at least 3m wide along the western side of the L2020 Local Road between the junction with the N61 National Road and the golf crossing at the southern end of Athlone Golf Club lands. The footpath widening in this section will be achieved by narrowing approximately 900m of the L2020 carriageway to between 5.5m and 6m.

Northern Section of the L2020

The Active Travel route crosses the L2020 Local Road at the existing golf crossing at the southern end of Athlone Golf Club lands and the existing footpath along the eastern side of the L2020 Local Road will be widened to 3m along an approximately 415m section between the golf crossing and the Hodson Bay Marina. An embankment at a 1:2 slope will be provided at the edge of the proposed 3m wide shared path, to tie back into the golf club levels.

While the active travel corridor will be continuous, it will require crossing of the L2020 Local Road at an existing pedestrian crossing which will be upgraded as part of the works. Raised tables are proposed at all pedestrian crossings along the L2020 to prioritise pedestrians. The Proposed Development will also see the implementation of traffic calming measures along the L2020 Local Road accessing the site including c. 6 no. speed humps at c. 150m spacing and 7 no. raised crossings at key pedestrian crossing locations.

The construction methodology for the works along the L2020 Local Road is outlined as follows:

Southern Section of the L2020

- Works will be undertaken under phased traffic management arrangements including lane narrowing, temporary traffic signals/stop-go control, reduced speed limits and pedestrian management measures to maintain local access throughout the works.
- Existing road markings will be removed by hydroblasting prior to commencement of pavement works.
- A new kerbline will be constructed along the revised carriageway edge, including:
  - Excavation into the existing carriageway;
  - Installation of kerbs on concrete bedding and haunching;
  - Adjustment of utility covers and ironwork where required.
- Excavation within the carriageway for the new kerbline and drainage works will be reinstated in layers to provide a strong structural tie-in with the retained pavement. Reinstatement will comprise:
  - Granular sub-base;
  - Bituminous binder/base layers;
  - Surface course surfacing;
  - Tack coat application and sealing of longitudinal joints.
- The existing footway will be widened to provide a minimum 3m shared pedestrian/cycle route, including:
  - Excavation to formation level;
  - Installation and compaction of sub-base material;
  - Construction of asphalt footway layers;

- Resurfacing across the full footway width to provide a consistent finish tied into existing surfaces.

- A total of 21 existing gullies along the western side of the carriageway will be relocated to align with the proposed kerbline. Works will include:
  - Saw cutting and excavation of existing pavement;
  - Removal of existing gullies and pipework connections;
  - Installation of new gullies and drainage connections;
  - Tie-in to the existing drainage network;
  - Backfilling and reinstatement using compacted granular and bituminous pavement layers.
- All driveway crossings and accesses along the route will be reconstructed with dropped/vehicle entry kerbs and strengthened pavement construction where required.
- Traffic calming measures comprising speed humps and raised pedestrian crossings will be installed at approximately 150m intervals. Works will include:
  - Saw cutting and planing of existing carriageway surfacing;
  - Localised excavation and pavement build-up;
  - Construction of asphalt raised tables and ramps;
  - Installation of tactile paving and anti-skid surfacing where required;
  - Reinstatement of associated signage and road markings.
- Following completion of the civil works, final surfacing, repainting of road markings and general reinstatement works will be completed.

Northern Section of the L2020

- The existing carriageway width, kerbline and gullies will be retained throughout this section.
- Works will be undertaken under phased traffic management arrangements including lane narrowing, temporary traffic control and pedestrian management measures to maintain safe access throughout construction.
- Footway widening works will include:
  - Vegetation clearance and topsoil stripping;
  - Excavation to formation level;
  - Installation and compaction of granular sub-base;
  - Construction of asphalt pavement layers;
  - Resurfacing across the full footway width to provide a continuous and consistent finish.
- A 1:2 earth embankment will be formed along the outer edge of the widened footway to tie into existing golf course levels, including:
  - Placement and compaction of suitable fill material;
  - Grading to required slope profile;
  - Topsoiling and reinstatement of disturbed areas and trees.
- Ball stop fencing will be installed along the footway edge adjacent to the golf course, including:
  - Excavation and concreting of fence post foundations;
  - Installation of fence posts and mesh/netting systems.
- 10 no. lighting columns will be relocated to the opposite side of the proposed fence line, including:
  - Electrical isolation and disconnection;
  - Removal of existing columns;
  - Installation of new ducting, cabling and foundations;
  - Installation and commissioning of relocated lighting columns.
- Traffic calming measures comprising speed humps and raised pedestrian crossings will be installed at approximately 150m intervals. Works will include:
  - Carriageway planing and saw cutting;
  - Asphalt build-up and surfacing works;

- Installation of tactile paving;
- Reinstatement of signage and road markings.

- Existing road markings throughout the section will be refreshed or repainted following completion of the works, with all disturbed verges and surfaces reinstated on completion.

4.6.7 Car Parking Areas

There are three parking areas proposed as outlined in Planning Drawings 31022-DR-CIV-CE-00201 to 31022-DR-CIV-CE-00205 prepared by CIVIC Engineers.

Existing parking areas being retained will keep existing asphalt surfacing. New parking areas will be constructed using a porous asphalt to assist with site SuDS. The car parking areas will be constructed using the following methodology:

- Establish alignment of the parking areas from the construction drawings and mark out the boundaries with ranging rods or timber posts;
- All drainage measures prescribed in the detailed drainage design for the Proposed Development will be implemented around the works area;
- All excavated material will be managed on-site. Some topsoil will be temporarily stockpiled locally for reuse for landscaping purposes;
- The subsoil will be excavated down to a suitable formation layer of either firm clay or bedrock and managed on-site in the temporary stockpile areas;
- The car park will be constructed using well-graded imported granular fill, spread and compacted in layers typically of 200mm and a suitable capping layer to provide a homogeneous running surface. The thickness of layers and amount of compaction required will be subject to detailed design by Project Engineer in consultation with the Construction Manager based on the characteristics of the material and the compaction plant to be used;
- The car parking areas will be constructed with the necessary gradient to promote drainage;
- Car parking areas will be finished with porous asphalt;
- The parking lines will then be painted; and
- Any updated or new signage will be installed

Other hardstand/paved areas will be installed using the same methodology as that outlined for carparking areas with the only key difference being the paving or finished applied to each area.

4.6.8 Demolition of Existing Buildings

As part of the Proposed Development, 2 no. existing buildings on the site which are owned by RCC will be demolished. The water sports building currently used by Baysports and the adjacent toilet block building will be demolished. Temporary structures such as existing marquees on site will also be removed. The locations of these buildings are shown in Planning Drawing HB-RKD-ZZ-ZZ-DR-A-1010. The existing concreted area around the buildings will also be demolished as part of the development.

Service Disconnections

Prior to commencement of the demolition works the location of services likely to be affected by the works will be ascertained. Arrangements will be made with service providers for all services to be disconnected and/or terminated as required. The demolitions contractor will confirm terminations & disconnections in advance of works commencing liable to affect same. Services to the areas of the site where demolitions are proposed which may need to be disconnected or terminated would be electricity and water.

Soft Strip

This would consist of the removal of remaining furniture, loose rubbish from the individual buildings or rooms to provide a clear working area. The buildings/rooms would then be stripped of all built in units, doors, flooring, skirting, framework, plasterboard etc. Removal of any temporary structures such as marquees and removal water sports equipment will also take place.

Demolitions

Once the above steps have been carried out, demolition of the external structures of the 2 no. buildings for demolition will comprise using kango/demolition hammers and appropriately sized excavators to remove the structures. Waste material will be disposed off-site at an appropriate licensed recovery or waste facility.

Details on the environmental management and controls to be implemented for the demolition works are provided in Section 3 of the CEMP.

4.6.9 Water Sports Pavilion Buildings

Foundations

The WSP buildings and associated structures will be constructed on a reinforced concrete foundation which will be formed on competent strata (i.e. bedrock or subsoil of sufficient load bearing capacity) which will be determined by the Project Design Engineers. The three primary buildings will sit on a concrete plinth. Foundations will be shallow pads, expected to be founded at 1m below ground level. Ground investigation will be completed prior to final designs to confirm the depth and strength of the bearing strata.

A cofferdam will used to create a works area for the construction works. The works area will be approximately 70m in width and 120m in length (subject to final cofferdam design confirmed by the Contactor). See Section 4.6.2 above for further details.

Overburden and material excavated to create the working area will be stripped off the foundation area to a suitable formation using a 360-degree excavator and will be stored locally for later reuse in backfilling or site reinstatement. This material will be stored in the temporary stockpile area within the primary construction compound for later reuse. The excavated material will be sealed using the back of the excavator bucket and surrounded by silt fences to ensure sediment-laden run-off does not occur further details of which are discussed in Section 4.6.3 above, Chapter 8 of this EIAR and in the CEMP.

The basement structure will be formed with concrete. The formation material will have to be approved by an engineer as meeting the design specification. If the formation level is reached at a depth greater than the depth of the foundation, the ground level will have to be raised with approved hardcore material, compacted in 250 millimetres (mm) layers, with sufficient compacted effort (i.e. compacted with seven passes using 12 tonne roller).

The formwork and reinforcing steel cage will be installed on completion of all preliminary ground works. Formwork to concrete bases will be propped/supported sufficiently to prevent failure. Concrete for bases will be poured using a concrete pump. Each base will be poured in three stages. Stage 1 will see the concrete being poured and vibrated in the centre of the anchor cage to bring the concrete up to the required level inside the cage. Stage 2 will see the centre of the steel foundation being poured and vibrated to the required level. Stage 3 will see the remaining concrete being poured around the steel foundation to bring it up to the required finished level. After a period when the concrete has set sufficiently the top surface of the concrete surface is to be finished.

Once the base has sufficient curing time it will be backfilled with suitable fill up to existing ground level and finished with the original material that was excavated.

Structural Frame

The structure of the WSP buildings and Plaza Canopy will be formed with a modular steel frame, or similar, which will be installed on the concrete foundation. The frame will be fabricated off site and imported to site in sequence and installed by an experienced erection crew using a combination of lifting equipment such as cranes and hydraulic lifting equipment. The frame will provide a series of columns and beams which will be installed as per the structural frame design. The flooring above ground level will be reinforced concrete and will be installed as the frame installation develops.

The temporary marquees will be constructed with timber-clad walls and tensile canvas roofs, or similar. The demountable marquees will be lightweight steel and fabric. They will be mounted on the concrete plaza to reinforced concrete foundations.

External Finishes

The external finishes proposed for the Water Sports Pavilion buildings and structures are presented in the HB-RKD-ZZ-ZZ-DR-A-1300 drawing series and the Architectural Design Statement.

As with the structural frame components, the cladding and glazing will be prefabricated off site and delivered to site via Heavy Goods Vehicles (HGVs) as discussed in Chapter 14 of this EIAR.

Both the cladding and glazing installation will be completed by specialist contractors using the necessary lifting and access equipment. As with the steel frame also, there is no invasive element to the installation of the external cladding and glazing finishes as all material will be installed in pre-prepared areas.

Building Services

As outlined in Section 4.3.6 above, the site is already serviced with both foul and storm sewage networks to which the Proposed Development will connect. The Engineering Drawings and Drainage Report provide details of the internal networks for both foul and storm water export to the public network. In addition, the watermain proposals are also provided in Section 4.3.6.

All utility infrastructure will be laid underground within the Proposed Development site. This will be carried out using the methodologies set out in Section 4.6.12 below.

Domestic hot and cold water, foul water and power will be provided to all buildings. Power and drainage will be provided under the Plaza Canopy for use in difference seasonal modes. In peak summer season it will function as the reception / wetsuit storage for the Water Sports providers. In winter season it will function as a canopy / bandstand. Power points will be provided in the plaza for use by the demountable changing canopies.

Solar Panels

The proposed panels will be installed on WSP building and cafe building using either ballasts, bond or will be mechanically fixed.

- Ballasted - panels sit on a frame held down by weight without penetrating the roof membrane.
- Bonded – the connection points are bonded to membrane layer without penetrating the roof membrane.

- Mechanically Fixed - panels are bolted through the roof structure into the deck below.

4.6.10 Marina Redevelopment and Extension

The marina redevelopment and extension will include the following installations;

- Approximately 42 no. steel piles driven into lake bed;
- Floating breakwater;
- Floating jetties;
- Gangways to connect to the existing marina;
- Canoe step;
- Marina service block building; and
- Provision of services including electricity, potable water and foul water pump-out throughout the marina.

The construction crew will begin by pushing a floating pontoon with 36-tonne excavator and Movax hydraulic piling hammer on board into position using the Inis Muilinn workboat for the location of the first pile to be installed (see Plate 4-3 below). Pile locations will be set out using Global Positioning System (GPS). A silt curtain will be installed around the location of where this pile will be installed and connected back to the pontoon, weights will be used to ensure the silt curtain sits on the bed of the lake. Silt curtains will be monitored regularly for effectiveness.

The 36-tonne excavator using the Movax piling hammer will then lift the steel pile and vibrate the pile into the lakebed to the required depth. The floating pontoon will then be moved to the next pile position and the process repeated until all the piles have been installed.

It will take approximately 4-6 weeks to install all the steel piles. Once the piles have been installed, the contractor suppling the jetties and breakwater will lift the floating jetties and breakwater into the water, push them into position using workboats and connect them to the relevant steel piles and other section of jetties/breakwater. The canoe step will then be pushed into place and connected.

The gangways will then be lifted into place using the 36-tonne excavator on the floating pontoon and bolted to concrete on the existing breakwater.

As outlined in Figure 4-1, whilst the entire marina redevelopment may take up to approximately 6 months, the in-water construction elements of the marina and breakwater extension (including piling) will be undertaken between the months of August to September as per Section 4 of the 2016 Inland Fisheries Ireland guidance document *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*[1].

The marina service block building will be constructed with concrete and steel and finished with concrete terracotta tiles similar to the Water Sports Pavilion buildings. Please refer to Section 4.6.9 for the construction methodology.

Services including electricity, potable water and foul water pump-out will then be installed on the new sections of jetties.

[1] Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016) *Available at* https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf



Plate 4-2 Coill an Eo, Inis Muilinn workboats and Pontoon Raft with 36-tonne excavator

4.6.11 Public Realm Upgrade Works

Prior to completion of works on the development site, the Public Realm Upgrade works will be carried out. The finishes include areas of amenity grassland, a wellness meadow, nature trails, footpaths, playground, changing shelter for wild swimmers, several benches, tree planting. These works will involve the use of plant and machinery in order to carry out tasks such as earth moving. Materials which have been stockpiled for the task will be used as much as possible, and material will only be imported where it is required. Where topsoil is stripped prior to excavation, this material will be retained on site for use in landscaping. Hoarding will be erected around the construction site boundary for the duration of the Public Realm Upgrade construction works.

A detailed Tree Replanting Scheme with comprise a key element of the Public Realm Upgrade works (see Drawing HBWP-ZZ-ZZ-DR-OKR-LA-001201). 240 no. trees and shrubs will be replanted across the site, all of which will be native species. The Tree Replanting Scheme incorporates a significant number of mature trees (10 years or older) to compensate for the removal of a number of mature trees for the construction of the Proposed Development.

The proposed Public Realm Upgrades will also include upgrades to the lighting scheme throughout the site. Lighting design and specification throughout the Proposed Development site has been carefully considered to ensure minimisation of ecological disturbance is balanced with ensuring the safety of those visiting the Hodson Bay area is not compromised. See Planning Drawing No. P752-2995-E and the External Lighting Report included in this planning application for the proposed Lighting Plan for the site.

The Northern Swimming Changing Canopy will be constructed of in-situ concrete on a reinforced concrete foundation.

OKRA Landscape Architects have prepared detailed landscape drawings which accompany this application (see HBWP-ZZ-ZZ-DR-OKR-LA-001000 Planning Drawing series included in this application planning pack).

4.6.12 Excavation and Services Installation

Where excavations and installations of any new services are required on the Proposed Development site, the following will apply:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, Uisce Éireann, RCC etc. will be contacted and all drawings for all existing services sought.
- A Construction Traffic Management Plan will be produced by CIVIC Engineers as required for connection works to the existing service network.
- A road opening licence will be obtained as required for connection to existing services.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the trench to the required dimensions.
- All excavated material will be removed to an authorised waste recovery facility or, if suitable, stockpiled and reused for backfilling and landscaping where appropriate.
- Once the trench has been excavated the ducting/pipework will then be placed in the trench as per specification.
- Once the service ducts/pipework has been installed couplers will be fitted as required and capped to prevent any dirt etc. entering the ducts/pipes.
- The as-built location of the ducting/pipework will be surveyed using a total station/GPS.
- Backfill material will be carefully placed so as not to displace the ducting/pipework within the trench.
- The appropriate warning/marker tape will be installed above the ducts/pipes at the appropriate depths.
- The surface will be reinstated as per original specification or to the requirements of the site layout/Local Authority as appropriate.

4.6.12.1 Existing Underground Services

Any underground services encountered during the works will be surveyed for level and where possible will be left in place. If there is a requirement to move the service, then the appropriate body (ESB, Gas Networks Ireland, etc.) will be contacted, and the appropriate procedure put in place. Back fill around any utility services will be with dead sand/pea shingle where appropriate. All works will be in compliance with required specifications.

4.6.13 Electrical Substation

The proposed substation will be constructed by the following methodology:

- The area of the onsite substation will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to nearby temporary storage area for later use in landscaping. Any excess material will be disposed/recovered offsite at an appropriately licensed facility;
- The dimensions of the substation area have been designed to meet the current requirements of the ESB;
- The required level platform will be established and finished with well-graded imported granular fill, compacted in layers and finished with a suitable capping layer to the desired level;
- The ESB substation will have oil-less equipment within.

- The foundations will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it.;
- The block work walls will be built up from the footings to damp proof course level and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors;
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the buildings for this operation;
- Concrete roof slabs will be used over the ESB Substation section only and will be lifted into position using an adequately sized mobile crane;
- The timber roof trusses over the complete substation will then be lifted into position using a telescopic load all or mobile crane depending on site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather;
- The substation plinths will be shuttered and poured with reinforced concrete.;
- The electrical equipment will be installed on the concrete plinths and commissioned.

4.6.14 Ball Stop Fencing

Ball stop fencing will be installed along the footway edge adjacent to the golf course, and will be constructed as follows:

- Excavation and concreting of fence post foundations;
- Installation of fence posts and mesh/netting systems.

4.7 Management of Construction Phase Activities

4.7.1 Environmental Management

All proposed construction activities on the site of the Proposed Development are outlined in the CEMP. The CEMP includes details of drainage, overburden management and waste management. In the event planning permission is granted for the Proposed Development, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and developed though the detailed design to be submitted to the Planning Authority for approval.

4.7.2 Protecting Water Quality

Prior to the commencement of any subsequent construction activities, the necessary mitigation measures will be put in place to ensure that no silt laden water runoff generated at the site will flow to nearby waterbodies, with particular emphasis on the Lough Ree SAC / Lough Ree SPA located immediately adjacent to the site, thus ensuring the protection of surface water during the works. This will involve confirming the location of all existing services and delineating between drainage systems. Surface waters will be managed to ensure the prevention of run off from areas where excavation occur does not result in silt laden water entering the existing storm water network.

Particular emphasis will also be placed on hazardous materials management and prevention of spills or leaks of fuel oils to ensure watercourses and groundwater are not impacted. Section 5 of the CEMP provides an Emergency Response Plan for dealing with spillages which may result in adverse environmental effects

Excavation works have the potential to encounter sub-surface waters and ground water. In the event of encountering groundwaters during excavation, the excavation will be de-watered using a pump equipped with a silt bag on the discharge outlet. The pumped water will be discharged to either the

existing surface water drainage system or to a suitably vegetated area within the site boundary. Where discharge to a vegetated area is required, the area will be enclosed with silt fencing, as necessary, to prevent sediment-laden runoff and ensure compliance with best practice environmental controls. In order to avoid hydrocarbons encountering groundwaters onsite, Section 3.3 of the CEMP presents mitigation measures to avoid the release of hydrocarbons onsite.

The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001). The construction phase of the Proposed Development will adhere to this guidance and will ensure that surface water arising during the course of construction activities will contain minimal sediment. The methods and best practice measures outlined in the section below will ensure that sediment release and potential for pollution during the construction phase is minimised and reduced to insignificant.

4.7.2.1 Prevention Pollution Control Measures

The following measures will be put in place to prevent the transportation of silt laden water or pollutants from entering any of the wider environments including watercourses/drains within or near the site:

- The site boundary will be fenced off with Heras fencing (or similar) prior to works commencing to protect adjacent habitats and to prevent any egress of machinery outside of the site during construction activities.
- Run-off generated on-site will undergo the necessary filtration process as previously outlined.
- The works will be managed to ensure there will be no silt-laden run-off beyond the site boundary. This will be achieved through the use of appropriate excavation techniques during the initial construction works. Where necessary, silt fencing will be installed downslope of the construction areas, particularly where drains or drainage pathways are present. These measures will serve as a protective measure to contain silt material within the site.
- Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall.
- Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised.
- Excavated spoil will be stockpiled and contained entirely within the confines of the site boundaries. Material stockpiles will be kept at least 10m from any manholes. Depending on the nature of the excavated material, the stockpiles of excavated materials will be sealed with a digger bucket to reduce the potential for sediment runoff. These areas will be surrounded with silt fencing, if deemed necessary to prevent runoff.
- The minimum number of soil/subsoils and bedrock material should be removed from site. Soil may be reused for landscaping elsewhere on the site. However, any excess construction material shall be removed from the area and sent to an authorized waste recovery facility
- Works shall not take place at periods of high rainfall and shall be scaled back if or suspended if heavy rain is forecast during excavation works.
- High rainfall' is defined as follows:
    - >10 mm/hr (i.e. high intensity local rainfall events);
    - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day);
    - Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week).
- Stockpiles will also be covered with plastic sheeting during high rainfall to prevent runoff.

- In the event of encountering groundwaters during excavation, groundwater will be pumped out of the excavation using a pump equipped with a silt bag on the discharge pipe, if necessary, to capture any silty material prior to subsequent natural percolation to ground. The area surrounding the silt bag will be surrounded by silt fencing if deemed necessary.
- As construction advances there may be a small requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into silt bags prior to overland discharge allowing water to percolate naturally to ground. Overland discharge, if required, will be located within the confines of the site boundary.
- No wastewater will be discharged on-site during the construction phase.
- Good construction practices will be implemented at the site. This will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provides guidance on the control and management of water pollution from construction sites, as outlined in *Control of Water Pollution from Construction Sites, guidance for consultants and contractors* (CIRIA, 2001). This guidance will be adhered to throughout the construction phase to ensure that surface water generated on site contains minimum sediment.

Details of control measures which will be implemented at the site, if required are included in the Plates below. All water quality mitigation measures to be implemented during the construction of the Proposed Development are further detailed in Section 8.5.3 of the Hydrology and Hydrogeology chapter of this EIAR.



Plate 4-3.Silt Bag with water being pumped through.



Plate 4-4. Silt Bag under inspection.

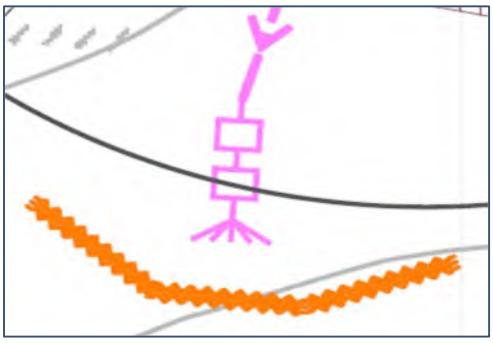


Plate 4-5. Silt Fence surrounding the discharge from Silt Bag.



Plate 4-6. Embedded Silt Fence

4.7.3 Refuelling, Fuel and Hazardous Materials Management

4.7.3.1 On-site Refuelling and Management

On site re-fuelling of machinery will be carried out in a dedicated refuelling area. Please refer to Figure 4-2 above which shows the proposed location of the vehicle refuelling area. The fuel storage area required will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor. On-site refuelling will only take place at distances greater than 30m from nearest water courses or site drainage infrastructure. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations. Only designated trained and competent operatives will be authorised to refuel plant. No storage of hydrocarbons will occur within 30m of watercourses or surface water features. Diesel or fuel oils stored on site will be bunded to 110% of the capacity of the storage tank.

All plant and machinery will be serviced before being mobilised to site, and regular leak inspections will be completed during the site operations. No plant maintenance will be completed on site; any broken-down plant will be removed from site to be fixed.

4.7.4 Concrete Deliveries

Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in sealed concrete delivery trucks. The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching. When concrete is delivered to Site, only the chute of the delivery truck will be cleaned, using the smallest volume of water necessary, before leaving the Site. Concrete trucks will be washed out fully at the batching plant, where facilities are already in place.

The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area. Where temporary lined impermeable containment areas are used, such containment areas are typically built using straw bales and lined with an impermeable membrane. Two examples are shown in Plate 4-7 below.

The areas are generally covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents will be tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste.



Plate 4-7 Concrete washout area

Alternatively, a Siltbuster-type concrete wash unit or equivalent (https://www.siltbuster.co.uk/sb_prod/siltbuster-roadside-concrete-washout-rcw/) may be used. This type of Siltbuster unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. The residual liquids and solids can be disposed of off-site at an appropriate waste facility.

The risks of pollution arising from concrete deliveries will be further reduced by the following:

- Concrete trucks will not be washed out on the site but will be directed back to their batching plant for washout.
- Site roads will initially be constructed with a subgrade and compacted with the use of a roller to allow concrete delivery trucks access all areas where the concrete will be needed. No concrete will be transported around the site in open trailers or dumpers so as to avoid spillage while in transport. All concrete used in the construction of foundations will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete to the location where it is needed.
- The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout and discussing emergency procedures.
- Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the Site.

4.7.4.1 Concrete Pouring

The following procedures will be adopted in advance of and during all concrete pours to minimise the risk of pollution to Lough Ree. These may include:

- Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast.
- Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete.
- Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets.
- Ensuring that covers are available for freshly placed concrete to avoid the surface washing away in heavy rain.
- The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, or a Siltbuster-type concrete wash unit (https://www.siltbuster.co.uk/sb_prod/siltbuster-roadside-concrete-washout-rcw/) or equivalent.
- Disposing of surplus concrete after completion of a pour in agreed suitable locations away from any watercourse or sensitive habitats.

4.7.5 Dust Control

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e. soil, sand, etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the approach road. The measures below will also prevent construction debris arising on the public road network.

Proposed means to control dust include:

- Any site roads with the potential to give rise to dust will be regularly watered, as required, during dry and/or windy conditions.
- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness, and cleaned as necessary.
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.
- Water misting or bowsers will operate on-site as required to mitigate dust in dry weather conditions.
- The transport of soils, demolition material, aggregates or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary.
- All vehicles leaving the construction areas of the site will rinse their wheels at a designated wheel wash area prior to entering the local road network.
- All construction related traffic will have speed restrictions on un-surfaced roads to 15 kph.
- Daily inspection of construction sites to examine dust measures and their effectiveness.
- When necessary, sections of the approach road will be swept using a truck mounted vacuum sweeper.

4.7.6 Noise Control

The operation of plant and machinery, including construction vehicles, is a source of potential noise impacts. Construction phase noise is typically assessed in light of guidance set out in British Standards Institution (BSI) (2014) *BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise*[2], as well as the National Roads Authority (NRA) (now TII) (2014) *Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes*[3]. Although the NRA document is not directly relevant to the Proposed Development, it has seen increasing application to non-road projects in recent years in the absence of any specific Irish guidance.

All construction plant used on-site will be required to comply with maximum sound power levels set out in *Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000*[4]on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors, implemented in Ireland by the *European Communities* (Noise Emission by Equipment For Use Outdoors) *Regulations, 2001* (S.I. 632 of 2001)[5], as amended by the *European*

[2] *British Standards Institution (BSI). (2014) BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise. London: BSI.*
[3] *National Roads Authority (NRA) (now TII) (2014) Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes.*
[4] *Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000*
[5] European Communities *(Noise Emission by Equipment For Use Outdoors)* Regulations, 2001 *(S.I. 632 of 2001)*

Communities (Noise Emission by Equipment for Use Outdoors) (Amendment) *Regulations, 2006* (S.I. 241 of 2006)[6].

Proposed measures to control noise include:

- Construction equipment for use outdoors shall comply with the European Communities Regulations– Noise Emission by Equipment for Use Outdoors – SI 241 - 2006.
- Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts.
- Where practical, separation distances to any locations of frequent human use where noise would have the potential to interfere with typical activities will be maximised through appropriate on-site positioning of plant. Plant will also be sited so as to maximise potential screening provided by intervening topographical features, structures, and barriers
- Plant with the potential of generating noise or vibration will be placed as far away from sensitive properties as permitted by site constraints.
- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations;
- Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works;
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machines which are used intermittently will be shut down during those periods when they are not in use;
- Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation.
- Local areas of the access route will be condition monitored and maintained if necessary.
- It is recommended that drivers of heavy goods vehicles (HGVs) associated with the development extend due care and courtesy to other road users. Excessive use of and unnecessary engine racing will be avoided.

The proposed construction working hours are as follows:

- 07:00 – 19:00 Monday to Friday
- 08:00 to 17:00 on Saturday.
- Closed Sundays or Public Holidays.

Deviation from these times will only be allowed in exceptional circumstances where written approval has been received from the planning authority.

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise and vibration limits at their discretion. However, there are several publications commonly used in Ireland to set appropriate construction criteria.

[6] European Communities *(Noise Emission by Equipment for Use Outdoors) (Amendment)* Regulations, 2006 *(S.I. 241 of 2006)[6].*

The Transport Infrastructure Ireland (TII) *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (2014)[7] provides detailed information on the permissible construction noise levels for various hours of operation. The maximum allowable construction noise level limits, as per the TII publication, are listed below:

- Monday to Friday 07:00 to 19:00hrs 80 dB
- Monday to Friday 19:00 to 22:00hrs 65 dB
- Saturdays 08:00 to 16:30hrs 75 dB
- Sundays & Bank Holidays 08:00 to 16:30hrs 65 dB

All complaints of noise received during the construction phase will be logged in a register and investigated immediately. Details of follow-up action will be included in the register.

4.7.7 Vibration Control

Vibration standards can be considered in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For example, vibration is perceptible at around 0.5mm/s in the case of road traffic, however at higher magnitudes, this vibration may become an annoyance. Guidance relevant to the protection of building structures is contained in the following documents:

- **British Standards Institution (BSI). (1993)** *BS 7385-2:1993 Evaluation and Measurement for Vibration in Buildings – Part 2: Guide to Damage Levels from Ground Borne Vibration***. London: BSI[8].**
- **British Standards Institution (BSI). (2014)** *BS 5228-2:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2: Vibration***. London: BSI[9].**

Vibration can be more difficult to control than noise, and there are few generalisations which can be made about its control. It should be borne in mind that vibration can cause disturbance by causing structures to vibrate and radiate noise in addition to perceptible movement. The following mitigation measures will be implemented at the site during the demolition and construction phases to control vibration levels:

- The hours of working should be planned, and account should be taken of the effects of vibration upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned and the duration of work.
- Where reasonably practicable, low vibration working methods should be employed. Consideration should be given to use of the most suitable plant, reasonable hours of working for operations which might give rise to perceptible vibrations, and economy and speed of operations.
- Vibration should be controlled at source and the spread of vibration should be limited.
- Where reasonably practicable, plant and/or methods of work causing significant levels of vibration at sensitive premises should be replaced by other less intrusive plant and/or methods of working.
- Vibration from stationary plant (e.g. generators, pumps, compressors) can, in some instances, prove disturbing when located close to sensitive premises or when

[7] ***Transport Infrastructure Ireland*** *(TII), 2014. Guidelines for the Treatment of Noise and Vibration in National Road Schemes. Dublin: Transport Infrastructure Ireland*
[8] ***British Standards Institution (BSI). (1993)*** BS 7385-2:1993 Evaluation and Measurement for Vibration in Buildings – Part 2: Guide to Damage Levels from Ground Borne Vibration***. London: BSI***
[9] ***British Standards Institution (BSI). (2014)*** BS 5228-2:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2: Vibration***. London: BSI***

operating on connected structures. In these instances, equipment should be relocated or isolated using resilient mountings.
- Where processes could potentially give rise to significant levels of vibration, on-site vibration levels should be monitored regularly by a suitably qualified person appointed specifically for the purpose, particularly if changes in machinery or project designs are introduced. A method of vibration measurement should be agreed prior to commencement of site works.
- On those parts of a site where high levels of vibration are likely to be a hazard to persons working on the site, prominent warning notices should be displayed.
- Offsite fabrication - In method statement/risk assessment the contractor will highlight any activity that may cause significant vibration levels and include measures in helping to mitigate these emission levels.
- Equipment is to be task specific.
- Best practice vibration control measures will be employed by the contractor.
- A designated member of staff will be appointed as the point of contact for any queries or complaints from nearby local residents.

4.7.8 Waste Management

The CEMP, Appendix 4-2 of this EIAR, includes a Resource Waste Management Plan (RWMP) which outlines the best practice procedures during the construction phase of the Proposed Development. The RWMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Proposed Development. Disposal of waste will be a last resort.

The Waste Management Act 1996 (Act) and its subsequent amendments provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related activity must have all necessary licenses and authorisations. Prior to the commencement of the construction phase, a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the RWMP, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the development adheres to the management plan.

The RWMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the Contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The RWMP can then be adapted with changes that are seen through record keeping.

4.7.8.1 Invasive Species

During the ecological site walkover surveys and aquatic drone surveys, which were carried out throughout 2025 and 2026, several invasive species were encountered within the Proposed Development site.

Non-native invasive species were encountered primarily within the lake itself, along the shore of Lough Ree, and at the Marina. These included the below:

- Nuttall's Waterweed (*Elodea nuttallii*) (Third and first schedule invasive species).
- Canadian Waterweed (*Elodea canadensis*) (Removed from third and first schedules but still considered a non-native invasive species of minor impact).

- Starry Stonewort (*Nitellopsis obtusa*) (Not listed on third or first schedules but a known non-native invasive charophyte (native to mainland Europe) and present in Lough Ree).
- Quagga Mussel (*Dreissena rostriformis*) (Third and first schedule invasive species).
- Zebra Mussel (*Dreissena polymorpha*) (Third and First schedule invasive species).

Appropriate control measures will be incorporated into the design and construction phase of the development to ensure that the relevant measures (outlined in Chapter 6 Biodiversity of this EIAR) will be implemented.

4.7.9 Traffic Management

As part of the Construction Stage Safety Plan for the works a Construction Traffic Management Plan will be prepared by CIVIC Engineers in accordance with the principles outlined below and held on site. It will comply at all times with the requirements of;

- Chapter 8 of the Department of the Environment Traffic Signs Manual, current edition, published by The Stationery Office, and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;
- Guidance for the Control and Management of Traffic at Road Works (June 2010)[10] prepared by the Local Government Management Services Board;
- Any additional requirements detailed in the Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (DMURS).

Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site construction and supervisory staff.
- Excavation plant, dumper trucks and materials delivery vehicles involved in site development works.

The following mitigation measures will be implemented, as required in order to minimise movement and potential impacts associated with construction phase traffic:

- The aggregates required for the construction of the Proposed Development will be sourced, as much as is possible and practicable, from quarries and suppliers located as near as possible to the Proposed Development. This will reduce the potential for any negative impacts associated with the haulage of the materials to the site of the Proposed Development. Existing soils and subsoils located on the site will be used where possible to reduce the amount of such materials required for import onto the site. Aggregates will be transported to the site in tarpaulin covered trucks.
- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access locations.
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes.
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds.
- Parking of site vehicles will be managed and will not be permitted on public road, unless proposed within a designated area that is subject to traffic management measures and agreed with RCC.
- Consolidation of delivery loads to / from the site and management of large deliveries on site to occur outside of peak periods,
- Use of precast/prefabricated materials where possible,

[10] **Local Government Management Services Board,** *Guidance for the Control and Management of Traffic at Road Works (June 2010)*

- Adequate storage space on site to be provided where possible,
- Scheduling of movements to outside peak traffic times and school pick-up/drop off times.
- All vehicles to switch off engines when not in use,
- No idling of vehicles at the site,
- Vehicle cleaning and wheel washing to take place on leaving the site,
- On-road vehicles to comply to set emission standards,
- All Non-Road Mobile Machinery (NRMM) to be fitted with appropriate exhaust systems and to be regularly serviced,
- Haul routes to be hard surfaced and cleaned and appropriate speed limits applied around the site.
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel.
- Safe and secure pedestrian facilities provided where construction works obscure any existing pedestrian footways. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic and pedestrian movements, and to be identified by appropriate signage. Pedestrian facilities will cater for vulnerable users including mobility impaired persons.

4.7.9.1 Staff and Parking

On-site employees will generally arrive before 07:00, thus avoiding the morning peak hour traffic. Construction employees will generally depart after 17:00. It should be noted that a large proportion of construction workers may arrive in shared transport.

Construction traffic will not be permitted to park on the public roads or within the general area outside the main site. Restricted parking facilities will be provided by the contractor. Parking of site vehicles will be managed and will not be permitted on public road, unless proposed within a designated area that is subject to traffic management measures and agreed with RCC.

4.7.9.2 Road Cleaning and Wheel Washing

Provision shall be made for the cleaning by road sweeper etc. of all access routes to and from the site during the course of the works as required. It is intended that cleaning will be undertaken regularly and not allowed to accumulate. A wheel wash facility will be provided on site to clean site traffic leaving the site. Wastewater generated at this washing facility will be directed to on-site settlement tanks/ponds. Debris and sediment captured by vehicle washes will be disposed off-site at an appropriately licensed facility.

4.7.10 Other site Details

4.7.10.1 Water Supply

Water will be supplied on site by water tankers for general use during the construction phase. Potable water will be provided in the form of bottled water for staff use.

4.7.10.2 Aggregates

The aggregates required for the construction of the Proposed Development will be sourced, as much as is possible and practicable, from quarries and suppliers located as near as possible to the Proposed Development. This will reduce the potential for any negative impacts associated with the haulage of the materials to the site of the Proposed Development. Existing soils and subsoils located on the site will be used where possible to reduce the amount of such materials required for import onto the site. Aggregates will be transported to the site in tarpaulin covered trucks.

4.8 Operation and Maintenance of the Proposed Development

4.8.1 Water Sports Pavilion

It is proposed that RCC will lease the WSP to an appointed operator. The appointed operator will be responsible for the day-to-day operation, management and maintenance of the building and associated facilities. This will include the management of public access (where applicable), cleaning, routine building maintenance, servicing of mechanical and electrical systems, health and safety compliance, security and the maintenance of all internal facilities to an appropriate operational standard. The Operational Management Plan, Appendix 4-3 of this EIAR sets out the description and frequency of maintenance tasks required for the WSP.

4.8.2 Café Building

It is proposed that RCC will lease the café building to an appointed operator. The appointed operator will be responsible for the day-to-day operation, management and maintenance of the café building and associated facilities.

It is also proposed to install 9 no. of solar panels on the café building. The proposed solar panels will be erected at a 30-degree angle and orientated south facing to maximise generation. Maintenance requirement for the panels will be minor and will be the responsibility of RCC. The main requirement for maintenance consists of periodic cleaning of the panels. The maintenance schedule for the Café Building, including the solar panels, is set out in the Operational Management Plan, Appendix 4-3 of this EIAR. The waste generation and waste management proposals during the operation of the café is detailed in the Operational Management Plan.

4.8.3 Waterways Ireland Marina

Operation and maintenance of the marina at Hodson Bay will continue to be the responsibility of Waterways Ireland. Waterways Ireland will ensure provision of all facilities for marina users including the cleaning of bathrooms and shower facilities in the marina services block building. Waterways Ireland will also ensure the functioning and adequate capacity of services provided for boat users of the marina including water, electricity and waste pump-out facilities. The Operational Management Plan, Appendix 4-3 of this EIAR sets out the description and frequency of maintenance tasks required for the marina. The Operational Management Plan also sets out the operational waste management procedures which will be implemented for the marina.

4.8.4 Public Recreation Areas

The Public Realm Upgrades will provide a flexible public space at the centre of the site, providing a space for programmed activity and events while serving as a functional amenity for marina activities.

The following is proposed as elements of the Public Realm Upgrades:

- Amenities including;
  - A playground,
  - Nature observation space,
  - Picnic areas,
  - Benches,
  - Wellness meadow,
  - Bike storage and service areas,
  - Changing shelter and

- Events space including the development of a continuous promenade along the lakeshore.

- Provision of extensive natural landscaping including;
  - Sustainable Drainage Systems (SuDS) planting zones,
  - Integrated planter boxes with public seating,
  - Open grassed areas including the wellness meadow in the north of the site and green lake shore areas.
- Site lighting scheme.

RCC (or an RCC-appointed operator) will be responsible for the maintenance of the Public Recreation Areas at Hodson Bay. This will include regular maintenance of landscaping and meadow areas and maintenance and upkeep of the playground area and public realm facilities including benches. RCC will be responsible for the monitoring and maintenance of SuDS features throughout the Proposed Development site, with any issues to drainage features being repaired as soon as possible. RCC will also be responsible for emptying bins in the area and litter removal during operation. The Public Realm maintenance schedule is set out the Operational Management Plan, Appendix 4-3 of this EIAR.

4.8.5 Parking and Road Maintenance

It is proposed to provide additional electric vehicle (EV) charging spaces, car parking spaces, accessible parking spaces bicycle parking spaces, bus parking bays, boat trailer parking bays, and a 3 m wide shared cycle/pedestrian pathway along the length of the L2020 Local Road from the N61 National Road junction to the Hodson Bay Marina. RCC (or an RCC-appointed operator) will be responsible for the maintenance of car and bicycle parking spaces, and road maintenance including the cycle/pedestrian pathway. The parking and road maintenance schedule is set out in the Operational Management Plan, Appendix 4-3 of this EIAR.

4.8.6 Operational Waste Management

The typical non-hazardous and hazardous wastes that will be generated at the Proposed Development will include the following:

- Mixed Residual Waste;
- Dry Mixed Recycling – includes wastepaper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic Waste;
- Glass and;
- Foul Water

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated in small quantities/ less frequently which will be managed separately including batteries and waste electric and electronic equipment (WEEE).

Wastes will be generated by operations of the café building with a weekly estimated waste of 3,750 litres. Wastes will also be generated by operations at the WSP building with a weekly estimate of 3,415 litres. The Proposed Development Wastes from

The redevelopment of the marina includes for an extension consisting of a floating breakwater and jetty extension connecting to the existing marina structure. The marina redevelopment will include provisions of services for boat users including foul water pump out-facilities. Waterways Ireland will ensure the functioning and adequate capacity of these services. Foul water from the redeveloped marina will connect to the existing Uisce Éireann operated on-site pumping station.

4.8.7 Resource Efficiency

It is proposed that the Proposed Development will be designed to minimise operational energy demand through a fabric-first approach, the use of energy-efficient building services and the integration of appropriate renewable energy technologies.

The Proposed Development will propose replacement of the existing water sports building with all-electric buildings. Space heating and cooling will be provided by air-source heat pump driven variable refrigerant flow (VRF) systems serving fan coil units, with limited direct electric panel heating in selected back-of-house areas. Mechanical ventilation with heat recovery will be provided, with the final centralised or local arrangement confirmed at detailed design. Central air-source heat pumps and insulated hot-water storage tanks will serve the significant shower and domestic hot water demand. A maximised roof-mounted solar photovoltaic (PV) array will generate renewable electricity; no battery storage is proposed.

The proposed WSP building has been designed to comply with the requirements of Building Regulations Part L (Buildings Other Than Dwellings) and achieve the Nearly Zero Energy Building (NZEB) standard.

Key commitments for the Proposed Development include:

- All-electric development; no direct fossil-fuel heating.
- High-performance fabric and 3.0 $m^3/(h \cdot m^2)$ @ 50 Pascal airtightness target.
- Air-source heat pump /VRF heating and cooling, heat recovery ventilation and air-source heat pump domestic hot water.
- Light Emitting Diode (LED) lighting with occupancy and daylight controls.
- Low-flow water fittings and resilient pressurised cold-water storage.
- Maximised roof-mounted PV array, with no battery storage proposed.
- A detailed Non-Domestic Energy Assessment Procedure (NEAP) assessment and Building Energy Rating (BER)certification and commissioning evidence will be completed at detailed design and prior to operation.

An Energy Statement has been prepared by CIVIC Engineers which provides further detail on resource efficiency with regard to the Proposed Development (Planning Document reference no. 71589-CIV-XX-XX-R-J-50001).

APPENDIX 4-1

SITE PHOTOS

Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

Fáilte Ireland

ROSCOMMON
Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

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Plate 1 View of the Water Sports Operations on site looking West



Plate 2 View of the Water Sports Operations on site looking Northeast



Plate 3 View of the Water Sports Operations on site looking East



Plate 4 View of the Water Sports Operations on site looking East



Plate 5 View of the existing toilet block on site for demolition looking Southeast



Plate 6 View of the Water Sports Operations on site looking East



Plate 7 View of the Marina on site looking South



Plate 8 View of the Marina and Marina Carpark (Carpark A) on site looking East



Plate 9 View of the Marina Carpark (Carpark A) on site looking Northwest



Plate 10 View of the On-Street Car Parking along the Lakeshore looking North



Plate 11 View of the On-Street Car Parking along the Lakeshore (and Carpark B to the right of the photo) looking South



Plate 12 View of the Northern Carpark (Carpark C) on site looking South



Plate 13 View of the L2020 Local Road looking Northeast



Plate 14 View of the L2020 Local Road and golf course boundary netting looking North



Plate 15 View of the L2020 Local Road and golf course boundary netting looking South

APPENDIX 4-2

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

Fáilte Ireland

Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

Planning and Environmental Consultants

Rialtas na hÉireann Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Réigiúnach Oirthir agus Lár-Tire
Eastern and Midland Regional Assembly

Fáilte Ireland

ROSCOMMON Comhairle Contae Ros Comáin Roscommon County Council

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

Construction and Environmental Management Plan

Hodson Bay Waterfront Park, Co. Roscommon



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Planning and Environmental Consultants

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1. INTRODUCTION

This Construction and Environmental Management Plan (CEMP) has been prepared by MKO on the behalf of Roscommon County Council (RCC) who intend to apply to An Coimisiún Pleanála (ACP) for permission to redevelop the Hodson Bay waterfront and marina ("Proposed Development") at Barrymore, Co. Roscommon. This CEMP provides the environmental management framework to be adhered to during the pre-commencement and construction phases of the Proposed Development, and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur.

This CEMP has been informed by and takes account of the accompanying documents which have been prepared for the development, including:

- Environmental Impact Assessment Report (EIAR) (MKO, 2026)
- Detailed Flood Risk Assessment (DFRA) (CIVIC, 2026)
- Natura Impact Statement (NIS) (MKO, 2026)
- Transport and Traffic Assessment (TTA) (CIVIC, 2026)

This report is intended as a single, amalgamated document that can be used during the future phases of the Proposed Development, as a single consolidated point of reference relating to all construction, environmental and drainage requirements for the Planning Authority, developer, and contractors alike. The CEMP may evolve over further iterations as the construction works progress, but at all times must meet or exceed the standards and requirements set out in this document. Once a Contractor is appointed, it will be the Contractor's current version of the CEMP, which at any point in time, will guide the construction activities on site and the implementation of which will be audited during construction.

1.1 Scope of the Construction and Environmental Management Plan

This report is presented as a guidance document for the management of construction activities and waste materials generated during the proposed works and following completion. It clearly outlines the mitigation and monitoring measures that are required to be adhered to in order to complete the works in an appropriate manner.

For the purpose of the CEMP:

- Where the 'Proposed Development' is referred to, this relates to all the project components described in detail in Chapter 4 of the EIAR.
- Where 'the site' is referred to, this relates to areas within the planning application boundary where it is proposed to carry out construction works.

The report is divided into nine sections as outlined below:

- **Section 1** provides a brief introduction as to the scope of the report detailing the targets and objectives of the CEMP.
- **Section 2** outlines the site and Proposed Development details, along with providing an overview of construction methodologies that will be adopted throughout the Proposed Development.
- **Section 3** sets out details of the environmental controls on site which looks at noise and dust controls. Site drainage measures and a waste management plan are also included in this section.
- **Section 4** sets out a fully detailed implementation plan for the environmental management of the Proposed Development outlining the roles and responsibilities of the project team.

- **Section 5** outlines the Emergency Response Plan to be adopted in the event of an emergency in terms of site health and safety and environmental protection is also included in this section.
- **Section 6** consists of a summary table of all mitigation proposals to be adhered to during the Proposed Development.
- **Section 7** consists of a summary table of all monitoring requirements and proposals to be adhered to during the Proposed Development.
- **Section 8** sets out a programme for the timing of the works.
- **Section 9** outlines the proposals for reviewing compliance with the provisions of this report.

1.2 Targets and Objectives

The following key targets and objectives will be implemented at the site:

- Adopt a sustainable approach to construction and, ensure sustainable sources for materials supply where possible.
- Correct fuel storage and refuelling procedures to be followed.
- Construction Methods and designs will be altered where it is found there is an adverse effect on the environment.
- Good waste management and housekeeping to be implemented.
- Using recycled materials, if possible, e.g., excavated material used for backfilling.
- Avoidance of vandalism.
- Air and noise pollution prevention to be implemented.
- Monitoring of the works and any adverse effects that it may have on the environment.
- Provide adequate environmental training and awareness for all project personnel.

The key site objectives are as follows.

- Keep impact of construction to a minimum on the local environment and wildlife.
- Ensure construction works and activities are completed in accordance with any planning conditions for the development.
- Ensure construction works and activities have minimal impact/disturbance to local landowners and the local community.
- Ensure construction works and activities have minimal impact on the natural environment.

2. SITE AND PROPOSED DEVELOPMENT DETAILS

2.1 Site Location and Development Description

The Proposed Development site is located within the townland of Barrymore and is approximately 4 Kilometres (km) to the northwest of Athlone, Co. Roscommon. The planning application (red line) boundary area measures approximately 8.7 hectares (ha). The Irish Transverse Mercator (ITM) coordinates for the approximate centre of the site are X 600814, Y 746366. The site location is shown in Figure 2-1. The site is accessed via the L2020 Local Road from the N61 National Road which runs in a northwest-southeast direction to the southwest of the site. The N61 National Road links Athlone town and Roscommon town.

2.2 Site Description

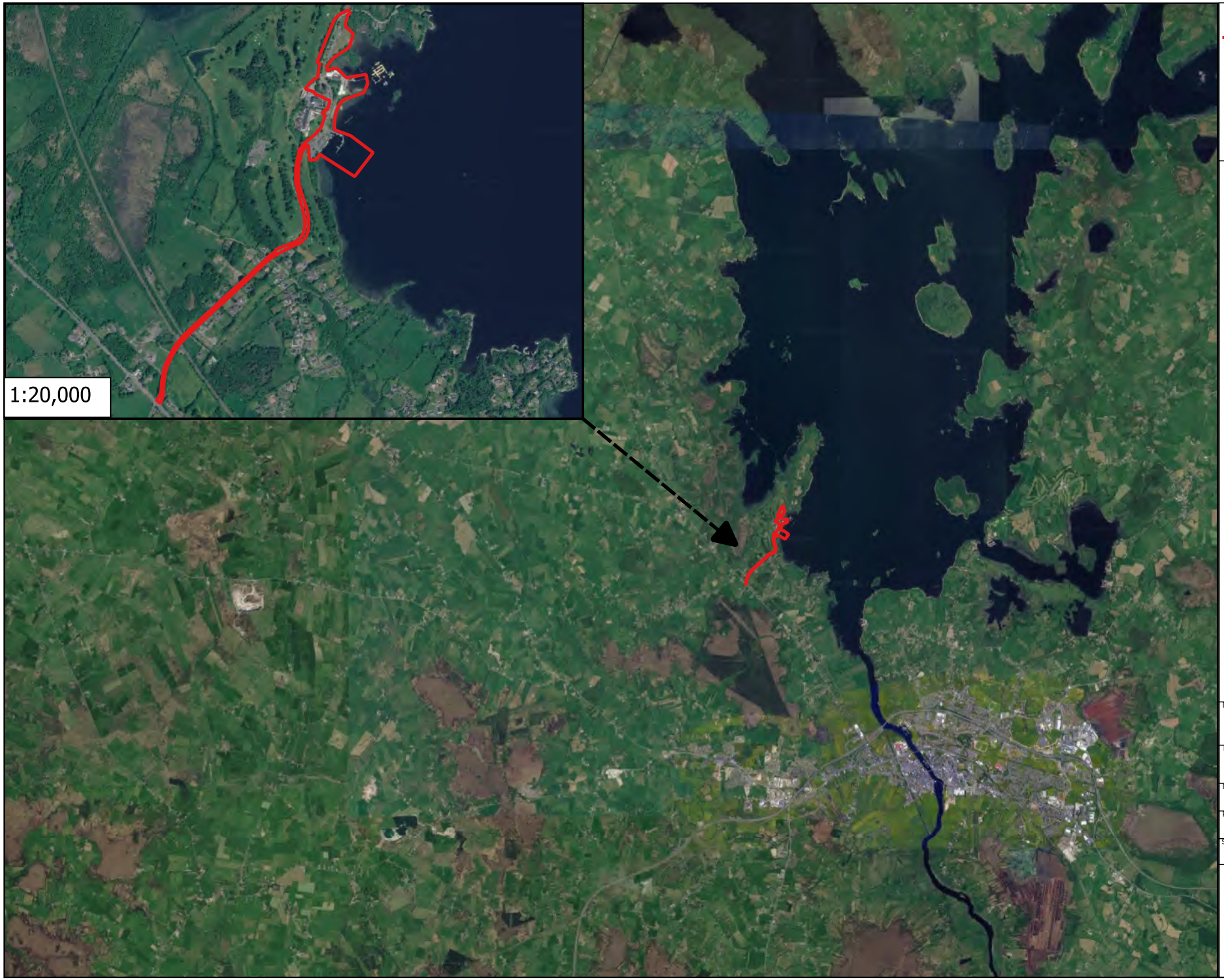
The Proposed Development site currently comprises the existing Waterways Ireland-operated marina facility, the Baysports water sports facility, areas of land currently owned by RCC, Athlone Golf Club and the Hodson Bay Hotel, along with access road, car parking, landscaped public realm space operated and maintained by RCC and an Uisce Éireann pumping station.

The Proposed Development is located within the Upper Shannon hydrological catchment (Catchment 26E), and the Shannon [Upper]_SC_090 hydrological sub-catchment (Sub-Catchment 26E_6). Lough Ree (EU Code IE_SH_26_750a) is located along the eastern boundary of the Proposed Development site.

The Proposed Development is located on the shore of and within the Lough Ree Special Area of Conservation (SAC) and Lough Ree Special Protection Area (SPA). Four European sites were identified as within the likely Zone of Influence (ZoI) of the Proposed Development; within and on the shore of Lough Ree SAC [000440] and Lough Ree SPA [004064], and approximately 6 km northwest of River Shannon Callows SAC [000216] and Middle Shannon Callows SPA [004096].

The nearest Natural Heritage Area (NHA) is Carrickynaghtan Bog NHA, located approximately 6.9 km southeast of the Proposed Development site. The nearest proposed Natural Heritage Area (pNHA) is Lough Ree pNHA, located partially within the Proposed Development site. Lough Ree pNHA [000440] and River Shannon Callows pNHA [000216] (located approximately 6 km southeast of the Proposed Development site) are considered within the likely ZoI of the Proposed Development.

A layout of the Proposed Development is shown in Appendix 1 of the CEMP.



Map Legend

Application Boundary

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N

Drawing Title

Site Location

Project Title

Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Drawn By	Checked By
EC	FL
Project No.	Drawing No.
241220	Figure 2-1
Scale	Date
1:100,000	31.07.2026

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2.3 Proposed Development Description

The Proposed Development will consist of the following:

- **Water Sports Pavilion (WSP) Development:** The demolition of the existing water sports building on site, and temporary relocation of the water sports facility to provide for the construction of a new Water Sports Pavilion;
- **Marina Redevelopment and Extension:** The redevelopment of an existing Waterways operated marina including an upgraded breakwater and jetty to increase marina capacity to approximately 59 berths;
- **Public Realm Upgrades:** Construction of a playground, nature observation space, picnic areas, benches, bicycle storage & service areas, wellness meadow, outdoor changing shelter and events spaces including the development of a continuous promenade pathway along the lakeshore along with secondary connection path;
- **Active Travel and Site Access Improvements:** Alterations and upgrade to the L2020 Local Road to include to provide for a 3 m wide shared cycle / pedestrian pathway along the length of the L2020 from the N61 National Road junction to the Hodson Bay Marina; Implementation of traffic calming measures along the L2020 Local Road accessing the site including vertical deflection ramps & raised crossings at key pedestrian crossing locations. Creation of a pedestrian priority environment resulting in the re-location of 57 no. car parking spaces from the lakefront areas to improve landscape and visual context of the site. Alterations to existing car parking & provision of new carparking at Hodson Bay; and
- The Proposed Development includes for all associated ancillary site development infrastructure including site clearance, boundary treatments, associated public lighting, electrical substation, bin storage, hard and soft landscaping, site drainage upgrades, connections to existing utilities to include foul and surface water drainage, water supply, electrical & telecommunications networks. Boundary treatments involve upgrades to the existing golf course boundary safety netting (between 3 m to 20 m in height) and fencing in sections where the boundary is altered to accommodate the proposed development and maintain public safety.

A full description of the Proposed Development is detailed in Chapter 4 of this EIAR.

2.4 Construction Management

2.4.1 Introduction

The appointed Contractors for the construction of the Proposed Development will be required to comply with this CEMP and any revisions made to this document throughout the construction phase. All measures identified in this CEMP, which will be finalised subsequent to any permission granted and updated prior to construction will include all mitigation measures identified to be adhered to during the pre-commencement and construction phases of the Proposed Development. An overview of the anticipated Construction Methodologies is provided in Section 2.4.2 below. There is potential for slight variations to some elements of the construction methodologies which are set out below in the event that a contractor adopts a different equivalent construction methodology subject to detail design and further site investigation works.

2.4.1.1 Phasing / sequencing of the Works

Phasing will be carefully planned to minimise disruption to all affected stakeholders, particularly given the site's location in relation to Athlone Golf Club and the Hodson Bay Hotel. The Contractor will be required to ensure that any construction works phasing and sequencing shall maintain access for local businesses, residents, and visitors to the area. This approach will help ensure that business entrances, footpaths, and key routes remain accessible throughout the works, while limiting the extent and duration of disruption in any one area over the full construction period.

The following phasing and sequencing framework is indicative and has been prepared to outline a viable strategy for the delivery of the Proposed Development. The appointed Works Contractor will ultimately be responsible for the final planning, phasing, and detailed sequencing of the works.

The construction phase can be divided into specific work elements:

1. *Upgrade and extension of existing parking spaces and site roads– 9 months;*
2. *Pedestrian Active Travel corridor enhancements – 5 months;*
3. *Demolition of existing water sports building and construction of new Water Sports Pavilion Buildings - 21 months;*
4. *Construction of Marina Redevelopment and Extension – 6 months;*
5. *Public Realm upgrades including landscaping – 9 months.*

Note that overlap is expected between the commencement of certain phases. The entirety of the construction phase is expected to take approximately 30 months. The construction phase for the Proposed Development can be broken down into two main phases, 1) enabling works, and 2) construction works. The main task items under each of the two phases are outlined below.

Enabling Works (including demolition of existing structures)

- Ensure that all pre-construction environmental measures are implemented/conducted e.g. implement Archaeological recovery works that may be needed, surface water protection measures (including installation of cofferdam and silt fencing) or any specific pre-construction planning conditions;
- Clear and hardcore areas for temporary construction compounds and site offices. Install same;
- Provide bunded area for oil tanks for refuelling;
- Set up the construction site enclosures. Protective hoarding will be erected around the perimeter;
- Removal of trees and vegetation in areas for construction. This will be carried out outside of breeding bird season from March 1st to August 31st inclusive;
- The demolition of the existing building used by Bay Sports and the adjacent toilet block building will be undertaken. Temporary structures such as existing marquees on site will also be removed;
- Commence site clearance and topsoil stripping;
- Regrade to foundation and road formation levels;
- Installation of utilities and services;
- The proposed surface water drainage network will be installed.
- The proposed foul water collection system will be installed.

Construction Works

- Construct road and footpath upgrades
- Construct parking areas. Removal of waterfront parking spaces, realignment of Marina car park, extension of northern car park;
- Lay foundations;
- Construction of Water Sports Pavilion buildings;
- Construction of Marina extension and Marina services block building;
- Construction of swimming changing shelter;
- Connection to public services – public water supply, sewerage system and electricity network;
- Landscaping and Public Realm upgrade areas completed including installation of lighting scheme;
- Complete all site finishes; and
- Completion of any testing and commission services within the development.

The phasing and scheduling of the main construction task items are outlined in Figure 2-2 below, where an indicative timeline for construction works has been shown. This timeline may be subject to review and changes following the receipt of planning permission.

			Year 1		Year 2				Year 3			
ID	Task Name	Task Description	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Health and Safety	Ongoing health, safety, environmental and quality management throughout construction	■	■	■	■	■	■	■	■	■	■
2	Site Compounds	Establishment of contractor compounds, welfare facilities, temporary services, site access and security measures	■									
3	Enabling Works and Site Preparation	Demolition, site clearance, vegetation removal, utility diversions, earthworks, and preparation for construction activities	■	■								
4	Pedestrian Active Travel Works	Footway widening, signage, and associated works for active travel route along L2020		■	■							
5	Drainage and Utilities	Installation of drainage networks, utility services, ducting and service connections.		■	■							
6	Building Foundations and Substructure	Construction of foundations, retaining structures and associated below-ground works for the pavilion.		■	■							
7	Water Sports Pavilion	Construction of Water Sports Pavilion buildings, building frames, cladding, glazing			■	■	■	■	■			
8	Marina Extension	In-water piling works and installation of breakwater and pontoons strictly carried out between July-September					■	■				
9	Car Parks and Site Roads	Construction of car parking areas, site roads, traffic calming measures, drainage, lighting and associated infrastructure.							■	■	■	
11	Public Realm and Landscaping	Site reinstatement, landscaping, lighting and tree planting, public realm installations constructed								■	■	■
12	Commissioning and Testing	Preparation for Operational Readiness									■	■

Figure 2-2 Hodson Bay Waterfront Redevelopment Indicative Construction Timeline

2.4.1.2 Working hours

Construction operations on site will generally be carried out in accordance with the conditions of the planning permission, RCC requirements and any associated regulatory requirements. Standard working hours will be observed to minimise impacts on residents, businesses, and road users, and to ensure compliance with noise, traffic, and environmental management conditions.

Material deliveries to the site are generally scheduled as follows:

- Monday to Friday: 07:00 to 19:00
- Saturdays: 08:00 to 17:00
- Sundays and Bank Holidays: No deliveries

However, in exceptional circumstances, certain construction activities may need to be undertaken outside these standard working hours. For example, deliveries of oversized or heavy loads may be restricted to off-peak periods, such as early mornings, evenings, or weekends, to minimise disruption to the surrounding transport network and maintain safety for other road users. Any such operations will be carefully coordinated, approved in advance by the Resident Engineer and RCC, and communicated to relevant stakeholders, including local authorities, emergency services, and affected residents or businesses.

All out-of-hours activities will be subject to strict safety, traffic management, and monitoring measures, including the implementation of additional signage, traffic control personnel required, and coordination with other construction works in the area. These measures will ensure that exceptional operations are conducted safely and efficiently, while maintaining compliance with regulatory requirements and minimizing impacts on the surrounding community.

2.4.2 Overview of the Proposed Construction Methodology

The proposed anticipated construction methodology is summarised under the following main headings:

- Site Establishment
- Temporary Construction Compound
- Perimeter Fencing
- Cofferdam Installation
- Demolition of Existing Buildings
- Tree and Vegetation Removal
- Soil Stripping & Temporary Stockpiling
- WSP Buildings
- Active Travel Improvement Works
- Car Parking Areas
- Marina Redevelopment and Extension
- Public Realm Upgrade Works
- Excavation and Services Installation
- Electrical Substation
- Ball Stop Netting

2.4.3 Site Establishment

The site will be accessed via the L2020 Local Road from the N61 National Road. A parking area for construction worker's vehicles will be provided within the confines of the site. There will be no parking permitted for any vehicles associated with the Proposed Development on the public road during the construction phase of the development unless agreed beforehand with the local authority. Two designated sections of the site will be marked out as the primary and secondary temporary site compounds.

Due to the nature and location of the proposed works, appropriate site signage will be installed on site to alert pedestrians of the construction activities and associated traffic movements. The appointed Contractor will be responsible for implementing the following site management measures:

- Enforce strict access restrictions to the construction zone to prevent unauthorised entry.
- Conduct a comprehensive site induction for all site personnel prior to commencing work.
- Ensure all site staff possess valid and up-to-date Safe Pass certification.
- Install secure access control measures, including gated entry points for authorised personnel.
- A traffic management plan will be produced, if required, to facilitate the works outlined in the sections below on the Proposed Development site.

2.4.4 Temporary Construction Compound

Temporary construction compounds will be used for temporary storage of some construction materials, prior to their delivery to the required area of the site. Any materials with high potential to cause contamination will be stored in the primary construction compound to minimise potential for runoff or pollution to Lough Ree.

Primary Construction Compound

The primary construction compound area will incorporate temporary site offices, staff facilities and car-parking areas and will be located to the north of the Hodson Bay Hotel. Tree and vegetation removal will be required to allow the primary construction compound to be prepared. This location is intended as the main management and welfare hub for the Proposed Development. It will house site offices, canteen facilities, and primary tool storage. Its central position allows for efficient management of the works while remaining within existing hardstanding areas.

A dedicated waste management area will be located within the primary construction compound, with waste to be sorted and collected from site by permitted collectors. The primary construction compound will also contain a dedicated temporary stockpiling area (as shown in Figure 2-3) which will be used for the temporary storage of topsoil if necessary. Temporary lighting will be installed for the construction compounds. Lighting will not shine directly on Lough Ree to ensure disturbance to biodiversity is minimised.

Secondary Construction Compound

A secondary construction compound location will be required during the preparation of the primary construction compound and at various times throughout the construction phase as works progress. Its location in the existing northern parking area is designed to remove heavy logistical activity from the primary visitor and hotel interfaces.

Designated Refuelling Area

A specific refuelling zone has been identified at the maximum practicable distance from the lakeshore (greater than 30 m). This strategic placement is a mandatory mitigation measure to protect the water quality of Lough Ree and the surrounding reedbeds from any potential hydrocarbon contamination.

Site Welfare

These site welfare facilities will include a canteen, toilet block, and drying room for all staff and workers. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewaters being tankered off site by permitted waste collector to wastewater treatment plants

All arrangements will comply with relevant public health and environmental regulations, ensuring that on-site sanitary and hygiene facilities are managed safely and efficiently throughout the duration of the construction works.



Map Legend

- Application Boundary
- Construction Compound
- Temporary Stockpile Area

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Drawing Title
Dedicated Temporary Stockpile Areas

Project Title
Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Drawn By	Checked By
EC	FL
Project No.	Drawing No.
241220	Figure 2-3
Scale	Date
1:1,750	31.07.2026

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2.4.5 Perimeter Fencing

Perimeter hoarding will be provided around the site, where required. This will be in the form of Heras fencing or hoarding panels, to provide a barrier against unauthorised access from the public areas. The Main Contractor will be responsible for ensuring site security and restricting access to authorised personnel only. A controlled access point in the form of a site entrance will be kept locked outside of normal working hours.

The fencing and hoarding will be maintained and managed for the duration of the construction works, painted or covered with graphics portraying project information, to effectively deter unauthorised access and minimise the visual impact of the development. Where deemed necessary by the Main Contractor, additional security measures such as routine security patrols and/or Closed-Circuit Television (CCTV) systems may be implemented to further enhance site security. Due to the nature of the works, appropriate signage will be provided along relevant footpaths and site entrances to alert pedestrians to the traffic exiting/entering the site. Likewise, appropriate signage will be installed within and outside the site to alert drivers of the pedestrians crossing ahead. The Contractor will be required to undertake the following.

- A site-specific Health and Safety Plan will be in place for the proposed site. All site staff will be made aware of and adhere to the Health and Safety Plan.
- Operate a Site Induction Process for all site staff.
- Ensure all site staff will have current Construction Skills Certification Scheme (CSCS) training or 'Safe Pass' cards.
- Site hoarding will include Health and Safety warnings at appropriate intervals.
- Fire extinguishers and first aid supplies to be available in the work area.
- All adjacent roadways will be maintained in clean condition at all times.
- Appropriate Personal Protective Equipment (PPE) to be worn at all times.

2.4.6 Cofferdam Installation

A key mitigation measure to avoid water quality impacts during the approximately 18-month construction phase of the WSP will include the installation of sheet piled cofferdam around the lake edge following the boundary of the existing concrete hardstand at the Baysports facility.

However, to avoid any impacts on alluvial woodland, alternative water quality protection solutions are required in this area. Sheet piling works are not proposed in areas of alluvial woodland, and instead an earth bund structure will be installed in the vicinity of the alluvial woodland. Works will take place outside of the identified root protection zone, as advised by an arboriculturist. In order to avoid disturbance of root structures, the dam structure will be constructed above ground, with an earth bund installed on top of the existing concrete hardstand. The earth bund will connect to the sheet piling at a point outside of the identified areas of alluvial woodland. The top-level of the cofferdam will be installed to a minimum of 37.5 metres above ordnance datum (mAOD) to ensure that the cofferdam is not breached during flooding. As with the cofferdam, the top-level of the bund will be installed to a minimum of 37.5 mAOD to ensure that the bund is not breached during flooding (Section 8.3.5 of Chapter 8 of the EIAR).

Concrete removal under the earth bund will be undertaken in a sensitive manner using hand tools where practical to ensure no tree roots are damaged. Concrete removal in this area will be conducted in the dry. Around the areas of concrete removal and prior to the commencement of works, a sandbag dam will be instated with an impermeable geomembrane to minimise any potential lake water penetration. Should any water penetrate the sandbag dam, water will be pumped from the area to the surface water drainage system (Section 8.5.3.2 of Chapter 8 of the EIAR). Weather and flood forecasting will be continuously monitored, with concrete removal in this area taking place only during periods of dry weather and low lake levels. Silt curtains will be installed in front of areas of reed bed within the lake, to the north of the existing Baysports facility.

Similarly, concrete pouring will be carried out during periods of dry weather and low lake levels, using water-tight shuttering and form works. Impermeable geomembrane sealing, sandbags and silt curtains will all be retained for the duration of concrete pouring and will be removed following the completion of

works. Should rain be forecasted, or lake levels anticipated to rise, any concrete removal or concrete reinstatement works will cease until rain stops and lake levels return to a suitable level.

Sheet piling and concrete removal works will be undertaken in August-September (inclusive) to avoid the main breeding and winter bird seasons, and to coincide with a time when water levels are at their lowest.

Dewatering will be provided as relevant to specific requirements with dewatered discharge pumped using a pump equipped with a silt bag on the discharge outlet. The pumped water will be discharged to either the existing surface water drainage system or to a suitably vegetated area within the site boundary. Where discharge to a vegetated area is required, the area will be enclosed with silt fencing, as necessary, to prevent sediment-laden runoff and ensure compliance with best practice environmental controls.

2.4.7 Demolition of Existing Buildings

As part of the Proposed Development, 2 no. existing buildings on the site which are owned by RCC will be demolished. The water sports building currently used by Baysports water sports providers and the adjacent toilet block building will be demolished. Temporary structures such as existing marquees on site will also be removed. The existing concreted area around the buildings will also be demolished as part of the development.

Service Disconnections

Prior to commencement of the demolition works the location of services likely to be affected by the works will be ascertained. Arrangements will be made by the Main Contractor with service providers for all services to be disconnected and/or terminated as required. The demolitions Contractor will confirm terminations & disconnections in advance of works commencing liable to affect same. Services to the areas of the site where demolitions are proposed which may need to be disconnected or terminated would be electricity and water.

Soft Strip

This will consist of the removal of remaining furniture, loose rubbish from the individual buildings or rooms to provide a clear working area. The buildings/rooms will then be stripped of all built in units, doors, flooring, skirting, framework, plasterboard etc. Removal of any temporary structures such as marquees and removal of water sports equipment will also take place.

Demolitions

Once the above steps have been carried out, demolition of the external structures of the 2 no. buildings for demolition will comprise using kango/demolition hammers and appropriately sized excavators to remove the structures. It is anticipated that some masonry/concrete generated during the demolition works will be reused at the site for backfilling. Old materials, if considered suitable, may subsequently be re-used. Demolition waste, not able to be reused, will be removed from the site for appropriate disposal by an appropriately licensed Contractor.

Details on the environmental controls to be implemented for the demolition works are provided in Section 3 of this CEMP.

2.4.8 Tree and Vegetation Removal

The Proposed Development will result in the removal of approximately 239 no. trees throughout the site. A total of 240 trees will be planted as part of the replanting scheme, with all trees replanted being native species. The removal of all trees and scrub vegetation on site will take place outside of the breeding bird season from March 1st to August 31st inclusive. No removal of mapped Annex I alluvial woodland is proposed as part of the Proposed Development.

2.4.9 Soil Stripping & Temporary Stockpiling

The excavation and stripping of soils and subsoils will be required across much of the site, and this soil will need to be redistributed and temporarily stockpiled around the site as the Proposed Development progresses. Prior to the construction phase of the Proposed Development, site levelling will be undertaken. During these works, topsoil from the development area of the site will be stripped and stored in a designated storage area, as show in Figure 2-3 above, for reuse. Where these works occur, the following will apply:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, RCC etc. will be contacted and all drawings for all existing services sought.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- All plant operators and general operatives will be inducted and informed as to the identification of invasive species.
- A tracked 360-degree excavator will be used to strip the topsoil, and a dumper will be used to move the excavated materials to the temporary stockpile location.
- All excavated material which is not required for future landscaping works or for backfill of excavations will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site.
- All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.
- Silt fencing will be installed around these stockpiles, if required.
- Trenches will be backfilled as soon as possible after excavation. When practically possible, excavation depths and volumes will be kept to a minimum.

2.4.10 Water Sports Pavilion Buildings

Foundations

The WSP buildings and associated structures will be constructed on a reinforced concrete foundation which will be formed on competent strata (i.e. bedrock or subsoil of sufficient load bearing capacity) which will be determined by the Project Design Engineers. The three primary buildings will sit on a concrete plinth. Foundations will be shallow pads, expected to be founded at 1 m below ground level. Ground investigation will be completed prior to final designs to confirm the depth and strength of the bearing strata. A cofferdam, as detailed in Section 2.4.6 above, will be used to create a works area for the construction works.

Overburden and material excavated to create the working area will be stripped off the foundation area to a suitable formation using a 360-degree excavator and will be stored locally for later reuse in backfilling or site reinstatement. This material will be stored in the temporary stockpile area within the primary construction compound for later reuse. The excavated material will be sealed using the back of the excavator bucket and surrounded by silt fences to ensure sediment-laden run-off does not occur further details of which are discussed in Chapter 4 and Chapter 8 of this EIAR and within this CEMP.

The basement structure will be formed with concrete. The formation material will have to be approved by an engineer as meeting the design specification. If the formation level is reached at a depth greater than the depth of the foundation, the ground level will have to be raised with approved hardcore material, compacted in 250 millimetres (mm) layers, with sufficient compacted effort (i.e. compacted with seven passes using 12 tonne roller). Exact depths and compaction will be confirmed by the Project Engineer.

The formwork and reinforcing steel cage will be installed on completion of all preliminary ground works. Formwork to concrete bases will be propped/supported sufficiently to prevent failure. Concrete for bases will be poured using a concrete pump. Each base will be poured in three stages. Stage 1 will see the concrete being poured and vibrated in the centre of the anchor cage to bring the concrete up to the

required level inside the cage. Stage 2 will see the centre of the steel foundation being poured and vibrated to the required level. Stage 3 will see the remaining concrete being poured around the steel foundation to bring it up to the required finished level. After a period when the concrete has set sufficiently the top surface of the concrete surface is to be finished.

Once the base has sufficient curing time it will be backfilled with suitable fill up to existing ground level and finished with the original material that was excavated.

Structural Frame

The structure of the WSP buildings and Plaza Canopy will be formed with a modular steel frame, or similar, which will be installed on the concrete foundation. The frame will be fabricated off site and imported to site in sequence and installed by an experienced erection crew using a combination of lifting equipment such as cranes and hydraulic lifting equipment. The frame will provide a series of columns and beams which will be installed as per the structural frame design. The flooring above ground level will be reinforced concrete and will be installed as the frame installation develops.

The temporary marquees will be constructed with timber-clad walls and tensile canvas roofs, or similar. The demountable marquees will be lightweight steel and fabric. They will be mounted on the concrete plaza to reinforced concrete foundations.

External Finishes

The external finishes proposed for the WSP buildings and structures are presented in the HB-RKD-ZZ-ZZ-DR-A-1300 drawing series and the Architectural Design Statement.

As with the structural frame components, the cladding and glazing will be prefabricated off site and delivered to site via Heavy Goods Vehicles (HGVs) and various transport solution as discussed in Chapter 14 of the EIAR.

Both the cladding and glazing installation will be completed by specialist contractors using the necessary lifting and access equipment. As with the steel frame also, there is no invasive element to the installation of the external cladding and glazing finishes as all material will be installed in pre-prepared areas.

Building Services

The site is already serviced with both foul and storm sewage networks to which the Proposed Development will connect, subject to confirmation from providers. The Engineering Drawings provide details of the internal networks for both foul and storm water export to the public network.

All utility infrastructure will be laid underground within the Proposed Development site. This will be carried out using the following methodologies:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Gas Networks Ireland, Eir, RCC etc. will be contacted and all drawings for all existing services sought.
- A Traffic Management Plan will be produced if required for connection works to the existing service network.
- A road opening licence will be obtained where required for connection to existing services.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the trench to the required dimensions.
- All excavated material will be removed to an authorised waste recovery facility or, if suitable, stockpiled and reused for backfilling and landscaping where appropriate.

- Once the trench has been excavated the ducting/pipework will then be placed in the trench as per specification.
- Once the service ducts/pipework has been installed couplers will be fitted as required and capped to prevent any dirt etc. entering the ducts/pipes.
- The as-built location of the ducting/pipework will be surveyed using a total station/GPS.
- Backfill material will be carefully placed so as not to displace the ducting/pipework within the trench.
- The appropriate warning/marker tape will be installed above the ducts/pipes at the appropriate depths.
- The surface will be reinstated as per original specification or to the requirements of the site layout/Local Authority as appropriate.

2.4.11 Active Travel Improvement Works

The L2020 Local Road which provides access to the Proposed Development site will be narrowed to between 5.5 m and 6.0 m to facilitate space for a 3.0 m wide shared cycle / pedestrian pathway as part of the Active Travel upgrades. The upgrades to the L2020 Local Road and pathway will involve two elements.

Southern Section of the L2020

Involves a widening of approximately 900 m of the existing footpath to at least 3.0 m wide along the western side of the L2020 Local Road between the junction with the N61 National Road and the golf crossing at the southern end of Athlone Golf Club lands. The footpath widening in this section will be achieved by narrowing approximately 900 m of the L2020 carriageway to between 5.5 m and 6.0 m. No land acquisition is required in this section.

Northern Section of the L2020

The Active Travel route crosses the L2020 Local Road at the existing golf crossing at the southern end of Athlone Golf Club lands and the existing footpath along the eastern side of the L2020 Local Road will be widened to 3.0 m along an approximately 415 m section between the golf crossing and the Hodson Bay Marina. The existing carriageway widths in this section will be retained, and land acquisition from Athlone Golf Club is required to widen the footway. An embankment at a 1:2 slope will be provided at the edge of the proposed 3.0 m wide shared path, to tie back into the golf club levels.

While the active travel corridor will be continuous, it will require crossing of the L2020 Local Road at an existing pedestrian crossing which will be upgraded as part of the works. Raised tables are proposed at all pedestrian crossings along the L2020 to prioritise pedestrians. The Proposed Development will also see the implementation of traffic calming measures along the L2020 Local Road accessing the site including 10 no. speed humps/speed tables at approximately 150 m spacings.

The construction methodology for the works along the L2020 Local Road is outlined as follows:

Southern Section of the L2020

- Works will be undertaken under phased traffic management arrangements including lane narrowing, temporary traffic signals/stop-go control, reduced speed limits and pedestrian management measures to maintain local access throughout the works.
- Existing road markings will be removed by hydroblasting prior to commencement of pavement works.
- A new kerbline will be constructed along the revised carriageway edge, including:
    - Excavation into the existing carriageway;
    - Installation of kerbs on concrete bedding and haunching;
    - Adjustment of utility covers and ironwork where required.

- Excavation within the carriageway for the new kerbline and drainage works will be reinstated in layers to provide a strong structural tie-in with the retained pavement. Reinstatement will comprise:
  - Granular sub-base;
  - Bituminous binder/base layers;
  - Surface course surfacing;
  - Tack coat application and sealing of longitudinal joints.
- The existing footway will be widened to provide a minimum 3.0 m shared pedestrian/cycle route, including:
  - Excavation to formation level;
  - Installation and compaction of sub-base material;
  - Construction of asphalt footway layers;
  - Resurfacing across the full footway width to provide a consistent finish tied into existing surfaces.
- A total of 21 existing gullies along the western side of the carriageway will be relocated to align with the proposed kerbline. Works will include:
  - Saw cutting and excavation of existing pavement;
  - Removal of existing gullies and pipework connections;
  - Installation of new gullies and drainage connections;
  - Tie-in to the existing drainage network;
  - Backfilling and reinstatement using compacted granular and bituminous pavement layers.
- All driveway crossings and accesses along the route will be reconstructed with dropped/vehicle entry kerbs and strengthened pavement construction where required.
- Traffic calming measures comprising speed humps and raised pedestrian crossings will be installed at approximately 150 m intervals. Works will include:
  - Saw cutting and planing of existing carriageway surfacing;
  - Localised excavation and pavement build-up;
  - Construction of asphalt raised tables and ramps;
  - Installation of tactile paving and anti-skid surfacing where required;
  - Reinstatement of associated signage and road markings.
- Following completion of the civil works, final surfacing, repainting of road markings and general reinstatement works will be completed.

Northern Section of the L2020

- The existing carriageway width, kerbline and gullies will be retained throughout this section.
- Works will be undertaken under phased traffic management arrangements including lane narrowing, temporary traffic control and pedestrian management measures to maintain safe access throughout construction.
- Footway widening works will include:
  - Vegetation clearance and topsoil stripping;
  - Excavation to formation level;
  - Installation and compaction of granular sub-base;
  - Construction of asphalt pavement layers;
  - Resurfacing across the full footway width to provide a continuous and consistent finish.
- A 1:2 earth embankment will be formed along the outer edge of the widened footway to tie into existing golf course levels, including:
  - Placement and compaction of suitable fill material;
  - Grading to required slope profile;
  - Topsoiling and reinstatement of disturbed areas and trees.
- Ball stop fencing will be installed along the footway edge adjacent to the golf course, including:
  - Excavation and concreting of fence post foundations;
  - Installation of fence posts and mesh/netting systems.
- 10 no. lighting columns will be relocated to the opposite side of the proposed fence line, including:

- Electrical isolation and disconnection;
- Removal of existing columns;
- Installation of new ducting, cabling and foundations;
- Installation and commissioning of relocated lighting columns.

- Traffic calming measures comprising speed humps and raised pedestrian crossings will be installed at approximately 150 m intervals. Works will include:
  - Carriageway planing and saw cutting;
  - Asphalt build-up and surfacing works;
  - Installation of tactile paving;
  - Reinstatement of signage and road markings.
- Existing road markings throughout the section will be refreshed or repainted following completion of the works, with all disturbed verges and surfaces reinstated on completion.

2.4.12 Car Parking Areas

There are three parking areas proposed. Existing parking areas being retained will keep existing asphalt surfacing. New parking areas will be constructed using a porous asphalt to assist with site SuDS. The car parking areas will be constructed using the following methodology:

- Establish alignment of the parking areas from the construction drawings and mark out the boundaries with ranging rods or timber posts;
- All drainage measures prescribed in the detailed drainage design for the Proposed Development will be implemented around the works area;
- All excavated material will be managed on-site. Some topsoil will be temporarily stockpiled locally for reuse for landscaping purposes;
- The subsoil will be excavated down to a suitable formation layer of either firm clay or bedrock and managed on-site in the temporary stockpile areas;
- The car park will be constructed using well-graded imported granular fill, spread and compacted in layers typically of 200 mm and a suitable capping layer to provide a homogeneous running surface. The thickness of layers and amount of compaction required will be subject to detailed design by Project Engineer in consultation with the Construction Manager based on the characteristics of the material and the compaction plant to be used;
- The car parking areas will be constructed with the necessary gradient to promote drainage;
- Car parking areas will be finished with porous asphalt;
- The parking lines will then be painted; and
- Any updated or new signage will be installed

Other hardstand/paved areas will be installed using the same methodology as that outlined for carparking areas with the only key difference being the paving or finished applied to each area.

2.4.13 Marina Redevelopment and Extension

The marina redevelopment and extension will provide approximately 29 no. additional boat berths, ensuring that the extended marina will be capable of hosting approximately 59 no. berths for cruisers and visiting watercraft. The redevelopment will also include for the provision of services for boat users including potable water, electricity and foul water pump-out facilities. A new marina service block building covering an area of 74 m^2 will be constructed as part of the Proposed Development adjacent to the marina which will provide shower and toilet facilities for marina users. The marina service block building will be constructed with concrete and steel and finished with concrete terracotta tiles similar to the Water Sports Pavilion buildings.

The marina redevelopment and extension will include the following installations;

- Approximately 42 no. steel piles driven into lakebed;
- Floating breakwater;

- Floating jetties;
- Gangways to connect to the existing marina;
- Canoe step;
- Marina service block building; and
- Provision of services including electricity, potable water and foul water pump-out throughout the marina.

The construction crew will begin by pushing a floating pontoon with 36-tonne excavator and Movax on board into position using the Inis Muilinn workboat for the location of the first pile to be installed (see Plate 2-1 below). Pile locations will be set out using Global Positioning System (GPS). A silt curtain will be installed around the location of where this pile will be installed and connected back to the pontoon, weights will be used to ensure the silt curtain sits on the bed of the lake.

The 36-tonne excavator using the Movax will then lift the steel pile and vibrate the pile into the lakebed to the required depth. The floating pontoon will then be moved to the next pile position and the process repeated until all the piles have been installed.

Mooring anchors of the floating pontoons will be placed precisely on the lakebed and not dragged, to avoid disturbance to lakebed habitat. Pre-defined access routes will be used by the floating pontoon and Movax for the installation of piles and all other floating marina components, to limit the area of lakebed disturbance. Total works duration for the marina redevelopment and extension is anticipated to take approx. 6 months (including the 4–6 weeks of piling), with all in-lake works (piling works) to be undertaken between August–September (months inclusive) during periods of lower lake water levels and outside of ecological sensitive time periods (e.g., core breeding bird season, core wintering bird season).

Once the piles have been installed, the Contractor suppling the jetties and breakwater will lift the floating jetties and breakwater into the water, push them into position using workboats and connect them to the relevant steel piles and other section of jetties/breakwater. The canoe step will then be pushed into place and connected. The gangways will then be lifted into place using the 36-tonne excavator on the floating pontoon and bolted to concrete on the existing breakwater.

The in-water construction elements of the marina and breakwater extension (piling) will be undertaken between the months of August to September as per Section 4 of the 2016 Inland Fisheries Ireland guidance document *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*[3].

The marina service block building will be constructed with concrete and steel and finished with concrete terracotta tiles similar to the WSP buildings. Services including electricity, potable water and foul water pump-out will then be installed on the new sections of jetties.



Plate 2-1 Coill an Eo, Inis Muilinn workboats and Pontoon Raft with 36-tonne excavator

2.4.14 Public Realm Upgrade Works

Prior to completion of works on the development site, the Public Realm Upgrade works will be carried out. The finishes include areas of amenity grassland, a wellness meadow, nature trails, footpaths, playground, changing shelter for wild swimmers, several benches, tree planting. These works will involve the use of plant and machinery in order to carry out tasks such as earth moving. Materials which have been stockpiled for the task will be used as much as possible, and material will only be imported where it is required. Where topsoil is stripped prior to excavation, this material will be retained on site for use in landscaping. Hoarding will be erected around the construction site boundary for the duration of the Public Realm Upgrade construction works.

A detailed Tree Replanting Scheme will comprise a key element of the Public Realm Upgrade works (see Figure 2-4 below). 240 no. trees and shrubs will be replanted across the site, all of which will be native species. The Tree Replanting Scheme incorporates a significant number of mature trees (10 years or older) to compensate for the removal of a number of mature trees for the construction of the Proposed Development.

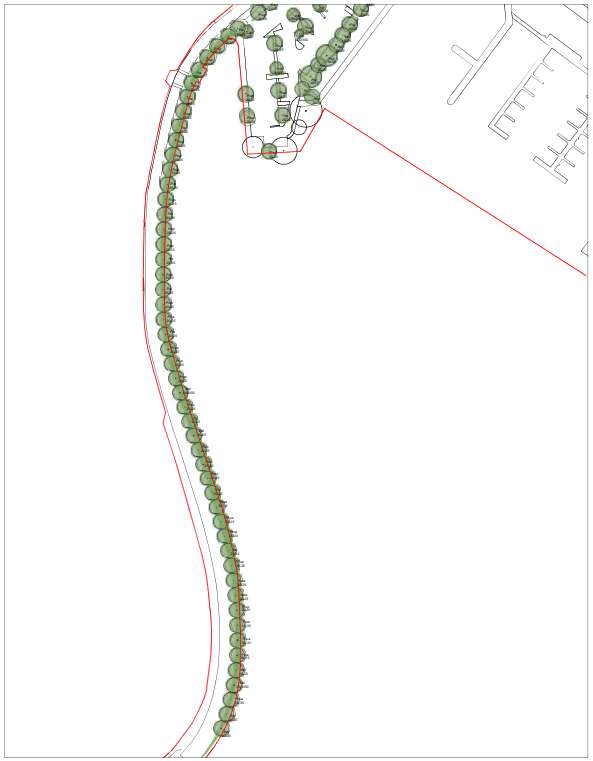
The proposed Public Realm Upgrades will also include upgrades to the lighting scheme throughout the site. Lighting design and specification throughout the Proposed Development site has been carefully considered to ensure minimisation of ecological disturbance is balanced with ensuring the safety of those visiting the Hodson Bay area is not compromised. A detailed Lighting Plan and accompanying report with specifications sheets has been included in the planning application documents.

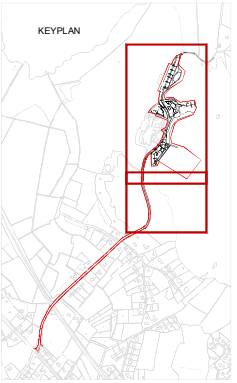
The Northern Swimming Changing Canopy will be constructed of in-situ concrete on a reinforced concrete foundation.



ITEM / ELEMENT		NAME	% of sqm	Planting principle	Size	Amount (units)
TREES						
Large trees	Ag	Alnus glutinosa - Common alder			4-5 x tr WR30-35	4
	Ulg	Ulmus glabra - Elm			4-5 x tr WR30-35	2
	Que	Quercus robur - English oak			4-5 x tr WR30-35	6
	Pop	Populus tremula - Aspen			4-5 x tr WR30-35	6
Medium and small trees	Prup	Prunus padus - Bird cherry			4-5 x tr WR30-35	47
	Cra	Crataegus monogyna			3-4 x tr WR 18-20	23
	Prua	Prunus avium - Sweet cherry			4-5 x tr WR30-35	15
	Fra	Fraxinus excelsior			4-5 x tr WR30-35	30
	Sora	Sorbus aria			3-4 x tr WR20-25	10
	Bet	Betula pendula - Silver birch			4-5 x tr WR30-35	27
	Sor	Sorbus aucuparia - Rowan			4-5 x tr WR30-35	9
Multi-Stem trees / shrubs	Euo	Euonymus europaeus - Spindle			Multi-stem 300/350	10
	Mal	Malus sylvestris			Multi-stem 300/350	9
	Vib	Viburnum opulus			Multi-stem 300/350	10
	Ilex	Ilex aquifolium - Common holly			Multi-stem 300/350	9
Wet Area Trees	Bep	Betula pubescens - Downy Birch			3-4 x tr WR30-35	15
	Sal	Salix alba - Willow			4-5x tr WR30-35	1
	Sac	Salix cinerea			Multi-stem 300/350	7
TREES PLANTED						
Total per size			68%		3-4 x tr WR30-35	162
Total per size			4%		3-4 x tr WR20-25	10
Total per size			10%		3-4 x tr WR 18-20	23
Total per size			19%		Multi-stem 300/350	45
Total						240

TREES SCHEDULE





Drawing Title
Replanting Scheme

Project Title
Hodson Bay Waterfront Redevelopment

Adapted By	Checked By
FL	EOS
Project No.	Drawing No.
241220	Figure 2-4
	Date
	31.07.2026

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Rialtas na hÉireann
Government of Ireland

Arna dtromhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Réigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

Fáilte Ireland

Comhairle Contae Bhaile Átha Cliath
Fingal County Council

Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FOUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

This drawing is based upon the following base drawing/s:
Deze tekening is gebaseerd op de volgende ondertekening:

-	-	-	-
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HODSON BAY WATERFRONT PARK
PUBLIC REALM

PROPOSED TREES PLAN

10-08-26

001201	-	R00	AF
PLANNING	25-006	1-1000	A0

OKRA

2.4.15 Excavation and Services Installation

Where excavations and installations of any new services are required on the Proposed Development site, the same methodology as set out in Section 2.4.10 Building Services above will apply.

2.4.15.1 Existing Underground Services

Any underground services encountered during the works will be surveyed for level and where possible will be left in place. If there is a requirement to move the service, then the appropriate body (ESB, Gas Networks Ireland, etc.) will be contacted, and the appropriate procedure put in place. Back fill around any utility services will be with dead sand/pea shingle where appropriate. All works will be in compliance with required specifications.

2.4.16 Electrical Substation

The proposed substation will be constructed by the following methodology:

- The area of the onsite substation will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to nearby temporary storage area for later use in landscaping. Any excess material will be disposed/recovered offsite at an appropriately licensed facility;
- The dimensions of the substation area have been designed to meet the current requirements of the ESB;
- The required level platform will be established and finished with well-graded imported granular fill, compacted in layers and finished with a suitable capping layer to the desired level;
- The ESB substation will have oil-less equipment within.
- The foundations will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it.;
- The block work walls will be built up from the footings to damp proof course level and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors;
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the buildings for this operation;
- Concrete roof slabs will be used over the ESB Substation section only and will be lifted into position using an adequately sized mobile crane;
- The timber roof trusses over the complete substation will then be lifted into position using a telescopic load all or mobile crane depending on site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather;
- The substation plinths will be shuttered and poured with reinforced concrete.;
- The electrical equipment will be installed on the concrete plinths and commissioned.

2.4.17 Ball Stop Netting

Ball stop netting will be installed along the footway edge adjacent to the golf course, and will be constructed as follows:

- Excavation and concreting of fence post foundations;
- Installation of fence posts and mesh/netting systems.

The ball stop netting will range between 3 m to 20 m in height.

3. ENVIRONMENTAL MANAGEMENT

3.1 Introduction

This CEMP includes all best practice measures required during construction of the Proposed Development, including the demolition works. The following sections give an overview of the drainage design, dust and noise control measures and a waste management plan for the site.

3.2 Health and Safety Requirements

Works at the site are to be carried out in accordance with all relevant Health and Safety legislation including the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013).

The Contractor shall comply with all relevant Statutory requirements such as the 2005 Safety Health and Welfare at Work Act, The Construction Regulations (SI 291 of 2013), the General Application Regulations (SI 299 of 2007), etc. (and any amendments thereof).

The Contractor shall also comply with all the reasonable safety requirements of the Client, the Project Supervisor for the Design Process and the Project Supervisor for the Construction Stage.

Additionally, the burning of any materials or the lighting of fires on-site is strictly prohibited.

3.3 Protecting Water Quality

3.3.1 Existing Water Environment

The closest river to the site has been temporarily named 'TEMP_26N58' by EPA (WFD code: IE_SH_26S021660), which originates to the west of the site and flows northward for approximately 0.8 km before discharging to Lough Ree; this river is upstream of the site, via Lough Ree. The Lough 'Ree' lake waterbody (WFD code: IE_SH_26_750a, Lough Ree, overlies and bounds the northern section of the site. The lake covers approximately 100 km^2. The continuation of the River Shannon [Upper] is mapped by the EPA approximately 3.6 km southeast of the site, draining Lough Ree towards Athlone.

The Proposed Development is located within the Upper Shannon WFD Catchment (Catchment ID: 26E) and within the Funshinagh Groundwater body (WFD Code: IE_SH_G_091) which has a good water quality status and is not at risk.

Prior to the commencement of any subsequent construction activities, the necessary mitigation measures will be put in place to ensure that no silt laden water runoff generated at the site will flow to nearby watercourses or drains thus ensuring the protection of surface water during the works. This will involve confirming the location of all existing services and delineating between drainage systems.

Particular emphasis will also be placed on hazardous materials entering the surface water management system as well as spill or leaks of fuel oils. Section 1 below provides an Emergency Response Plan for dealing with spillages which may result in adverse environmental effects.

3.3.2 Prevention Pollution Control Measures

The following measures will be put in place to prevent the transportation of silt laden water or pollutants from entering any of the wider environments including watercourses/drains within or near the site:

- The site boundary will be fenced off with Heras fencing (or similar) prior to works commencing to protect adjacent habitats and to prevent any egress of machinery outside of the site during construction activities.

- There are no watercourses on site and surface water will not be directly discharged into any external water bodies, surrounding land, or adjacent roadways. Any run-off generated on-site will undergo the necessary filtration process as previously outlined.
- The works will be managed to ensure there will be no silt-laden run-off beyond the site boundary. This will be achieved through the use of appropriate excavation techniques during the initial construction works. Where necessary, silt fencing will be installed downslope of the construction areas, particularly where drains or drainage pathways are present. These measures will serve as a protective measure to contain silt material within the site.
- Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall.
- Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised.
- Excavated spoil will be stockpiled and contained entirely within the confines of the site boundaries. Material stockpiles will be kept at least 10 m from any manholes. Depending on the nature of the excavated material, the stockpiles of excavated materials will be sealed with a digger bucket to reduce the potential for sediment runoff. These areas will be surrounded with silt fencing, if deemed necessary to prevent runoff.
- The minimum number of soil/subsoils and bedrock material should be removed from site. Soil may be reused for landscaping elsewhere on the site. However, any excess construction material shall be removed from the area and sent to an authorized waste recovery facility
- Works shall not take place at periods of high rainfall and shall be scaled back if or suspended if heavy rain is forecast during excavation works.
- High rainfall' is defined as follows:
    - >10 mm/hr (i.e. high intensity local rainfall events);
    - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day);
    - Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week).
- Stockpiles will also be covered with plastic sheeting during high rainfall to prevent runoff.
- In the event of encountering groundwaters during excavation, groundwater will be pumped out of the excavation using a pump equipped with a silt bag on the discharge pipe, if necessary, to capture any silty material prior to subsequent natural percolation to ground. The area surrounding the silt bag will be surrounded by silt fencing if deemed necessary.
- No wastewater will be treated or discharged on-site during the construction phase.
- Good construction practices will be implemented at the site. This will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provides guidance on the control and management of water pollution from construction sites, as outlined in 'Control of Water Pollution from Construction Sites, guidance for consultants and contractors'.[1] This guidance will be adhered to throughout the construction phase to ensure that surface water generated on site contains minimum sediment.

Details of control measures which will be implemented at the site, if required, are included in the Plates below.

[1] Construction Industry Research and Information Association (CIRIA) (2001) *Control of Water Pollution from Construction Sites, guidance for consultants and contractors.* Available at: https://www.ciria.org/CIRIA/productexcerpts/c532.aspx



Plate 3-1 Silt Bag with water being pumped through.



Plate 3-2. Silt Bag under inspection.

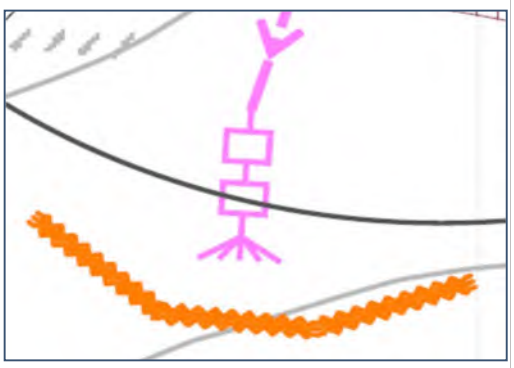


Plate 3-3 Silt Fence surrounding the discharge from Silt Bag.



Plate 3-4 Embedded Silt Fence.

3.3.3 Sediment Control Measures

The following measures will be put in place to protect Lough Ree from the uncontrolled release of suspended sediments:

Works will be completed between August and September (inclusive) aligning with Inland Fisheries Ireland guidelines (2016)[2] of sensitive periods for fish spawning, avoiding the main breeding and winter bird seasons, and coinciding with a time when water levels are at their lowest. A double-lined, floating silt curtain will be installed around the main works area (the WSP) before any near-shore or in-water works commence.
Non-intrusive or low-intrusive cofferdam systems are encouraged if possible. However, sheet piling is the likely method of cofferdam installation Differing sheet piling techniques cause differing levels of ground disturbance and pulverised drill spoil. Accordingly, percussive hammers will be minimised, and vibrative hammers will be utilised when installing sheet piles.
Disturbance of lake-substrate will be minimized through careful positioning of plant and adoption of low-impact construction methodologies. Equipment will not be dragged across the lakebed; this will avoid any

[2] Inland Fisheries Ireland (IFI) (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.* Available at: https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf

additional sediment disturbance. Piles will not be advanced into bedrock to avoid any potential bridging to the karstified aquifer below the lakebed.
The top-level of the cofferdam will be installed to a minimum of 37.5 mAOD to ensure that the cofferdam is not breached during flooding.
The silt curtain will remain in place after cofferdam installation, and for the duration of the construction stage, and will only be removed once monitored suspended solids concentrations are observed at baseline levels. The silt curtain will be inspected regularly for defects and adjusted as necessary.
Water quality measures during construction, including cofferdam and earth bund installation, concrete removal/pouring protocols, and timing restrictions to protect Lough Ree, are set out in full in Section 2.4.6.

The following measures will be in place to mitigate against any potential increase in suspended sediment load due to piling activities:

A double-lined, floating silt curtain will be installed around the works area before any works commence, i.e. the silt curtain will encompass as a whole, the 42 no. piling locations.
Differing drilling techniques cause differing levels of ground disturbance and pulverised drill spoil. Accordingly, percussive hammers will be minimised, and vibrative hammers will be utilised when drilling. Disturbance of lake-substrate will be minimized through careful positioning of plant and adoption of low-impact construction methodologies. Equipment will not be dragged across the lakebed; this will avoid any additional sediment disturbance.
Following completion of piling works, disturbed sediments will be allowed to consolidate under natural hydrological conditions. The silt curtain will be inspected regularly for defects and adjusted as necessary, will remain in place for the duration of the works, and will only be removed once monitored suspended solids concentrations are observed at baseline levels.

3.3.4 Cement Based Products Control Measures

The complete washing out of concrete trucks will not be permitted at the site during the construction phase. Suppliers will be directed back to their own facility to complete the washout process. However, a washout area for chute cleaning will be provided at the primary and secondary temporary construction compound.

The following mitigation measures are proposed to avoid release of cement leachate from the site:

Mitigation by Avoidance:

- Concrete will be delivered in sealed concrete delivery trucks. Batching of wet-cement products will not occur on-site.
- Ready-mixed supply of wet concrete products and emplacement of pre-cast elements will take place.
- Pre-cast elements for cofferdams, pile foundations, culverts, and concrete works will be used.
- Concrete trucks will not be washed out on-site but will be directed back to their batching plant for washout.

Mitigation Measures by Design:

- Where concrete is delivered on-site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement-contaminated waters to the construction stage drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined washout areas.
- Where temporary lined impermeable containment areas are used, such containment areas are built using straw bales and lined with an impermeable membrane. These are covered when not in use to prevent rainwater collecting.
- Pour sites of cement will be kept free of standing water, and plastic covers will be ready in case of sudden rainfall events.

Risks of pollution will be further reduced as follows:

- Concrete will not be transported around the site in open trailers or dumpers so as to avoid spillage while in transport.
- All concrete used in the construction will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete locally to the location where it is needed.
- Arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, confirming routes, prohibiting on-site washout and discussing emergency procedures.
- Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the site.
- Weather forecasting will be used to assist in planning large concrete pours and large pours will be avoided where prolonged periods of heavy rain is forecast.
- Concrete pumps and machine buckets from slewing over watercourses will be restricted while placing concrete.
- Excavations will be sufficiently dewatered before concreting begins and dewatering will continue while concrete sets.
- Covers will be available for freshly placed concrete to avoid the surface washing away in heavy rain.
- Any potential, small surplus of concrete remaining after completion of a pour will be disposed at a suitable off-site facility.

3.3.5 Refuelling, Fuel and Hazardous Materials Storage

The following measures are proposed to avoid the release of hydrocarbons at the site:

- All refuelling of construction vehicles and plant on site will be carried out in the dedicated refuelling area located adjacent to the primary construction compound at least 30 m from watercourses or surface water features.
- Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements.
- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- Storage bunds/trays, if required will be constructed of an impermeable membrane (high density polyethylene (HDPC) plastic and will have the adequate capacity to contain the volume of the liquids contained therein, if a leak/spillage does occur from one of the storage vessels.
- All plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All repair and maintenance operations will take place off site.
- Spill kits will be used to deal with any accidental spillage in and outside the refuelling area.

3.3.6 Drainage and surface water discharge routes control

Management of surface runoff and subsequent treatment prior to release will be undertaken during construction work as follows:

- Source controls include the covering work areas, staging areas, and stockpiles, as wells as the prioritisation of small working areas and cessation of works during heavy rainfall and inclement weather. Methods that will be employed are diversion drains, flume pipes, sand bags, oyster bags filled with gravel, and filter fabrics. A cofferdam and earth bund will be installed to minimise sediment mobilisation into Lough Ree. Flexibility to adapt methods will be required based on location-specific conditions, as judged by supervising engineers from visual inspection.
- In-line controls involve settling of suspended sediments with the use of silt fences, straw bales, sand or oyster bags, weirs, baffles, and check dams. Flow limiters and sump

pumping systems may be employed where needs arise in order to maintain the hydraulic functioning of the existing drain system.
- Treatment systems involve sediment traps and temporary sumps/attenuation ponds.

Adjacent drainage systems/groundwater need to be protected from sedimentation and direct surface water runoff generated onsite during the construction stage. Discharge from site will be managed and controlled within the Site boundary for the duration of the construction works. There will be no temporary uncontrolled discharges to surface water from the Site during the construction stage.

As construction advances there may be a requirement to collect and treat surface water within the Site. This will be completed using perimeter filter drains around the construction areas and discharged to the existing oil separator/petrol interceptor, which in turns discharges to Lough Ree. Sumps can be installed periodically along the perimeter filter drains to allow for collection of sediments. All works shall be undertaken in accordance with the CIRIA document[1], 'Control of Water Pollution from Construction Sites', guidance for consultants and contractors. All stockpiles will be damped down or covered, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation. Silt fencing will be installed around these stockpiles. Material stockpiles will be kept at least 10 m from any manholes and >50 m from lake shore where possible.

It should be noted for this site, that a network of stormwater drains already exists, and these will be integrated and enhanced as required and used within the Site drainage system. The main elements of interaction with existing drains will be as follows:

- Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the proposed Site drainage into the existing drainage network where possible. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion.
- Drains running parallel to the existing roads requiring widening will be upgraded. Velocity and silt control measures such as check dams, sand bags, oyster bags, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters;
- Silt fences will be emplaced within drains downgradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to watercourses of sand and gravel sized sediment, released from the excavation of subsoils, and entrained in surface water runoff. Inspection and maintenance of these structures during construction stage is critical to their functioning to stated purpose. They will remain in place throughout the entire construction stage. Double silt fences will be emplaced within drains downgradient of all construction areas; and
- Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters.

Airborne dust will be generated from excavation and concrete cutting across the Site. The most efficient method of reducing dust particles is to remove at source. Accordingly, all excavation and cutting sites will require the suppression of dust through the use of water and sprinkler systems at each excavation/cutting site.

A double-lined, floating silt curtain will be installed around the works area before any near-shore or in-water works commence. This will allow residual dust particles to be captured and settle out within the silt curtained area of Lough Ree, close to the Site.

Excavation spoil may be deposited on road surfaces via the wheels of construction vehicles. To minimise the amount of excavation material leaving the Site in this way, wheel washes will be installed at the exit of each work area and temporary construction compound. Residual material from wheels and airborne dust may still become deposited on the Site road network, potentially impacting the water quality of the stormwater drainage network or allowing for airborne dust to be mobilised from here in dry conditions. Therefore, dust suppression vehicles will be used throughout the year during the construction stage,

routinely traversing the Site road network as required; this may be continuous during the summer months.

Management of excavation seepages and subsequent treatment prior to discharge into the site drainage network will be undertaken. An upslope interceptor drain will be established upslope of the excavation area to prevent greenfield runoff into the excavations. Berms will also be used, as necessary.

The following design measures will be implemented on the site:

- Dewatering will be provided as relevant to specific requirements with de-watered discharge pumped using a pump equipped with a silt bag on the discharge outlet. As the water pass through the silt bags, the majority of sediment and organic matter is retained by geotextile fabric. The silt bags will be used with natural vegetation filters or sedimats. The sedimats will be secured to the ground surface using stakes/pegs. They will extend to the full width of the outfall to ensure that all water passes through this treatment measure.
- The pumped water will be discharged to either the existing stormwater drainage system or to a suitably vegetated area within the Site boundary. Where discharge to a vegetated area is required, level spreaders will be installed for each outfall, and the area will be enclosed with silt fencing to prevent sediment-laden runoff and ensure compliance with best practice environmental controls. Prior to the outset of works a silt fence will be erected along the lakeshore perimeter of the proposed construction area to prevent run-off to potentially floodable areas and into Lough Ree at the boundaries of the development site.

3.3.7 Accidental Spills, Leaks or Other Releases

The following design measures will be in place to mitigate accidental spills, leaks or other releases:

- Highest standards of site management will be maintained, with the utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during construction.
- An Emergency Response Plan for accidental spillages is set out in Section 1 below, all construction staff will be familiar with the emergency procedures and the use of the relevant equipment,
- To provide fuel for plant and equipment on site, a certified double-skinned metal fuel tank, equipped with an integrated pump, delivery hose, meter, filter, and locking mechanism, will be installed within a secure, bunded area on the construction site. The tank will be certified for lifting when full to facilitate safe relocation if required.
- To mitigate the risk of fuel spills, sand piles and emergency spill kits will be readily available on site. A dedicated hazardous waste bin will be provided for the disposal of contaminated materials, such as spent sand or soak pads.
- Fuel for small plant equipment will be transported around the site using new metal jerrycans fitted with appropriate pouring nozzles. Drip trays will always be used under small plant to capture any leaks or drips. Waste oils and other fluids collected in drip trays or within the bunded area will be transferred into a designated waste oil drum, which will be stored within the bund to prevent contamination. Refuelling of construction machinery will take place using drip trays at all times.
- All metal jerrycans and other fuel containers will be stored in certified metal bunded cabinets. Gas cylinders will be stored in a secure, caged area on site and will be properly secured at the point of use. These measures ensure compliance with environmental and safety regulations while minimising the risk of fuel-related incidents.
- On-site refuelling will be undertaken using a double skinned bowser.
- Fuels stored on-site will be minimised. Storage areas, where required, will be bunded appropriately for 110% of the fuel storage volume for the time period of construction and fitted with a storm drainage system and an appropriate oil interceptor.
- All waste tar material arising from the potential chipping and resurfacing of roads will be removed off-site and taken to a licenced waste facility; and
- Appropriate erosion, sediment and pollution control measures will be implemented throughout the construction stage in accordance with this CEMP and relevant industry guidance.

3.4 Dust Control

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e., soil, sand, etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the public road. The measures below will also prevent construction debris arising on the public road network.

Proposed measures to control dust include:

- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness and cleaned, as necessary.
- Material handling systems and waste storage areas will be designed and laid out to minimise exposure to wind. Double handling of materials with potential to generate dust will be minimised.
- Any hardstanding areas/site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- A water tanker will be maintained on-site to dampen exposed soils, unpaved haul routes, and active work areas.
- Water sprays will be used as required during transfer and loading activities, during dry and/or windy conditions.
- The transport of crushed concrete or other material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles where necessary. Any rubble that has potential to generate dust will also be dampened down as necessary.
- Regular Toolbox Talks (TBTs) will be carried out with operatives by site management to reinforce the need for all operatives to be aware of and responsive to conditions or activities that could generate dust.
- Stockpiles on-site will be located in the temporary construction compounds and will be covered with plastic sheeting to prevent dust generation during dry conditions. If plastic sheeting is not feasible, stockpiles will be dampened down when necessary.
- All plant and machinery will be maintained in good operational order while onsite.
- Vehicle speeds on-site will be restricted to 15 km/h.
- All internal access roads will be surfaced using suitable materials; the use of mud stone, clay stone, or shale stone is explicitly prohibited to prevent the generation of additional fine dust particles
- All trucks exiting the site carrying fine dry loads shall be covered and all other loads sprayed with water prior to exiting the site
- A wheel wash facility will be provided to clean HGV traffic leaving the site to minimise dust and dirt soiling on the L2020.

3.5 Noise Control

The following measures are proposed to control noise include:

- Construction operations will in general be confined to 0700–1900 h Monday-Friday and 0800-1700 h Saturday.
- Any works outside these hours, if required, will be limited to quieter operations, and will be agreed in advance with the planning authority.
- Drivers of plant and vehicles will be instructed to avoid hooting onsite at all times.
- Plant used onsite during the construction phase will be maintained in a satisfactory condition and in accordance with manufacturer recommendations. In particular, exhaust silencers will be fitted and operating correctly at all times. Defective silencers will be immediately replaced.
- Queuing of trucks on public roads near receptors will be prohibited.
- Machinery not in active use will be shut down.

- Driver training will be provided to ensure smooth machinery operation, to minimise unnecessary noise generation.
- A site representative will be appointed as a liaison officer with the local community. Prior to road improvement works along the L2020 Local Road, notification will be given to the residents along this road via letter drop.
- Any complaints of noise received during the construction phase will be logged in a register and investigated immediately. Details of follow-up action will be included in the register.
- Where it is proposed to import potentially noisy plant to the site, the potential impact of noise emissions will be assessed in advance.
- Guidance set out in BS 5228-1:2009 with respect to noise control will be applied throughout the construction phase.

The hours of working should be planned, and account should be taken of the effects of noise upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned, the duration of work and the likely consequence of any lengthening of work periods. Deviation from these times will only be allowed in exceptional circumstances where written approval has been received from the Planning Authority.

3.6 Vibration Control

It is proposed to carry out construction phase vibration monitoring at the hotel and at any other structure while vibro-rolling is undertaken within 100 m. The following is proposed:

- Vibration monitoring in accordance with *Measurement and assessment of groundborne noise and vibration* (Association of Noise Consultants, 2012).
- Measurement using a calibration vibrograph with tri-axial transducer.
- Measurement of Peak Particle Velocity (PPV) levels, frequency and displacement.
- Measurement at nearest point of hotel to vibro-rolling area.
- Measurement for duration of vibro-rolling.
- Prior agreement with hotel management.
- Alert system to notify where PPV levels exceed 10 mm/s.

3.7 Invasive Species Management

Third Schedule Invasive Species were recorded within the site boundary. Starry stonewort *(Nitellopsis obtusa)* was found throughout aquatic drone transects and grapnel throws within the existing marina, often in conjunction with Quagga mussel *(Dreissena rostriformis bugensis)*. Both Quagga mussel and Zebra mussel *(Dreissena polymorpha)* are listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) and Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011). The First and Third Schedule Nuttall's waterweed *(Elodea nutallii)* and Third Schedule Canadian waterweed *(Elodea candensis)* were recorded in macrophyte transects within and adjacent to the Proposed Development Site. No other invasive species listed on the First or Third Schedule were recorded within the Proposed Development Site

The medium impact species Butterfly bush (*Buddleia davidii*), Snowberry (*Symphoricarpos albus*) were recorded within the Proposed Development site. Spanish Blubell (*Hyacinthoides hispanica*), which is a First and Third Schedule listed species, was recorded outside the Proposed Development Site within Athlone Golf Club.

Measures to prevent the further spread of invasive species are detailed in Section 3.7.1 below.

3.7.1 Site Management and Biosecurity Measures

The following list of guidelines, which is not exhaustive, shall be followed by all on-site personnel. Only those who have been inducted into biosecurity measures on-site may enter the contaminated zones within the works areas. The following best practice measures will be implemented during the construction phases of the Proposed Development:

- Prior to the commencement of any construction activities, all equipment must be cleaned, disinfected and dried prior to entering the Proposed Development Site Footprint.
- A dedicated biosecurity point shall be established within the Proposed Development Site Footprint for the disinfection and cleaning of all equipment, plant machinery or vehicles used during construction phases.
    - All machinery and plant, including the floating pontoon boat and Movax, will be subject to Check–Clean–Dry protocol, and inspected regularly:
        - Check: Inspect all equipment for plant material, mud, mussels
        - Clean: Pressure wash with hot water (>60°C where possible)
        - Dry**:** Allow to dry completely before reuse elsewhere
- A tool-box talk will be given by the onsite Ecological Clerk of Works (ECoW) to notify the contractors of the presence of any terrestrial or aquatic invasive species, how to identify invasive species the biosecurity measures that will be followed to prevent further spread of invasives.
- Clear signage should be erected around the Proposed Development site to alert and remind all works of the presence of invasive species and the importance of biosecurity measures
- During periods of in-lake works, silt curtains and fragment barriers should be used around areas of marina extension, in order to limit the spread of invasive species
- Where any removal of invasive plant species is necessary, cut-and-collect systems should be used, with deployment of collection booms down-current of the works area.
    - Any removed invasive plant material should be removed from Lough Ree immediately.
- Where invasive mussel management is required from infrastructure, boats or machinery, mussels or mussel fragments should be removed mechanically via scraping or pressure washing
- Any removed invasive species should be transported to a designated disposal area located away from Lough Ree, surface water, groundwater or any drainage pathways.
- Anti-fouling coatings should be applied to infrastructure where appropriate
- Large-scale sediment and existing invasive mussel disturbance should be avoided throughout periods of in-lake works
- Machinery, including the floating pontoon and Movax, will follow designated navigation channels to avoid high-density areas of invasive species, including within the existing marina.
- Where possible, fixed moorings should be used for the floating pontoon boat and Movax, as opposed to dragging anchors and disturbing sediment and vegetation beds which include invasive species.
- Mooring chains and anchors should be inspected regularly and will be subject to Check–Clean–Dry protocol.

Evidence of cleaning and disinfection of all equipment will be fully logged and recorded, with the designated ECoW ensuring biosecurity compliance on site each day.

3.8 Ecological Protection Measures

3.8.1 Wet Willow-Alder-Ash Woodland Habitat and Fraxinus Excelsior Woodland Protection Measures

The Proposed Development, including site layout and construction phasing, was designed specifically to avoid areas of alluvial forest habitat identified along the shoreline of Lough Ree, both within and adjacent to the Proposed Development Site. Section 2.4.6 of this CEMP details the construction methodologies in place to protect Wet Willow-Alder-Ash Woodland Habitat and Fraxinus Excelsior Woodland.

In order to protect areas of alluvial forest habitat, all areas of woodland will be fenced off with Heras fencing (or similar) to prevent access of machinery or unauthorised access from public areas, thus

preventing disturbance and direct degradation of this habitat. All fencing will remain in place for the duration of construction phase.

3.8.2 Eutrophic Lake Protection Measures

Mitigation to protect area of lake habitat in the vicinity of the proposed marina extension will include the following:

- Works to the lakebed will be limited to the driving of 42 steel piles, with the attachment of a floating breakwater, floating jetties and gangways connected to the shoreline which will not interact directly with the lakebed or macrophyte communities present there. No in-lake vegetation removal is proposed as part of the marina redevelopment and extension phase of the Proposed Development.
- Silt curtains will be installed around each of the pile locations prior to the commencement of pile installation, in order to limit siltation impacts on lakebed vegetation in the wider vicinity. Silt curtains will be connected to the floating construction pontoon, with weights used to ensure the silt curtain sits flush to and remains on the lakebed around each of the pre-specified piling locations. Piles will be installed using vibration piling, with this lower-impact piling technique anticipated to help limit sediment disturbance and suspension on the lakebed, preventing additional siltation throughout macrophyte communities which are already subject to high levels of siltation.
- Piles will be installed in stages (sequentially one after another using a floating pontoon), with installation of steel piles anticipated to take 4–6 weeks. Floating jetties, breakwaters, gangway and canoe step will be installed following piling, with these components constructed off-site to minimise in-lake works duration. Installation of these floating components will occur via floating pontoon. Mooring anchors of the floating pontoon will be placed precisely on the lakebed and not dragged, to avoid disturbance to lakebed habitat. Pre-defined access routes will be used by the floating pontoon and Movax for the installation of piles and all other floating marina components, to limit the area of lakebed disturbance. Total works duration for the marina redevelopment and extension is anticipated to take approx. 6 months (including the 4–6 weeks of piling), with all in-lake works (piling works) to be undertaken between August–September (months inclusive) during periods of lower lake water levels and outside of ecological sensitive time periods (e.g., core breeding bird season, core wintering bird season).
- Marina redevelopment and extension works will be temporary in duration, phased in nature and isolated in area, taking place in the immediate vicinity of the existing marina, around which, lakebed habitat is already subject to high levels of disturbance.

Mitigation to protect areas of lake habitat in the vicinity of the proposed WSP will include the following:

The cofferdam and earth bund location has been designed to minimise interaction with lake waters and marginal habitats of Lough Ree. An isolated, linear area of reed bed fringing the existing Baysports facility concrete hardstand will be temporarily disturbed during the installation of the sheet piled cofferdam around this area. Linear areas of reedbed fringing the existing hardstand area will naturally reinstate following the completion of construction works, with no permanent net loss of this habitat.

3.8.3 Otter Protection Measures

Aside from all other mitigation set out in this document, the following pre-commencement measures will be implemented to ensure no disturbance to otters. The following measures are in line with 'Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes'[3].

- A pre-commencement survey for otter will be carried out prior to the commencement of any works. No holts or couches were recorded during ecological surveys conducted in March 2025. If evidence of a newly established breeding holt or other otter breeding signs

[3] TII (2006) *Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes.* Available at: https://cdn.tii.ie/publications/CC-ENV-01104-01.pdf

is recorded during pre-commencement surveys, construction works will not proceed until a derogation license is obtained from National Parks and Wildlife Service (NPWS).

- A tool-box talk will be given by the onsite ECoW to notify the contractors of the presence of any otter signs and outline the mitigation measures that will be followed to prevent disturbance to the species.
- Operating machinery will be restricted to the Proposed Development Site.
- Compressors will be of the "sound reduced" models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- All construction plant used on-site will be required to comply with maximum sound power levels set out in Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors, implemented in Ireland by the European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001 (S.I. 632 of 2001), as amended by the European Communities (Noise Emission by Equipment for Use Outdoors) (Amendment) Regulations, 2006 (S.I. 241 of 2006).
- All plant and equipment for use will comply with Statutory Instrument No. 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996" to minimise disturbance via noise emissions.
- Where reasonably practicable, low vibration working methods should be employed. Consideration should be given to use of the most suitable plant, reasonable hours of working for operations which might give rise to perceptible vibrations, and economy and speed of operations.
- Vibration should be controlled at source, and the spread of vibration should be limited.
- Where reasonably practicable, plant and/or methods of work causing significant levels of vibration at sensitive premises should be replaced by other less intrusive plant and/or methods of working.
- Off-site fabrication of construction components should be utilised wherever possible to limit vibration levels.
- Best practice vibration control measures will be employed by the contractor, as outlined in the following documents:
    - British Standard BS 7385: 1993: Evaluation and Measurement for Vibration in Buildings Part 2: Guide to Damage Levels from Ground Borne Vibration.
    - British Standard BS 5228: 2009+A1 2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2: Vibration .
    - A designated member of staff will be appointed as the point of contact for any queries or complaints from nearby local residents.

Any construction phase lighting associated with the Proposed Development will avoid illuminating fringing lake habitats e.g. lake waters, reedbeds, woodland, etc.

- All lighting should include the following specifications
    - 2700 Kelvins (K) (warm white)
    - Directional attachments to prevent upward light spill, as well as to prevent light spill on any sensitive habitats (e.g., light shields in the vicinity of woodland (alluvial or otherwise), reedbed, lakes shore, lake waters, and treelines).
    - Where possible, lighting should include timing options, either through motion sensor lighting or dimming. Construction phase lighting will only remain on during the outlined hours of construction.
    - Any construction phase light spill from lighting will fall below 1 lux on hedgerow, woodland or lake habitat (including marina lighting).
- In line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations:
    - Every light needs to be justifiable,
    - Limit the use of light to when it is needed,
    - Direct the light to where it is needed,
    - Reduce the light intensity to the minimum needed,
    - Use light spectra adapted to the environment,

- When using white light, use sources with a "warm" colour temperature (less than 2700K).

3.8.4 Bird Protection and Special Conservation Interest Species of SPAs Protection Measures

Aside from all the other measures set out in this document, the following mitigations will be implemented to ensure no disturbance to birds and Special Conservation Interest Species of SPAs.

- All in-lake works including marina extension construction and erection of cofferdam adjacent to reedbed habitat will take place outside the breeding season (March – July) and wintering season (October – March) for waterbirds and will therefore be limited to the months August - September of any given year.
- The cofferdam once installed will provide a screening buffer between the construction area and retained reedbed habitat. This will aid in minimising disturbance effects to birds throughout the duration of the Water Sports Pavilion construction phase.
- All vegetation clearance works throughout the Proposed Development Site and works in the vicinity of sensitive habitats for breeding waterbirds (i.e. reedbeds) will be conducted outside of the breeding bird season (1st March – 31st August, dates inclusive) where possible. If works must be carried out that continue into the breeding bird season, then these works will commence at a minimum in the weeks prior to 1st March. This will allow for existing levels of disturbance arising from construction works commencing prior to the breeding bird season to act as a disturbance buffer to ensure that waterbird species do not build nests within the Proposed Development Site, but prioritise sites within the wider vicinity, of which there are significant suitable areas to the north and south of the Proposed Development. This would be done to prevent nest abandonment by waterbirds.
- Vegetation removal (trees, scrub) should take place outside of the bird nesting season. Where removal cannot be avoided during this season, it will be preceded by an inspection of any vegetation to be removed by a qualified ecologist. If any nests are identified during these surveys, then works will halt until nesting has concluded.

3.8.5 Bat Protection Measures

Aside from all other mitigation set out in this document, the following measures will be implemented to ensure no disturbance to bats.

Mitigation measures regarding impacts to roosting bats

A bat derogation licence has been sought from the NPWS for the exclusion and removal of the roost of 6 no. soprano pipistrelle identified in the existing Baysports building. This derogation license was received from NPWS on the 22.07.2026.

The below measures have been included in order to address any impacts to roosting bats as a result of the Proposed Development, primarily in relation to the small roosting population of soprano pipistrelle bats identified within the Baysports main building:

Pre-Commencement Surveys

- A pre-commencement survey of the Baysports main building will be undertaken by a suitably licenced ecologist to identify any changes in baseline conditions since the previous surveys (conducted between May-September 2025). This will include a detailed inspection of the building proposed for demolition to confirm the presence/absence of bats immediately prior to works. If required, an emergence survey will also be carried out.
- A mature ash tree located within the Proposed Development Site is part of the cohort of trees to be removed to facilitate the Proposed Development. The tree was inspected at

height, with Potential Roost Features (PRF) inspected for the presence of bats. No signs of bats were identified during surveys of this tree, therefore a derogation license is not required. However, as this tree was assessed as having PRF-I features, a pre-commencement survey will be carried out on it. The requirement for a pre-commencement survey is in line with best practice, and does not present a lacuna in the survey effort.

- If any further bat roosts are identified during pre-commencement surveys, another bat derogation licence will be obtained from the NPWS prior to felling. Once a bat derogation licence is obtained, tree felling activity will be supervised by a qualified ecologist. The ecologist will provide further recommendations on felling methodology and timing, as necessary.

Ecological Oversight of Works/ Supervision

- A toolbox talk will be delivered to all site personnel to ensure awareness of legal protections, identification of bats, and procedures to follow should bats be encountered.
- Roof removal works around the roost entrance will be undertaken under ecological supervision, where required, to ensure appropriate safeguards are implemented.
- In the event that bats are encountered during works, activities will cease and the licensed ecologist will advise on appropriate actions.

Timing of works

- Demolition works will be scheduled outside of the main bat activity period (May–September), unless otherwise agreed with the licensed ecologist.

Provision of Alternative Roosting Habitat

- Prior to the commencement of demolition, at least one bat box/ replacement roost feature will be installed to provide an immediate alternative roosting option if required. Compensatory roosting features will be provided within the site in accordance with best practice (Marnell et al., 2022; TII, 2006; Collins, 2023).
- A minimum of one Rocket bat box will be installed, with additional boxes incorporated where feasible to enhance roosting opportunities for local bat populations.
- Rocket bat boxes and other bat boxes will be:
    - Installed at a height of ≥ 3 m above ground level;
    - Oriented south to southeast where possible;
    - Located away from artificial lighting;
    - Positioned adjacent to linear features such as treelines or woodland edge to maintain connectivity with existing commuting routes.
    - Located as close as possible to the existing bat roost to be removed.
- Final locations of replacement/ compensatory bat roosting features will be agreed in consultation with a licenced ecologist.
- The installed Rocket box structure and any other bat boxes will be subject to post-installation inspection by the appointed ECoW (or Project Ecologist) to confirm correct placement and suitability. The condition of the boxes will subsequently be reviewed as part of ongoing site maintenance to ensure their integrity is maintained and that they remain fit for purpose.

Monitoring of the compensatory roost feature

Monitoring of the compensatory roosting features will be undertaken on an annual basis (by a suitably licenced individual) for a minimum period to be agreed with NPWS, in order to assess their uptake and effectiveness. Monitoring will be carried out by a suitably qualified ecologist using a combination of appropriate and non-intrusive techniques, including:

- Visual inspection for signs of use (e.g. staining, droppings, or moisture);
- Inspection using an endoscope, where access allows;
- Use of thermal imaging or emergence surveys, where appropriate;

- DNA analysis of droppings, if required to confirm species presence.

The results of monitoring will be used to evaluate the success of the mitigation measures and to inform any adaptive management required. Confirmation of compensatory roost feature usage and monitoring outcomes will be reported to NPWS in accordance with licence conditions.

Measures to mitigate loss of Foraging/Commuting Habitat

The Proposed Development was designed specifically to retain individual trees and treelines within the Proposed Development site where possible.

239 trees are proposed for removal, with a total of 240 trees proposed to be replanted and will vary in maturity. Tree species replanting has been designed with consideration for maintaining connectivity throughout the Proposed Development. Where trees cannot be replanted within the vicinity of where they were removed, they will instead be replanted to enhance connectivity (i.e. replanted in the northern area of the site and along the L2020 road).

- The longest area of treeline removal where replanting is not proposed is the non-native Leyland treeline located to the north of the Proposed Development Site. However, due to the presence of another treeline within the Athlone Golf Club, located closely west of the treeline to be removed and running parallel to the Leyland treeline, no loss of overall commuting connectivity is anticipated. In addition, trees will be planted within the north of the Site in areas of existing amenity grassland which will enhance connectivity and foraging potential of this northern area over baseline conditions.
- The planting scheme will use native tree species to strengthen ecological value in accordance with the All-Ireland Pollinator Plan. By incorporating a carefully designed mix of native trees, the design and development will enhance existing habitats and replace removed non-native treeline habitat and trees for commuting and foraging bats. Retained trees throughout the Proposed Development Site Footprint will be protected during construction in full accordance with BS:5837 (Trees in Relation to Construction).

3.9 Cultural Heritage Protection Measures

The following mitigation measures proposed are subject to approval by the National Monuments Service and the planning authority.

- A suitably qualified archaeological consultant under licence, will monitor sub-surface groundworks in green areas only during the construction phase. This will target sub-surface groundworks in green areas which were not the subject of the preceding test excavation under Licence Number 26E0466.
- Should any archaeological material be encountered during archaeological monitoring and archaeological testing, the extent of such features/deposits will be determined, a GPS location of the site will be established and works at this location will cease. A strategy will be proposed to the Local Authority and National Monuments Service to preserve the site in situ, where possible. Where preservation in situ cannot be achieved, either in whole or in part, then a programme of full archaeological excavation will be proposed, to ensure the preservation by record of the portion of the site that will be directly impacted upon. This work should be carried out by a suitably qualified archaeologist under license and in accordance with the provisions of the National Monuments Acts 1930–2014.
- In line with the recommendation of the wade survey (Mizen Archaeology, Licence Nos. 26R0326 and 26D0085), should any dredging works associated with the Proposed Development be pursued, archaeological monitoring of such works shall be carried out by an experienced underwater archaeologist under licence from the National Monuments Service. Should archaeological material, wreckage, timbers or other artefacts be recorded in the course of monitoring, the archaeologist will be empowered to suspend further dredging in that area to recover and record the material.

3.10 Resource Waste Management Plan

This section of the CEMP provides a Resource Waste Management Plan (RWMP) which outlines the best practice procedures during the construction phases of the Proposed Development. This RWMP has been compiled based on the Environmental Protection Agency (EPA) 2021 document, *Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects*[4].

The plan is based on the European waste hierarchy which sets out the most to least preferred options for waste management. Waste prevention and re-use are viewed as the most desirable options for managing wastes with the least desirable option considered being disposal to a licensed landfill.

This plan has key objectives as outlined below:

- To set out management prescriptions that adhere to the waste management hierarchy.
- To outline the roles and responsibilities of the appointed Waste Manager.

3.10.1 Legislation

The Waste Management Acts 1996 (Act) as amended provide measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related activity has to have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the site of the Proposed Development to ensure that all contractors hired to remove waste from the site have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations.

3.10.1.1 Waste Management Hierarchy

The waste management hierarchy sets out the most efficient way of managing in the following order:

Prevention and Minimisation:

The primary aim of the RWMP will be to prevent and thereby reduce the amount of waste generated at each stage of the Proposed Development. The prevention and minimisation of waste of this development will be developed by implementing effective on-site materials management in terms of both material acquisition and storage on site.

Reuse of Waste

Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site to waste recovery facilities or landfill. Site management will be required to encourage the appropriate reuse of materials where possible as well as identify re-use opportunities to achieve ultimate goal of waste reduction.

[4] *Environmental Protection Agency (EPA) (2021) Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projections:* https://www.epa.ie/publications/circular-economy/resources/CDWasteGuidelines.pdf

Recycling of Waste

There are a number of established markets available for the beneficial use of construction waste such as using waste concrete as fill for new roads. A designated Waste Storage Area (WSA) will be maintained on site which will cater for segregation and recycling of various waste streams.

At all times during the implementation of the RWMP, disposal of waste to landfill will be considered only as a last resort.

3.10.2 Construction and Demolition Waste Management

Waste generated post excavation on site will be managed in the WSA where the various waste components will be segregated into a number of waste categories in accordance with a general waste segregation policy and placed into individual skips. The categories for segregation will include timber, metal, cardboard and plastics. This material will be removed by authorised waste collection contractors for recycling and recovery at appropriately licensed facilities. The remaining volume of waste material which cannot be allocated to any of these four waste streams will be disposed of in a general waste skip.

This waste material will be transferred to an appropriately licensed waste disposal/recovery facility by a fully licensed waste contractor where the waste will be further sorted into individual waste streams for recycling, recovery or disposal. This general waste will be subject to constant monitoring by site management to ensure that potential reusable and recyclable material is not being disposed of therein. Other waste mitigation measures which will be implemented at the site are as follows;

- All construction phase waste will be collected and disposed of as appropriate, and the site will be kept tidy and free of debris at all times.
- Waste oils and hydraulic fluids will be collected in leak proof containers and removed from the site for disposal or recycling. It is also essential that all empty oil containers and other hazardous wastes will be disposed of in accordance with the requirements of the Waste Management Act, 1996 as amended.
- All construction waste materials will be stored within the confines of the site, prior to removal from the site to an appropriately licensed waste facility.
- A self-contained port-a-loo with an integrated waste holding tank will be used within the confines of the site. This unit will be maintained by the providing contractor and removed from site upon completion of the construction works.
- No wastewater will be discharged on-site during the construction phase

Demolition Waste Management

The new upgraded WSP buildings will re-use materials from the demolished structure, where feasible. The main waste streams anticipated to arise from the demolition of the existing Water Sports building and toilet block, including the individual European list of waste (LoW) codes, are shown in Table 3-1 below.

Table 3-1 Expected waste types arising from the Demolition Phase

Materials type	Example	LoW Code
Cables	Electrical wiring	17 04 11
Concrete	Surfacing, flooring material	17 01 01
Tiles & Ceramics	Floor and wall tiles	17 01 03
Metals	Steel supports, roof and wall coverings, utility piping.	17 04 07
Mixture of inert material	Sand, stones, plaster, brick, rock	17 01 07

Materials type	Example	LoW Code
Plastic	PVC frames, pipework and electrical fittings	17 02 03
Wood	Rafters, frames, doors	17 02 01
Gypsum Materials	Roof tiles/slate	17 08 02
Glass	Windows and glazed doors	17 02 02
Bituminous mixtures, coal tar and tarred products	Felt or roof coverings	17 03 01*, 02 & 03*
Mixed C&D waste	General Waste	17 09 04
Electrical and electronic components	WEEE	20 01 35 & 36*
Batteries	Batteries from power tools etc	20 01 33*
Liquid Fuels	Fuels	13 07 01 - 03*
Chemicals	Solvents, paints, pesticides etc	20 01 13*, 20 01 27-30*
Insulation Materials	Waste fibreglass	17 06 04
Organic Food Waste	Canteen Waste	20 01 08

**Individual waste type may contain hazardous substances*

Construction Waste Management

The expected wastes arising from the construction works including the individual LoW codes are outlined in Table 3-2.

Table 3-2 Expected waste types arising from the Construction Phase

Material Type	Example	LOW Code
Cables	Electrical wiring and cabling	17 04 11
Soil and stones containing hazardous substances	Any contaminated soils that might be encountered during construction	17-05-03*
Soil and stones not containing hazardous substances	Excavated material	17-05-04
Inert materials	Sand, stones, plaster, rock, blocks.	17 01 07
Biodegradable Waste	Tree cutting, grass cuttings	20-02-01
Soils and Stones	Excavated material	20-02-02
Other non-biodegradable waste	Non-biodegradable garden and park waste	20-02-03
Mixed municipal waste	Daily waste from workers, miscellaneous.	20 03 01

Material Type	Example	LOW Code
Asphalt, Tar and Tar products	Old road surfaces	17 03 02
Plastic packaging	Packaging with new materials	15 01 02
Mixed materials	Mixed C&D waste	17 09 04
Tiles and ceramics	Slates and Wall and floor tiles	17 01 03
Steel and other metal	Steelwork, reinforcing bars, other metal waste	17-04-05, 17-04-07
Wood	Roof trusses, frames, and doors	17 02 01
Concrete	Surfacing, flooring material	17 01 01
Hazardous liquids	Oils, hydraulic oils, others from construction equipment	13 01 10*, 13 02 04*, 13 02 05*, 13 02 08*
Insulation Materials	Waste fibreglass, Cavity & Floor Insulation	17 06 04

Wastes arising for the Proposed Development will be segregated, identified and classified by the Contractor in accordance with the EPA *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects* (EPA, 2021). Wastes shall not be removed from the site until properly classified, assigned a correct LoW code and all appropriate tracking and disposal documentation is in place.

3.10.2.2 Waste Arisings and Proposals for Minimisation, Reuse and Recycling of Construction Waste

Construction waste will arise on the Proposed Development mainly from excavation and unavoidable construction waste including material surpluses and damaged materials and packaging waste.

Appropriate measures will be taken to ensure excess waste is not generated during construction, including;

- Ordering of materials will be on an 'as needed' basis to prevent over supply to site. Co-ordination is required with suppliers enabling them to take/buy back surplus stock.
- All trucks transporting fine or dry materials to and from the site will be securely covered immediately after loading, with tailgates firmly fixed to prevent wind-blown dust and spillages
- Purchase of materials pre-cut to length to avoid excess scrap waste generated on site.
- Request that suppliers use least amount of packaging possible on materials delivered to the site.
- Ensuring correct storage and handling of goods to avoid unnecessary damage that would result in their disposal.
- Ensuring correct sequencing of operations.
- Use reclaimed materials in the construction works.

3.10.2.3 Wastes Arising from Construction Activities

All waste generated on-site will be managed through controlled segregation and regular off-site removal by contractors. Waste will be temporarily stored where necessary, in a designated, labelled containers and will not be allowed to obstruct public areas.

Packaging waste generated from the delivery of materials will be returned to the suppliers where possible or removed off site for transfer to a Materials Recovery Facility (MRF).

Site personnel will be instructed at induction that, under no circumstances, can waste be brought to site for disposal and that the burning of waste material on-site is forbidden.

3.10.3 Implementation

3.10.3.1 Roles and Responsibilities

Prior to the commencement of the Proposed Development a Waste Manager will be appointed. The role of Waste Manager is likely to be fulfilled by the Environmental Manager given the scale of the development and will be responsible for the implementation of the objectives of this plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the Proposed Development adheres to the management plan. The waste manager will also be required to conduct regular waste audits throughout the site to ensure that the waste management plan is operating effectively.

3.10.3.2 Training

It is important for the Waste Manager to communicate effectively with colleagues in relation to the aims and objectives of the RWMP. All employees working on site during the construction phases of the Proposed Development will be trained in materials management and thereby, should be able to:

- Distinguish reusable materials from those suitable for recycling.
- Ensure maximum segregation at source.
- Co-operate with site manager on the best locations for stockpiling reusable materials.
- Separate materials for recovery.
- Identify and liaise with waste contractors and waste facility operators.

3.10.3.3 Record Keeping

The RWMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The RWMP can then be adapted with changes that are seen through record keeping.

The fully licensed waste contractor employed to remove waste from the site will be required to provide documented records for all waste dispatches leaving the site of the Proposed Development. Each record will contain the following:

- Consignment Reference Number;
- Material Type(s) and LoW Code(s);
- Company Name and Address of Site of Origin;
- Trade Name and Collection Permit Ref. of Waste Carrier;
- Trade Name and Licence Ref. of Destination Facility;
- Date and Time of Waste Dispatch;
- Registration No. of Waste Carrier vehicle;
- Weight of Material;
- Signature of Confirmation of Dispatch detail;
- Date and Time of Waste Arrival at Destination;
- Site Address of Destination Facility.

3.10.4 Resource Waste Management Conclusion

The RWMP will be fully implemented by all personnel involved in the Proposed Development. Its requirements will be clearly communicated during the site induction process. Prior to implementation, a comprehensive waste audit of the site and associated activities will be completed and integrated into the

RWMP. The waste hierarchy will be strictly applied throughout the construction phase to minimise waste generation, with disposal considered only as a last resort. By prioritising the reuse of suitable construction materials, the Proposed Development will reduce the demand for raw materials, resulting in both cost savings and a reduction in overall waste volumes.

3.11 Construction Traffic Management

This section outlines the Construction Traffic Management Plan (CTMP) requirements applicable to all Contractors engaged in demolition and construction activities at Hodson Bay. The Contractor is required to incorporate the provisions of this CTMP into their own site-specific plan and obtain formal agreement from RCC prior to commencement of works on site.

Indicative construction traffic routes are provided for planning purposes and shall be fully developed and finalised by the Contractor at contract stage, in consultation with RCC, to ensure safe, efficient, and compliant site access and egress throughout the construction period.

3.11.1 Management of Construction Traffic around the Site

The Contractor is responsible for the safe and efficient management of construction traffic in and around the Proposed Development site. To ensure compliance with traffic management requirements, the Contractor shall implement the following measures:

- All construction staff and subcontractors shall be clearly informed that they are bound by the restrictions set out in the CTMP. The Contractor shall schedule site traffic in advance to ensure adherence to these restrictions.
- Construction traffic shall be monitored at key points remote from the site to verify compliance with CTMP requirements. Detailed traffic management plans shall be submitted to RCC in advance of construction and incorporated into the overall Construction Management Plan.
- Special permits for the movement of oversized or hazardous loads shall be obtained from RCC and/or An Garda Síochána prior to any such movements.
- Daily construction programmes shall be planned to minimise disruptions to surrounding streets by staggering HGV and delivery movements to avoid site queues. Non-essential vehicle movements shall be minimised during peak traffic hours (08:00–09:00 and 16:30–18:00).
- On-site parking shall be limited to vehicles required for direct participation in the works. Construction vehicles shall follow the road hierarchy, using primary national and regional routes for site access and avoiding local or minor streets where practicable.
- A Traffic Management Coordinator shall be appointed to oversee all traffic safety and management matters and to ensure compliance with the CTMP. Where multiple contractors are working on site, overall traffic coordination shall be implemented, including review and harmonisation of individual CTMPs. An overall CTMP for the entire site shall be prepared and agreed with RCC in advance of works commencement.

3.11.2 Proof of Compliance with Traffic Restrictions

The Contractor shall actively track and manage the movement of construction traffic in and around the site for the duration of the Proposed Development. Traffic control will be implemented through the following procedures:

- Develop a restriction and rule adherence form to be signed by all lorry drivers and site operatives, confirming their understanding and agreement to comply with traffic management requirements. Prior to commencement, all new contractors and personnel must complete and sign the prequalification and restrictions forms.
- All movements of construction traffic to and from the site must be coordinated by the Contractor's Transport Manager in accordance with the approved restrictions. A

certified Flagman will be stationed at the site entrance to safely direct and manage traffic entering and leaving the site.
- An appointed person at the site entrance will issue traffic dockets and maintain a record of all vehicles entering and leaving the site. The site manager will periodically review these records to ensure compliance with traffic management procedures and to identify any opportunities for operational improvement.

3.11.3 Construction Traffic Access to Sites

3.11.3.1 Traffic Management Procedures / Generation

All deliveries to the site shall be pre-booked at least one day in advance. Drivers are required to contact the site gate attendant 15 minutes prior to arrival to ensure smooth coordination and minimise waiting times.

- All construction traffic will access the site via the main access roads, entering from the N61. Deliveries must be off-loaded promptly using the most appropriate method, and vehicles should be escorted off-site immediately to prevent congestion.
- The site gate attendant will be responsible for preventing any conflicts between pedestrians and vehicles entering or exiting the site. Temporary pedestrian routes and controls must be maintained at all times to ensure the safe movement of the public and the uninterrupted operation of businesses within the Proposed Development boundary.
- Some private car use by construction personnel is expected during periods of peak construction activity. Site working hours are anticipated to be 07:00–19:00 from Monday to Friday and 08:00–17:00 on Saturdays, meaning that the peak site movements are likely to occur outside of the usual AM and PM rush hours, thereby minimising disruption to local traffic.

HGV Movements:

For rigid HGVs transporting materials from the site, the total turnaround time—from arriving at the site entrance to travelling to the loading area, completing loading operations, and exiting—is estimated to be approximately 15 minutes per vehicle. Wherever practicable, HGV movements should be scheduled outside peak traffic periods. The Contractor must also prepare detailed traffic management plans for project stages that will generate high volumes of HGV activity, such as site clearance and regrading works, with particular attention given to temporary pedestrian management and ensuring safe access to neighbouring properties and businesses.

3.11.3.2 Traffic Management – Internal Site Extents

Contractor, Subcontractor, and Supplier Parking & Traffic Management

- Contractor, subcontractor, and supplier vehicles are not permitted to park on local access routes, and all site parking must be accommodated within the site boundaries as outlined in the Contractor's site setup layout strategy. Because of the spatial constraints within the site extents, the availability of on-site parking will be very limited.
- No unloading or blockage of access routes—including those designated for emergency vehicles—is permitted, and any vehicle that obstructs these routes must be instructed to move immediately to ensure that site operations and emergency access are not impeded.
- The Contractor must carry out a vehicle tracking analysis to confirm that all construction vehicles have sufficient turning space. This analysis should demonstrate safe entry and exit manoeuvres for every vehicle, with the goal of minimising—or, where possible, eliminating—the need for reversing.
- The Contractor shall ensure that all traffic management requirements outlined in this CTMP are fully implemented and adhered to throughout the duration of the Proposed Development.

- The Contractor shall undertake monthly logistics coordination meetings to review and update the traffic management strategy. These meetings will:
  - Discuss and agree on traffic management coordination measures.
  - Review the implementation of any required temporary traffic management schemes.
  - Identify any potential conflicts or operational issues and agree on corrective actions.
  - Ensure alignment between all contractors, subcontractors, and stakeholders regarding traffic management requirements.

3.11.3.3 Loading/Unloading Locations

All loading and unloading activities must be carried out entirely within the defined site area, meaning within the defined site boundary or red line. Contractors are strictly prohibited from conducting any loading or unloading on the public roadway. This requirement is in place to:

- Reduce risk to the public.
- Minimise congestion.
- Limit disruption or potential hazards to passing vehicles and other road users.

All deliveries and collections must be overseen and managed by a nominated competent person appointed by the Contractor. In addition, Contractors are required to assess and clearly outline the measures they will implement to manage impacts on cyclists, pedestrians, other road users, and any affected roadway infrastructure, ensuring the safety and continuity of public access around the site.

3.11.3.4 Emergency Access

Access for emergency vehicles via the designated primary haul roads must be maintained at all times throughout the construction period. The Contractor must ensure that no works, parking, or material storage obstruct these routes and that emergency access remains clear and immediately available in the event of an incident. To support this, the Contractor shall establish procedures to coordinate site activities so that emergency vehicle access is never compromised under any circumstances.

3.11.3.5 Asset Protection

The Contractor is required to take all necessary precautions to prevent damage to roads, footpaths, grass margins, walls (including protected walls), structures (including protected structures) and their curtilage, as well as trees, lighting fixtures, and all other street furniture both within and outside the site boundary. The Contractor is fully liable for the cost of repairing or replacing any such damage caused by its operations, and all remedial work must meet the satisfaction of RCC.

Precautions must also be taken to prevent any spillage of hydrocarbons, contaminated water, solvents, or other hazardous materials. Should any damage or contamination occur, it must be rectified at the Contractor's expense, and the Contractor may additionally be held responsible for breaches of related planning conditions.

The use of tracked plant on road surfaces outside the site is strictly prohibited unless approved protective measures are in place to safeguard the integrity of these surfaces.

The Contractor's Construction Management Plan must specify the required quality of temporary reinstatements of roads, pavements, and other affected surfaces, as well as the timeline for completing permanent reinstatements to ensure that all affected areas are restored promptly and to the required standard.

3.11.4 Traffic Management Proposals

Additional traffic management measures are provided in Chapter 14 Material Assets. These measures are outlined in this section. Please note that this is not an exhaustive list, and it will be updated accordingly by the appointed Contractor in consultation with the local authority.

A number of design measures are proposed to mitigate construction phase traffic impacts, these include:

- Phasing of construction activities to maintain access to existing facilities;
- Maintaining access to the hotel, marina, businesses and adjacent properties throughout construction;
- Locating construction compounds within the development site;
- Scheduling major deliveries to avoid periods of peak visitor demand where possible;
- Maintaining pedestrian and cyclist routes through temporary traffic management;
- Minimising the duration of temporary traffic management arrangements.

Preliminary traffic management measures for the construction of the Proposed Development are set out below:

- **Construction and Delivery Programme –** a programme of construction and deliveries will be submitted to RCC in advance of deliveries of material to the site. Liaison with the relevant local authorities and TII will be carried out where required.
- **A Pre and Post Construction Condition Survey** – A pre-condition survey of roads associated with the transportation of materials to and from the Proposed Development site will be carried out immediately prior to construction commencement to record an accurate condition of the road network at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. The timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.
- **Liaison with the roads department of RCC** Once the surveys have been carried out and "prior to commencement" status of the relevant roads established, the Roads section will be informed of the name and contact number of the Project Supervisor of the construction stage as well as the Site Environmental Manager.
- **Information to locals** – Locals in the area will be informed of any upcoming traffic related matters via letter drops and posters in public places. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided. Local access to all properties located within the proximity of the proposed works will be maintained at all times.
- **Identification of delivery routes** – The delivery routes for the transportation of all materials will be agreed and adhered to by all contractors.
- **Temporary traffic signs** – As part of the traffic management measures temporary traffic signs will be put in place at the location where works are being undertaken. All measures will be in accordance with the *'Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works*' (Department of Transport (DoT), 2019) and '*Guidance for the Control and Management of Traffic at Roadworks*' (DoT). A member of construction staff (flagman) will be present at each construction site location along the route.
- **Additional measures** - Various additional measures will be put in place in order to minimise the effects of the construction traffic on the surrounding road network including wheel washing facilities at the entrance to the site and sweeping/cleaning of local roads as required.
- **Road Opening Licence** – All roads' works will be undertaken in line with the requirements of a road opening licence as agreed with RCC

4. ENVIRONMENTAL MANAGEMENT IMPLEMENTATION AND EMERGENCY RESPONSE

4.1 Construction Manager/Site Manager

The Construction Manager/Site Manager will have overall responsibility for the organisation and execution of all related environmental activities as appropriate, in accordance with regulatory and project environmental requirements. The duties and responsibilities of the Site Manager will include:

Ensure that all works are completed safely and with minimal environmental risk; Approve and implement the CEMP and supporting environmental documentation, and ensure that all environmental standards are achieved during the construction phase of the Proposed Development;

- Take advice from the site Environmental Manager on legislation, codes of practice, guidance notes and good environmental working practice relevant to their work;
- Ensure compliance through audits and management site visits;
- Ensure timely notification of environmental incidents;
- Monitor the impact of construction traffic on local traffic conditions;
- Ensure that all construction activities are planned and performed such that minimal risk to the environment is introduced;
- Provide full and adequate supervision and site administration during the progress of the works; and
- Appoint suitably qualified foreman, craftsman, domestic subcontractors, and specialists.

4.2 Engineering Staff and Public Liaison Officer

Resident engineering staff will be on site to oversee the works of the Main Contractor and to liaise with local businesses, residents and other stakeholders. The Main Contractor will also have provide a Public Liaison Officer whose role will include the following:

- Liaison with all resident and businesses within the vicinity of the Proposed Development site for the duration of the works.
- Keeping all residents and businesses within the vicinity of the Proposed Development site informed with regards progress of the works and any possible restrictions to movement of vehicles, pedestrians and / or cyclists.
- General point of contact for queries from members of the public / businesses.
- Attend progress meetings and present information.

4.3 Environmental Manager

The Main Contractor appointed to carry out the works on site will be required to provide a level of supervision on site in the form of an Environmental Manager who will also fulfil the role of Waste Manager. Due to the scale of activity proposed for the site, this role can be adopted by a Site Manager/Foreman as part of their duties. In general, this Environmental Manager will maintain responsibility for monitoring the works and Contractors/Sub-contractors from an environmental perspective. The Environmental Manager will act as the regulatory interface on environmental matters by reporting directly to the client and liaising with the relevant local authority and other statutory bodies as required. The duties of the appointed Environmental Manager are summarised as follows:

- Vegetation removal (trees, scrub) should take place outside of the bird nesting season. Where removal cannot be avoided during this season, it will be preceded by an inspection

of any vegetation to be removed by a qualified ecologist. If any nests are identified during these surveys, then works will halt until nesting has concluded.
- Maintain and update as required the CEMP and supporting environmental documentation and review/approval of contractor method statements.
- Undertake inspections and reviews to ensure the works are carried out in compliance with the CEMP.
- Monitor the implementation of the CEMP, particularly all proposed/required environmental mitigation measures.
- Ensure proper mitigation measures are initiated and adhered to during the construction phase.
- Ensure adequate arrangements are in place for site personnel to identify potential environmental incidents.
- Ensure that details of environmental incidents are communicated in a timely manner to the relevant regulatory authorities, initially by phone and followed up as soon as is practicable by email.
- Support the investigation of incidents of significant, potential or actual environmental damage, and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties.
- Identify environmental training requirements and arrange relevant training for all levels of site-based staff/workers; and
- Fulfil the role of Waste Manager and implement the objectives of the Resource Waste Management Plan as set out in Section 3.10 above.

4.4 Ecological Clerk of Works

The duties of the appointed ECoW are summarised as follows:

- A tool-box talk will be given by the onsite ECoW to notify the contractors of the presence of any terrestrial or aquatic invasive species, how to identify invasive species, and the biosecurity measures that will be followed to prevent further spread of invasives and to notify the contractors of the presence of any otter signs and outline the mitigation measures that will be followed to prevent disturbance to the species.
- Evidence of cleaning and disinfection of all equipment will be fully logged and recorded, with the designated ECoW ensuring biosecurity compliance on site each day.
- The installed bat box structure and any other bat boxes will be subject to post-installation inspection by the appointed ECoW to confirm correct placement and suitability. The condition of the boxes will subsequently be reviewed as part of ongoing site maintenance to ensure their integrity is maintained and that they remain fit for purpose.

4.5 Environmental Awareness Training

4.5.1 Environmental Induction

The Environmental Induction will be integrated into the general site induction on a case-by-case basis for each member of staff employed on-site depending on their assigned roles and responsibilities on-site. Where necessary, the Environmental Induction will as a minimum include:

- A discussion of the key environmental risks and constraints.
- An outline of the CEMP structure.
- A discussion of the applicable works Method Statement.
- The roles and responsibilities of staff, including contractors, in relation to environmental management.
- An outline of the Environmental Incident Management Procedure.

5. EMERGENCY RESPONSE PLAN

5.1 Emergency Response

The Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection. The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the Site Manager and suppliers as the Proposed Development progresses. Where sub-contractors that are contracted on site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this document.

This is a working document that requires updating throughout the various stages of the Proposed Development construction.

5.1.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Manager will lead the emergency response which makes them responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 5-1. In a situation where the Site Manager/Environmental Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 5-1. This will be updated throughout the various stages of the Proposed Development construction.

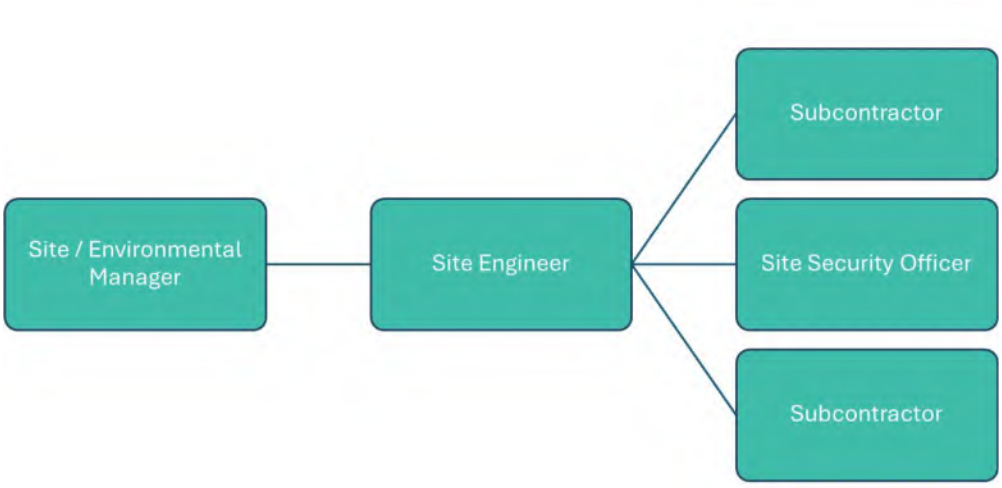


Figure 5-1 Emergency response procedure - chain of command

5.1.2 Initial Steps

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

Table 5-1 Hazards Associated with Potential Emergency Situations

Hazard	Emergency Situation
Construction Vehicles: Dump trucks, tractors, excavators, cranes etc.	Collision or overturn which has resulted in operator or third-party injury.
Abrasive wheels/Portable Tools.	Entanglement, amputation or electrical shock associated with portable tools.
Contact with services.	Electrical shock or gas leak associated with an accidental breach of underground services.
Fire	Injury to operative through exposure to fire.
Falls from heights including falls from scaffold towers, scissor lifts, ladders and roofs.	Injury to operative after a fall from a height.
Sickness	Illness unrelated to site activities of an operative e.g., heart attack, loss of consciousness, seizure.

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 5-1 the Site Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/foghorn that activates an emergency evacuation on the site.
- Make safe the area if possible and ensure that there no identifiable risk exists with regard to dealing with the situation e.g., if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if they are unable to do so. If delegating the task, ensure that they follow the procedures for contacting the emergency services set out in Section 5.1.5
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g., cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g., ESB Networks the numbers for which as provided in Section 5.1.5.
- Contact the next of kin of any injured personnel where appropriate.

5.1.3 Site Evacuation/Fire Drill

A site evacuation/fire drill procedure will provide basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. The following steps will be taken:

- Notification of the emergency situation. Provision of a siren or foghorn to notify all personnel of an emergency situation.
- An assembly point will be designated in the construction compound area and will be marked with a sign. All site personnel will assemble at this point.
- A roll call will be carried out by the Site Security Officer to account for all personnel on site.

- The Site Security Officer will inform the Site Manager when all personnel have been accounted for. At this time, the Site Manager will decide the next course of action which will be determined by the situation that exists at that time. The Site Manager will advise all personnel accordingly.

All personnel will be made aware of the evacuation procedure during site induction. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specified intervals and the keeping of records of such drills.

5.1.4 Environmental Emergency Response Procedure

5.1.4.1 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction and operational phase of the Proposed Development. Oil/Fuel spillages are one of the main environmental risks that will exist on the site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, clean up as much as possible using the spill control materials.
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. All scheduled maintenance will not be carried out on the public highway.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- External consultants will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The applicant will notify the appropriate regulatory body if deemed necessary.

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps:

- The Environmental Manager must be immediately notified.
- If necessary, the Environmental Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures that were used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- If the incident has impacted on an ecologically sensitive receptor, such as a sensitive habitat, protected species or designated conservation site (e.g., SPA or SAC), the Environmental Manager will liaise with an Ecologist.
- If the incident has impacted on a sensitive receptor such as an archaeological feature the Environmental Manager will liaise with an Archaeologist.
- A record of all environmental incidents will be kept on file by the Environmental Manager and the Main Contractor. These records will be made available to the relevant authorities and the EPA if required.

The Environmental Manager will be responsible for any corrective actions required as a result of the incident, e.g., an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Main Contractor as appropriate.

5.1.5 Contacting the Emergency Services

All staff members will know the address and location of the site as it may be necessary to liaise with the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services.

5.1.5.1 Emergency Communication Procedure

In the event of requiring the assistance of the emergency services the following steps should be taken:

- **Stay calm.** It is important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.
- **Know the location of the emergency and the number you are calling from**. This may be asked and answered a couple of times but do not get frustrated. Even though many emergencies call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.
- **Wait for the call-taker to ask questions, then answer clearly and calmly**. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.
- **If you reach a recording, listen to what it says**. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.
- **Let the call-taker guide the conversation**. He or she is typing the information into a computer and may seem to be taking forever. There is a good chance, however, that emergency services are already being sent while you are still on the line.
- **Follow all directions**. In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.
- **Keep your eyes open**. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.
- **Do not hang up the call** until directed to do so by the call taker.

All staff members will know the address and location of the site as it may be necessary to liaise with the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services.

5.1.5.2 Contact Details

A list of emergency contacts is presented in Table 5-2.

Table 5-2 Emergency Contacts

Hazard	Emergency Situation
Emergency Services – Ambulance, Fire, Gardaí	999/112
Doctor – Clonbrusk Primary Care Centre	090 6424 840
Hospital – Portiuncula University Hospital	090 964 8200
ESB Emergency Services	1850 372 999

Bórd Gais Emergency	1850 20 50 50
Gardaí – Athlone Garda Station	090 6498 550
Health and Safety Coordinator - Health & Safety Services	TBC
Health and Safety Authority	1890 289 389
Project Supervisor Construction Stage (PSCS): TBC	TBC
Project Supervisor Design Stage (PSDS): TBC	TBC
Client – RCC	TBC

5.1.6 Procedures for Personnel Tracking

All operatives on site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.

In the event of a site operative becoming involved in an emergency situation where serious injury has occurred, and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

5.1.6.1 Induction Checklist

Table 5-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the Proposed Development construction.

Table 5-3 Emergency Response Plan Items Applicable to the Site Induction process

ERP Items to be included in the Site Induction	Status
All personnel will be made aware of the evacuation procedure during site induction.	
In the case of remote sites, it may be necessary to liaise with and assist the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.	
All operatives on-site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.	

6. MITIGATION PROPOSALS

The mitigation measures which will be implemented are presented in this section of the CEMP. The CEMP will be finalised subsequent to any permission granted by An Coimisiún Pleanála and will be updated prior to construction to include, inter alia, any additional requirements pursuant to relevant planning conditions imposed.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the Proposed Development.

Table 6-1 Mitigation Measures for the Pre-commencement and Construction Phases

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
Pre-Commencement Phase				
Traffic Management				
MM1	CEMP Section 3.11.4, EIAR Chapter 14 Material Assets	> A Pre Construction Condition Survey – A pre-condition survey of roads associated with the transportation of materials to and from the Proposed Development site will be carried out immediately prior to construction commencement to record an accurate condition of the road network at the time. > Liaison with the roads department of RCC Once the surveys have been carried out and "prior to commencement" status of the relevant roads established, the Roads section will be informed of the name and contact number of the Project Supervisor of the construction stage as well as the Site Environmental Manager.		
Site Management and Biosecurity				
MM2	CEMP Section 3.7, EIAR Chapter 6 Biodiversity	Prior to the commencement of any construction activities, all equipment must be cleaned, disinfected and dried prior to entering the Proposed Development Site Footprint.		
Otter Protection				
MM3	CEMP Section 3.8.4, EIAR Chapter 6 Biodiversity	A pre-commencement survey for otter will be carried out prior to the commencement of any works. No holts or couches were recorded during ecological surveys conducted in March 2025. If evidence of a newly established breeding holt or other otter breeding signs is recorded during pre-commencement surveys, construction works will not proceed until a derogation license is obtained from NPWS.		
Bat Protection				

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
MM4	CEMP Section 3.8.5, EIAR Chapter 6 Biodiversity	**Pre-Commencement Surveys** › A pre-commencement survey of the Baysports main building will be undertaken by a suitably licenced ecologist to identify any changes in baseline conditions since the previous surveys (conducted between May-September 2025). This will include a detailed inspection of the building proposed for demolition to confirm the presence/absence of bats immediately prior to works. If required, an emergence survey will also be carried out. › A mature ash tree located within the Proposed Development Site is part of the cohort of trees to be removed to facilitate the Proposed Development. The tree was inspected at height, with PRFs inspected for the presence of bats. No signs of bats were identified during surveys of this tree, therefore a derogation license is not required. However, as this tree was assessed as having PRF-I features, a pre-commencement survey will be carried out on it. The requirement for a pre-commencement survey is in line with best practice, and does not present a lacuna in the survey effort. › If any further bat roosts are identified during pre-commencement surveys, another bat derogation licence will be obtained from the NPWS prior to felling. Once a bat derogation licence is obtained, tree felling activity will be supervised by a qualified ecologist. The ecologist will provide further recommendations on felling methodology and timing, as necessary.		
Construction Phase				
Health and Safety				
MM5	CEMP Section 3.2	The following health and safety measures will apply during the course of the Proposed Development: › Works at the site are to be caried out in accordance with all relevant Health and Safety legislation including the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013).		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› The Contractor shall comply with all relevant Statutory requirements such as the 2005 Safety Health and Welfare at Work Act, The Construction Regulations (SI 291 of 2013), the General Application Regulations (SI 299 of 2007), etc. (and any amendments thereof). › The Contractor shall also comply with all the reasonable safety requirements of the Client, the Project Supervisor for the Design Process and the Project Supervisor for the Construction Stage. › Additionally, the burning of any materials or the lighting of fires on-site is strictly prohibited.		
Prevention Pollution Control				
MM6	CEMP Section 3.3	The following measures will be put in place to prevent the transportation of silt laden water or pollutants from entering any of the wider environments including watercourses/drains within or near the site: › The site boundary will be fenced off with Heras fencing (or similar) prior to works commencing to protect adjacent habitats and to prevent any egress of machinery outside of the site during construction activities. › There are no watercourses on site and surface water will not be directly discharged into any external water bodies, surrounding land, or adjacent roadways. Any run-off generated on-site will undergo the necessary filtration process as previously outlined. › The works will be managed to ensure there will be no silt-laden run-off beyond the site boundary. This will be achieved through the use of appropriate excavation techniques during the initial construction works. Where necessary, silt fencing will be installed downslope of the construction areas, particularly where drains or drainage pathways are present. These measures will serve as a protective measure to contain silt material within the site. › Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised. › Excavated spoil will be stockpiled and contained entirely within the confines of the site boundaries. Material stockpiles will be kept at least 10 m from any manholes. Depending on the nature of the excavated material, the stockpiles of excavated materials will be sealed with a digger bucket to reduce the potential for sediment runoff. These areas will be surrounded with silt fencing, if deemed necessary to prevent runoff. › The minimum number of soil/subsoils and bedrock material should be removed from site. Soil may be reused for landscaping elsewhere on the site. However, any excess construction material shall be removed from the area and sent to an authorized waste recovery facility › Works shall not take place at periods of high rainfall and shall be scaled back if or suspended if heavy rain is forecast during excavation works. › High rainfall' is defined as follows: › >10 mm/hr (i.e. high intensity local rainfall events); › >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); › Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week). › Stockpiles will also be covered with plastic sheeting during high rainfall to prevent runoff. › In the event of encountering groundwaters during excavation, groundwater will be pumped out of the excavation using a pump equipped with a silt bag on the discharge pipe, if necessary, to capture any silty material prior to subsequent natural percolation to ground. The area surrounding the silt bag will be surrounded by silt fencing if deemed necessary. › No wastewater will be treated or discharged on-site during the construction phase. › Good construction practices will be implemented at the site. This will ensure minimal risk. The CIRIA provides guidance on the control and management of water pollution from construction sites, as outlined in *Control of Water Pollution from Construction Sites, guidance for consultants and contractors*[1].		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		This guidance will be adhered to throughout the construction phase to ensure that surface water generated on site contains minimum sediment.		
Sediment Control Measures				
MM7	CEMP Section 3.3, EIAR Chapter 8 Hydrology and Hydrogeology	The following measures will be put in place to protect Lough Ree from the uncontrolled release of suspended sediments: › Works will be completed between August and September (inclusive) aligning with IFI guidelines (2016)[5] of sensitive periods for fish spawning, avoiding the main breeding and winter bird seasons, and coinciding with a time when water levels are at their lowest. A double-lined, floating silt curtain will be installed around the main works area (the WSP) before any near-shore or in-water works commence. › Non-intrusive or low-intrusive cofferdam systems are encouraged if possible. However, sheet piling is the likely method of cofferdam installation Differing sheet piling techniques cause differing levels of ground disturbance and pulverised drill spoil. Accordingly, percussive hammers will be minimised, and vibrative hammers will be utilised when installing sheet piles. › Disturbance of lake-substrate will be minimized through careful positioning of plant and adoption of low-impact construction methodologies. Equipment will not be dragged across the lakebed; this will avoid any additional sediment disturbance. Piles will not be advanced into bedrock to avoid any potential bridging to the karstified aquifer below the lakebed. › The top-level of the cofferdam will be installed to a minimum of 37.5 mAOD to ensure that the cofferdam is not breached during flooding. › The silt curtain will remain in place after cofferdam installation, and for the duration of the construction stage, and will only be removed once monitored suspended solids concentrations are observed at baseline levels. The silt curtain will be inspected regularly for defects and adjusted as necessary.		

[5] Inland Fisheries Ireland (IFI) (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.* Available at: https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		The following measures will be in place to mitigate against any potential increase in suspended sediment load due to piling activities: › A double-lined, floating silt curtain will be installed around the works area before any works commence, i.e. the silt curtain will encompass as a whole, the 42 no. piling locations. › Differing drilling techniques cause differing levels of ground disturbance and pulverised drill spoil. Accordingly, percussive hammers will be minimised, and vibrative hammers will be utilised when drilling. › Disturbance of lake-substrate will be minimized through careful positioning of plant and adoption of low-impact construction methodologies. Equipment will not be dragged across the lakebed; this will avoid any additional sediment disturbance. › Following completion of piling works, disturbed sediments will be allowed to consolidate under natural hydrological conditions. The silt curtain will be inspected regularly for defects and adjusted as necessary, will remain in place for the duration of the works, and will only be removed once monitored suspended solids concentrations are observed at baseline levels.		
Cement Based Products Control Measures				
MM9	CEMP Section 3.3, EIAR Chapter 8 Hydrology and Hydrogeology	The complete washing out of concrete trucks will not be permitted at the site during the construction phase. Suppliers will be directed back to their own facility to complete the washout process. However, a washout area for chute cleaning will be provided at the primary and secondary temporary construction compound. The following mitigation measures are proposed to avoid release of cement leachate from the site: **Mitigation by Avoidance:**		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Concrete will be delivered in sealed concrete delivery trucks. Batching of wet-cement products will not occur on-site. › Ready-mixed supply of wet concrete products and emplacement of pre-cast elements will take place. › Pre-cast elements for cofferdams, pile foundations, culverts, and concrete works will be used. › Concrete trucks will not be washed out on-site but will be directed back to their batching plant for washout. **Mitigation Measures by Design:** › Where concrete is delivered on-site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement-contaminated waters to the construction stage drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined washout areas. › Where temporary lined impermeable containment areas are used, such containment areas are built using straw bales and lined with an impermeable membrane. These are covered when not in use to prevent rainwater collecting. › Pour sites of cement will be kept free of standing water, and plastic covers will be ready in case of sudden rainfall events. Risks of pollution will be further reduced as follows: › Concrete will not be transported around the site in open trailers or dumpers so as to avoid spillage while in transport. › All concrete used in the construction will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete locally to the location where it is needed.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, confirming routes, prohibiting on-site washout and discussing emergency procedures. › Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the site. › Weather forecasting will be used to assist in planning large concrete pours and large pours will be avoided where prolonged periods of heavy rain is forecast. › Concrete pumps and machine buckets from slewing over watercourses will be restricted while placing concrete. › Excavations will be sufficiently dewatered before concreting begins and dewatering will continue while concrete sets. › Covers will be available for freshly placed concrete to avoid the surface washing away in heavy rain. › Any potential, small surplus of concrete remaining after completion of a pour will be disposed at a suitable off-site facility.		
Refuelling, Fuel and Hazardous Materials Storage				
MM10	CEMP Section 3.3.5	The following measures are proposed to avoid release of hydrocarbons at the site: › All refuelling of construction vehicles and plant on site will be carried out in the dedicated refuelling area located adjacent to the primary construction compound at least 30 m from watercourses or surface water features. › Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements. › Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment. › Storage bunds/trays, if required will be constructed of an impermeable membrane (HDPC) plastic and will have the adequate capacity to contain the		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		volume of the liquids contained therein, if a leak/spillage does occur from one of the storage vessels. › All plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All repair and maintenance operations will take place off site. › Spill kits will be used to deal with any accidental spillage in and outside the refuelling area.		
Drainage and surface water discharge routes control				
MM11	CEMP Section 3.3.6, EIAR Chapter 8 Hydrology and Hydrogeology	Management of surface runoff and subsequent treatment prior to release will be undertaken during construction work as follows: › Source controls include the covering work areas, staging areas, and stockpiles, as wells as the prioritisation of small working areas and cessation of works during heavy rainfall and inclement weather. Methods that will be employed are diversion drains, flume pipes, sand bags, oyster bags filled with gravel, and filter fabrics. A cofferdam will be installed to minimise sediment mobilisation into Lough Ree. Flexibility to adapt methods will be required based on location-specific conditions, as judged by supervising engineers from visual inspection. › In-line controls involve settling of suspended sediments with the use of silt fences, straw bales, sand or oyster bags, weirs, baffles, and check dams. Flow limiters and sump pumping systems may be employed where needs arise in order to maintain the hydraulic functioning of the existing drain system. › Treatment systems involve sediment traps and temporary sumps/attenuation ponds. Adjacent drainage systems/groundwater need to be protected from sedimentation and direct surface water runoff generated onsite during the construction stage. Discharge from site will be managed and controlled within the Site boundary for the duration of the construction works. There will be no temporary uncontrolled discharges to surface water from the Site during the construction stage.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		As construction advances there may be a requirement to collect and treat surface water within the Site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into sediment bags prior to overland discharge allowing water to percolate naturally to ground at a suitable area. All works shall be undertaken in accordance with the CIRIA document[1], 'Control of Water Pollution from Construction Sites', guidance for consultants and contractors. All stockpiles will be damped down or covered, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation. Silt fencing will be installed around these stockpiles. Material stockpiles will be kept at least 10 m from any manholes and >50 m from lake shore where possible. It should be noted for this site, that a network of stormwater drains already exists, and these will be integrated and enhanced as required and used within the Site drainage system. The main elements of interaction with existing drains will be as follows: › Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the proposed Site drainage into the existing drainage network where possible. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion. › Drains running parallel to the existing roads requiring widening will be upgraded. Velocity and silt control measures such as check dams, sand bags, oyster bags, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters; › Silt fences will be emplaced within drains downgradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		prevent entry to watercourses of sand and gravel sized sediment, released from the excavation of subsoils, and entrained in surface water runoff. Inspection and maintenance of these structures during construction stage is critical to their functioning to stated purpose. They will remain in place throughout the entire construction stage. Double silt fences will be emplaced within drains downgradient of all construction areas; and › Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters. Airborne dust will be generated from excavation and concrete cutting across the Site. The most efficient method of reducing dust particles is to remove at source. Accordingly, all excavation and cutting sites will require the suppression of dust through the use of water and sprinkler systems at each excavation/cutting site. A double-lined, floating silt curtain will be installed around the works area before any near-shore or in-water works commence. This will allow residual dust particles to be captured and settle out within the silt curtained area of Lough Ree, close to the Site. Excavation spoil may be deposited on road surfaces via the wheels of construction vehicles. To minimise the amount of excavation material leaving the Site in this way, wheel washes will be installed at the exit of each work area and temporary construction compound. Residual material from wheels and airborne dust may still become deposited on the Site road network, potentially impacting the water quality of the stormwater drainage network or allowing for airborne dust to be mobilised from here in dry conditions. Therefore, dust suppression vehicles will be used throughout the year during the construction stage, routinely traversing the Site road network as required; this may be continuous during the summer months. Management of excavation seepages and subsequent treatment prior to discharge into the site drainage network will be undertaken. An upslope interceptor drain will be established upslope of the excavation area to prevent greenfield runoff into the excavations. Berms will also be used, as necessary.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		The following design measures will be implemented on the site: › Dewatering will be provided as relevant to specific requirements with de-watered discharge pumped using a pump equipped with a silt bag on the discharge outlet. As the water pass through the silt bags, the majority of sediment and organic matter is retained by geotextile fabric. The silt bags will be used with natural vegetation filters or sedimats. The sedimats will be secured to the ground surface using stakes/pegs. They will extend to the full width of the outfall to ensure that all water passes through this treatment measure. The pumped water will be discharged to either the existing stormwater drainage system or to a suitably vegetated area within the Site boundary. Where discharge to a vegetated area is required, level spreaders will be installed for each outfall, and the area will be enclosed with silt fencing to prevent sediment-laden runoff and ensure compliance with best practice environmental controls. Prior to the outset of works a silt fence will be erected along the lakeshore perimeter of the proposed construction area to prevent run-off to potentially floodable		
Accidental spills, leaks or other releases controls				
MM13	CEMP Section 3.3.7, EIAR Chapter 7 Land, Soils, and Geology	The following design measures will be in place to mitigate accidental spills, leaks or other releases: › Highest standards of site management will be maintained, with the utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during construction. › An Emergency Response Plan for accidental spillages is set out in Section 5 below, all construction staff will be familiar with the emergency procedures and the use of the relevant equipment, › To provide fuel for plant and equipment on site, a certified double-skinned metal fuel tank, equipped with an integrated pump, delivery hose, meter, filter, and locking mechanism, will be installed within a secure, bunded area on the		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		construction site. The tank will be certified for lifting when full to facilitate safe relocation if required. › To mitigate the risk of fuel spills, sand piles and emergency spill kits will be readily available on site. A dedicated hazardous waste bin will be provided for the disposal of contaminated materials, such as spent sand or soak pads. › Fuel for small plant equipment will be transported around the site using new metal jerrycans fitted with appropriate pouring nozzles. Drip trays will always be used under small plant to capture any leaks or drips. Waste oils and other fluids collected in drip trays or within the bunded area will be transferred into a designated waste oil drum, which will be stored within the bund to prevent contamination. Refuelling of construction machinery will take place using drip trays at all times. › All metal jerrycans and other fuel containers will be stored in certified metal bunded cabinets. Gas cylinders will be stored in a secure, caged area on site and will be properly secured at the point of use. These measures ensure compliance with environmental and safety regulations while minimising the risk of fuel-related incidents. › On-site refuelling will be undertaken using a double skinned bowser. › Fuels stored on-site will be minimised. Storage areas, where required, will be bunded appropriately for 110% of the fuel storage volume for the time period of construction and fitted with a storm drainage system and an appropriate oil interceptor. › All waste tar material arising from the potential chipping and resurfacing of roads will be removed off-site and taken to a licenced waste facility; and		
Wastewater Management				
MM14	EIAR Chapter 8 Hydrology and Hydrogeology	The following measures will be put in place to mitigate against any potential impact on groundwater and surface water quality from wastewater: › Self-contained portable toilets within portacabins with an integrated waste holding tank will be used at the Site compounds, maintained by the providing Contractor, and removed from site on completion of the construction works.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Portable toilets will be numerous and located conveniently for site workers. › Wastewater will not be treated or disposed of onsite.		
Dust Control				
MM15	CEMP Section 3.4, EIAR Chapter 9 Air Quality	Proposed measures to control dust include: › The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness and cleaned, as necessary. › Material handling systems and waste storage areas will be designed and laid out to minimise exposure to wind. Double handling of materials with potential to generate dust will be minimised. › Any hardstanding areas/site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions. › A water tanker will be maintained on-site to dampen exposed soils, unpaved haul routes, and active work areas. › Water sprays will be used as required during transfer and loading activities, during dry and/or windy conditions. › The transport of crushed concrete or other material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles where necessary. Any rubble that has potential to generate dust will also be dampened down as necessary. › Regular Toolbox Talks (TBTs) will be carried out with operatives by site management to reinforce the need for all operatives to be aware of and responsive to conditions or activities that could generate dust. › Stockpiles on-site will be located in the temporary construction compounds and will be covered with plastic sheeting to prevent dust generation during dry conditions. If plastic sheeting is not feasible, stockpiles will be dampened down when necessary. › All plant and machinery will be maintained in good operational order while onsite. › Vehicle speeds on-site will be strictly restricted to 15 km/h.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› All internal access roads will be surfaced using suitable materials; the use of mud stone, clay stone, or shale stone is explicitly prohibited to prevent the generation of additional fine dust particles › All trucks exiting the site carrying fine dry loads shall be covered and all other loads sprayed with water prior to exiting the site › A wheel wash facility will be provided to clean HGV traffic leaving the site to minimise dust and dirt soiling on the L2020.		
Noise Control				
MM16	CEMP Section 3.5, EIAR Chapter 11 Noise and Vibration	Proposed measures to control noise include: › Construction operations will in general be confined to 0700–1900 h Monday-Friday and 0800-1700 h Saturday. › Any works outside these hours, if required, will be limited to quieter operations, and will be agreed in advance with the planning authority. › Drivers of plant and vehicles will be instructed to avoid hooting onsite at all times. › Plant used onsite during the construction phase will be maintained in a satisfactory condition and in accordance with manufacturer recommendations. In particular, exhaust silencers will be fitted and operating correctly at all times. Defective silencers will be immediately replaced. › Queuing of trucks on public roads near receptors will be prohibited. › Machinery not in active use will be shut down. › Driver training will be provided to ensure smooth machinery operation, to minimise unnecessary noise generation. › A site representative will be appointed as a liaison officer with the local community. Prior to road improvement works along the L2020 Local Road, notification will be given to the residents along this road via letter drop. › Any complaints of noise received during the construction phase will be logged in a register and investigated immediately. Details of follow-up action will be included in the register.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Where it is proposed to import potentially noisy plant to the site, the potential impact of noise emissions will be assessed in advance. › Guidance set out in BS 5228-1:2009 with respect to noise control will be applied throughout the construction phase. The hours of working should be planned, and account should be taken of the effects of noise upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned, the duration of work and the likely consequence of any lengthening of work periods. Deviation from these times will only be allowed in exceptional circumstances where written approval has been received from the Planning Authority.		
Invasive Species Management				
MM17	CEMP Section 3.7.1, EIAR Chapter 6 Biodiversity	The following best practice measures will be implemented during the construction phases of the Proposed Development: › A dedicated biosecurity point shall be established within the Proposed Development Site Footprint for the disinfection and cleaning of all equipment, plant machinery or vehicles used during construction phases. › All machinery and plant, including the floating pontoon boat and Movax, will be subject to Check–Clean–Dry protocol, and inspected regularly: › Check: Inspect all equipment for plant material, mud, mussels › Clean: Pressure wash with hot water (>60°C where possible) › Dry: Allow to dry completely before reuse elsewhere › A tool-box talk will be given by the onsite ECoW to notify the Contractors of the presence of any terrestrial or aquatic invasive species, how to identify invasive species the biosecurity measures that will be followed to prevent further spread of invasives. › Clear signage should be erected around the Proposed Development site to alert and remind all works of the presence of invasive species and the importance of biosecurity measures		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› During periods of in-lake works, silt curtains and fragment barriers should be used around areas of marina extension, in order to limit the spread of invasive species › Where any removal of invasive plant species is necessary, cut-and-collect systems should be used, with deployment of collection booms down-current of the works area. › Any removed invasive plant material should be removed from Lough Ree immediately. › Where invasive mussel management is required from infrastructure, boats or machinery, mussels or mussel fragments should be removed mechanically via scraping or pressure washing › Any removed invasive species should be transported to a designated disposal area located away from Lough Ree, surface water, groundwater or any drainage pathways. › Anti-fouling coatings should be applied to infrastructure where appropriate › Large-scale sediment and existing invasive mussel disturbance should be avoided throughout periods of in-lake works › Machinery, including the floating pontoon and Movax, will follow designated navigation channels to avoid high-density areas of invasive species, including within the existing marina. › Where possible, fixed moorings should be used for the floating pontoon boat and Movax, as opposed to dragging anchors and disturbing sediment and vegetation beds which include invasive species. › Mooring chains and anchors should be inspected regularly and will be subject to Check–Clean–Dry protocol Evidence of cleaning and disinfection of all equipment will be fully logged and recorded, with the designated ECoW ensuring biosecurity compliance on site each day.		
Wet Willow-Alder-Ash Woodland Habitat and Fraxinus Excelsior Woodland Protection Measures				

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
MM18	CEMP Section 3.8.1, EIAR Chapter 6 Biodiversity	The Proposed Development, including site layout and construction phasing, was designed specifically to avoid areas of alluvial forest habitat identified along the shoreline of Lough Ree, both within and adjacent to the Proposed Development Site. In order to protect areas of alluvial forest habitat, all areas of woodland will be fenced off with Heras fencing (or similar) to prevent access of machinery or unauthorised access from public areas, thus preventing disturbance and direct degradation of this habitat. All fencing will remain in place for the duration of construction phase. In order to avoid any impacts on alluvial forest, additional/ alternative water quality protection solutions are required in this area. Sheet piling works are not proposed in areas of alluvial forest, and instead an earth bund structure will be installed in the vicinity of the alluvial forest. Works will take place outside of the identified root protection zone, as advised by an arboriculturist. In order to avoid disturbance of root structures, the dam structure will be constructed above ground, with an earth bund installed on top of the existing concrete hardstand in the vicinity of the alluvial forest habitat. The earth bund will connect to the sheet piling at a point outside of the identified areas of alluvial forest. The top-level of the cofferdam will be installed to a minimum of 37.5 mAOD to ensure that the cofferdam is not breached during flooding. As with the cofferdam, the top-level of the bund will be installed to a minimum of 37.5 mAOD to ensure that the bund is not breached during flooding Concrete removal in areas bordering alluvial forest habitat will be undertaken in a sensitive manner using hand tools where practical to ensure no tree roots are damaged. Concrete removal in this area will be conducted in the dry. Around the areas of concrete removal and prior to the commencement of works, a sandbag dam will be installed with an impermeable geomembrane to minimise any potential lake water penetration. Should any water penetrate the sandbag dam, water will be pumped from the area to the surface water drainage system Weather and flood forecasting will be continuously monitored, with concrete removal in this area taking place only during periods of dry weather and low lake		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		levels. Silt curtains will be installed in front of areas of reed bed within the lake, to the north of the existing Baysports facility. Similarly, concrete pouring will be carried out during periods of dry weather and low lake levels, using water-tight shuttering and form works. Impermeable geomembrane sealing, sandbags and silt curtains will all be retained for the duration of concrete pouring and will be removed following the completion of works. Should rain be forecasted, or lake levels anticipated to rise, any concrete removal or concrete reinstatement works will cease until rain stops and lake levels return to a suitable level. Sheet piling and concrete removal works will be undertaken in August - September (inclusive) to avoid the main breeding and winter bird seasons, to be within the suitable season for works in water (August-September, IFI 2016)[e], and to coincide with a time when water levels are at their lowest.		
Eutrophic Lake Protection Measures				
MM19	CEMP Section 3.8.2, EIAR Chapter 6 Biodiversity	Mitigation to protect area of lake habitat in the vicinity of the proposed marina extension will include the following: › Works to the lakebed will be limited to the driving of 42 steel piles, with the attachment of a floating breakwater, floating jetties and gangways connected to the shoreline which will not interact directly with the lakebed or macrophyte communities present there. No in-lake vegetation removal is proposed as part of the marina redevelopment and extension phase of the Proposed Development. › Silt curtains will be installed around each of the pile locations prior to the commencement of pile installation, in order to limit siltation impacts on lakebed vegetation in the wider vicinity. Silt curtains will be connected to the floating construction pontoon, with weights used to ensure the silt curtain sits flush to		

[e] Inland Fisheries Ireland (IFI) (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.* Available at: https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		and remains on the lakebed around each of the pre-specified piling locations. Piles will be installed using vibration piling, with this lower-impact piling technique anticipated to help limit sediment disturbance and suspension on the lakebed, preventing additional siltation throughout macrophyte communities which are already subject to high levels of siltation. › Piles will be installed in stages (sequentially one after another using a floating pontoon), with installation of steel piles anticipated to take 4–6 weeks. Floating jetties, breakwaters, gangway and canoe step will be installed following piling, with these components constructed off-site to minimise in-lake works duration. Installation of these floating components will occur via floating pontoon. Mooring anchors of the floating pontoon will be placed precisely on the lakebed and not dragged, to avoid disturbance to lakebed habitat. Pre-defined access routes will be used by the floating pontoon and Movax for the installation of piles and all other floating marina components, to limit the area of lakebed disturbance. Total works duration for the marina redevelopment and extension is anticipated to take approx. 6 months (including the 4–6 weeks of piling), with all in-lake works (piling works) to be undertaken between August–September (months inclusive) during periods of lower lake water levels and outside of ecological sensitive time periods (e.g., core breeding bird season, core wintering bird season). › Marina redevelopment and extension works will be temporary in duration, phased in nature and isolated in area, taking place in the immediate vicinity of the existing marina, around which, lakebed habitat is already subject to high levels of disturbance. Mitigation to protect areas of lake habitat in the vicinity of the proposed WSP will include the following: The cofferdam location has been designed to minimise interaction with lake waters and marginal habitats of Lough Ree. An isolated, linear area of reed bed fringing the existing Baysports facility concrete hardstand will be temporarily disturbed during the installation of the sheet piled cofferdam around this area. Linear areas of reedbed fringing the existing hardstand area will naturally reinstate following the completion of construction works, with no permanent net loss of this habitat.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
Otter Protection Measures				
MM21	CEMP Section 3.8.3, EIAR Chapter 6 Biodiversity	Prior to the commencement of construction works associated within the Proposed Development Site, the following measures will be undertaken for the avoidance of disturbance to otter which utilise Lough Ree in the vicinity of the proposed construction areas. The following measures are in line with 'Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes'[3]. › Works will be carried out in accordance with 'Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes' (TII 2006)[3]. › A tool-box talk will be given by the onsite ECoW to notify the Contractors of the presence of any otter signs and outline the mitigation measures that will be followed to prevent disturbance to the species. › All plant and equipment for use will comply with Statutory Instrument No. 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996" to minimise disturbance via noise emissions. › Operating machinery will be restricted to the Proposed Development Site. › Work will be completed during daylight hours. › Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers. › Compressors will be of the "sound reduced" models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. › Machines which are used intermittently will be shut down during periods when they are not in use. › All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works. › Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. › Equipment not in active use will be shut down.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Use of horns will be prohibited on-site. Communication between operators (e.g. between excavator and dumper operators) will be by visual methods only. › Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation HGV drivers will be instructed to extend care and courtesy to other road users, and to avoid unnecessary revving of engines. › All construction plant used on-site will be required to comply with maximum sound power levels set out in Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors, implemented in Ireland by the European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001 (S.I. 632 of 2001), as amended by the European Communities (Noise Emission by Equipment for Use Outdoors) (Amendment) Regulations, 2006 (S.I. 241 of 2006). › All plant and equipment for use will comply with Statutory Instrument No. 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996" to minimise disturbance via noise emissions. › Where reasonably practicable, low vibration working methods should be employed. Consideration should be given to use of the most suitable plant, reasonable hours of working for operations which might give rise to perceptible vibrations, and economy and speed of operations. › Vibration should be controlled at source, and the spread of vibration should be limited. › Where reasonably practicable, plant and/or methods of work causing significant levels of vibration at sensitive premises should be replaced by other less intrusive plant and/or methods of working. › Off-site fabrication of construction components should be utilised wherever possible to limit vibration levels. › Best practice vibration control measures will be employed by the Contractor, as outlined in the following documents:		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		Operating machinery will be restricted within the Proposed Construction Areas only. Given the largely crepuscular nature of otter, all work associated with the Proposed Development will be completed during daylight hours or as outlined below. The proposed construction working hours are as follows: › 07:00 – 19:00 Monday to Friday. › 08.00 – 17.00 Saturday › Closed Sundays and public holidays. Any construction phase lighting associated with the Proposed Development will avoid illuminating fringing lake habitats e.g. lake waters, reedbeds, woodland, etc. › British Standard BS 7385: 1993: Evaluation and Measurement for Vibration in Buildings Part 2: Guide to Damage Levels from Ground Borne Vibration. › British Standard BS 5228: 2009+A1 2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2: Vibration . › A designated member of staff will be appointed as the point of contact for any queries or complaints from nearby local residents. All lighting should include the following specifications › 2700 K (warm white) › Directional attachments to prevent upward light spill, as well as to prevent light spill on any sensitive habitats (e.g., light shields in the vicinity of woodland (alluvial or otherwise), reedbed, lakes shore, lake waters, and treelines). › Where possible, lighting should include timing options, either through motion sensor lighting or dimming. Construction phase lighting will only remain on during the outlined hours of construction. › Any construction phase light spill from lighting will fall below 1 lux on hedgerow, woodland or lake habitat (including marina lighting). › In line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations: › Every light needs to be justifiable, › Limit the use of light to when it is needed,		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Direct the light to where it is needed, › Reduce the light intensity to the minimum needed, › Use light spectra adapted to the environment, › When using white light, use sources with a "warm" colour temperature (less than 2700K).		
Bird and SCI Species of SPAs Protection Measures				
MM22	CEMP Section 3.8.4, EIAR Chapter 6 Biodiversity	Aside from all the other measures set out in this document, the following mitigations will be implemented to ensure no disturbance to birds and Special Conservation Interest Species of SPAs. › All in-lake works including marina extension construction and erection of cofferdam adjacent to reedbed habitat will take place outside the breeding season (March – July) and wintering season (October – March) for waterbirds and will therefore be limited to the months August - September of any given year. › The cofferdam once installed will provide a screening buffer between the construction area and retained reedbed habitat. This will aid in minimising disturbance effects to birds throughout the duration of the Water Sports Pavilion construction phase. › All vegetation clearance works throughout the Proposed Development Site and works in the vicinity of sensitive habitats for breeding waterbirds (i.e. reedbeds) will be conducted outside of the breeding bird season (1st March – 31st August, dates inclusive) where possible. If works must be carried out that continue into the breeding bird season, then these works will commence at a minimum in the weeks prior to 1st March. This will allow for existing levels of disturbance arising from construction works commencing prior to the breeding bird season to act as a disturbance buffer to ensure that waterbird species do not build nests within the Proposed Development Site, but prioritise sites within the wider vicinity, of which there are significant suitable areas to the north and south of the Proposed Development. This would be done to prevent nest abandonment by waterbirds.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Vegetation removal (trees, scrub) should take place outside of the bird nesting season. Where removal cannot be avoided during this season, it will be preceded by an inspection of any vegetation to be removed by a qualified ecologist. If any nests are identified during these surveys, then works will halt until nesting has concluded.		
Bat Protection Measures				
MM24	CEMP Section 3.8.5, EIAR Chapter 6 Biodiversity	Aside from all other mitigation set out in this document, the following measures will be implemented to ensure no disturbance to bats. **Timing of works** › Demolition works will be scheduled outside of the main bat activity period (May–September), unless otherwise agreed with the licensed ecologist. **Provision of Alternative Roosting Habitat** › Prior to the commencement of demolition, at least one bat box/ replacement roost feature will be installed to provide an immediate alternative roosting option if required. Compensatory roosting features will be provided within the site in accordance with best practice (Marnell et al., 2022; TII, 2006; Collins, 2023). › A minimum of one Rocket bat box will be installed, with additional boxes incorporated where feasible to enhance roosting opportunities for local bat populations. › Rocket bat boxes and other bat boxes will be: ○ Installed at a height of ≥ 3 m above ground level; ○ Oriented south to southeast where possible; ○ Located away from artificial lighting;		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		○ Positioned adjacent to linear features such as treelines or woodland edge to maintain connectivity with existing commuting routes. ○ Located as close as possible to the existing bat roost to be removed. › Final locations of replacement/ compensatory bat roosting features will be agreed in consultation with a licenced ecologist. › The installed Rocket box structure and any other bat boxes will be subject to post-installation inspection by the appointed ECoW (or Project Ecologist) to confirm correct placement and suitability. The condition of the boxes will subsequently be reviewed as part of ongoing site maintenance to ensure their integrity is maintained and that they remain fit for purpose. **Monitoring of the compensatory roost feature** Monitoring of the compensatory roosting features will be undertaken on an annual basis (by a suitably licenced individual) for a minimum period to be agreed with NPWS, in order to assess their uptake and effectiveness. Monitoring will be carried out by a suitably qualified ecologist using a combination of appropriate and non-intrusive techniques, including: › Visual inspection for signs of use (e.g. staining, droppings, or moisture); › Inspection using an endoscope, where access allows; › Use of thermal imaging or emergence surveys, where appropriate; › DNA analysis of droppings, if required to confirm species presence. The results of monitoring will be used to evaluate the success of the mitigation measures and to inform any adaptive management required. Confirmation of compensatory roost feature usage and monitoring outcomes will be reported to NPWS in accordance with licence conditions.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		Measures to mitigate loss of Foraging/Commuting Habitat The Proposed Development was designed specifically to retain individual trees and treelines within the Proposed Development Site where possible. 239 trees proposed for removal, with a total of 240 trees are proposed to be replanted and will vary in maturity. Tree species replanting has been designed with consideration for maintaining connectivity throughout the Proposed Development. Where trees cannot be replanted within the vicinity of where they were removed, they will instead be replanted to enhance connectivity (i.e. replanted in the northern area of the site and along the L2020 road). › The longest area of treeline removal where replanting is not proposed is the non-native Leyland treeline located to the north of the Proposed Development Site. However, due to the presence of another treeline within the Athlone Golf Club, located closely west of the treeline to be removed and running parallel to the Leyland treeline, no loss of overall commuting connectivity is anticipated. In addition, trees will be planted within the north of the Site in areas of existing amenity grassland which will enhance connectivity and foraging potential of this northern area over baseline conditions. › The planting scheme will use native tree species to strengthen ecological value in accordance with the All-Ireland Pollinator Plan. By incorporating a carefully designed mix of native trees, the design and development will enhance existing habitats and replace removed non-native treeline habitat and trees for commuting and foraging bats. Retained trees throughout the Proposed Development Site Footprint will be protected during construction in full accordance with BS:5837 (Trees in Relation to Construction).		
Cultural Heritage Protection Measures				
MM25	CEMP Section 3.9, EIAR	The following mitigation measures proposed are subject to approval by the National Monuments Service and the planning authority.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
	Chapter 12 Cultural Heritage	› Should any archaeological material be encountered during archaeological monitoring and archaeological testing, the extent of such features/deposits will be determined, a GPS location of the site will be established and works at this location will cease. A strategy will be proposed to the Local Authority and National Monuments Service to preserve the site in situ, where possible. Where preservation in situ cannot be achieved, either in whole or in part, then a programme of full archaeological excavation will be proposed, to ensure the preservation by record of the portion of the site that will be directly impacted upon. This work should be carried out by a suitably qualified archaeologist under license and in accordance with the provisions of the National Monuments Acts 1930–2014.		
Resource Waste Management				
MM26	CEMP Section 3.10.2	› All construction phase waste will be collected in skips and the site will be kept tidy and free of debris at all times. › Waste oils and hydraulic fluids will be collected in leak proof containers and removed from the site for disposal or recycling. It is also essential that all empty oil containers and other hazardous wastes will be disposed of in accordance with the requirements of the Waste Management Act, 1996 as amended. › All construction waste materials will be stored within the confines of the site, prior to removal from the site to an appropriately licensed waste facility. › A self-contained port-a-loo with an integrated waste holding tank will be used within the confines of the site. This unit will be maintained by the providing Contractor and removed from site upon completion of the construction works. › No wastewater will be discharged on-site during the construction phase		
MM27	CEMP Section 3.10.2.2	› Ordering of materials will be on an 'as needed' basis to prevent over supply to site. Co-ordination is required with suppliers enabling them to take/buy back surplus stock.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› All trucks transporting fine or dry materials to and from the site will be securely covered immediately after loading, with tailgates firmly fixed to prevent wind-blown dust and spillages › Purchase of materials pre-cut to length to avoid excess scrap waste generated on site. › Request that suppliers use least amount of packaging possible on materials delivered to the site. › Ensuring correct storage and handling of goods to avoid unnecessary damage that would result in their disposal. › Ensuring correct sequencing of operations. › Use reclaimed materials in the construction works.		
Traffic Management				
MM28	CEMP Section 3.11.1	To ensure compliance with traffic management requirements, the Contractor shall implement the following measures: › All construction staff and subcontractors shall be clearly informed that they are bound by the restrictions set out in the CTMP. The Contractor shall schedule site traffic in advance to ensure adherence to these restrictions. › Special permits for the movement of oversized or hazardous loads shall be obtained from RCC and/or An Garda Síochána prior to any such movements. › Daily construction programmes shall be planned to minimise disruptions to surrounding streets by staggering HGV and delivery movements to avoid site queues. Non-essential vehicle movements shall be minimised during peak traffic hours (08:00–09:00 and 16:30–18:00). › On-site parking shall be limited to vehicles required for direct participation in the works. Construction vehicles shall follow the road hierarchy, using primary national and regional routes for site access and avoiding local or minor streets where practicable. A Traffic Management Coordinator shall be appointed to oversee all traffic safety and management matters and to ensure compliance with the CTMP. Where		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		multiple contractors are working on site, overall traffic coordination shall be implemented, including review and harmonisation of individual CTMPs. An overall CTMP for the entire site shall be prepared and agreed with RCC in advance of works commencement.		
MM29	CEMP Section 3.11	Traffic control will be implemented through the following procedures: › Develop a restriction and rule adherence form to be signed by all lorry drivers and site operatives, confirming their understanding and agreement to comply with traffic management requirements. Prior to commencement, all new contractors and personnel must complete and sign the prequalification and restrictions forms. › All movements of construction traffic to and from the site must be coordinated by the Contractor's Transport Manager in accordance with the approved restrictions. A certified Flagman will be stationed at the site entrance to safely direct and manage traffic entering and leaving the site. › An appointed person at the site entrance will issue traffic dockets and maintain a record of all vehicles entering and leaving the site. The site manager will periodically review these records to ensure compliance with traffic management procedures and to identify any opportunities for operational improvement.		
MM30	CEMP Section 3.11.3	› All construction traffic will access the site via the main access roads, entering from the N61. Deliveries must be off-loaded promptly using the most appropriate method, and vehicles should be escorted off-site immediately to prevent congestion. › The site gate attendant will be responsible for preventing any conflicts between pedestrians and vehicles entering or exiting the site. Temporary pedestrian routes and controls must be maintained at all times to ensure the safe movement of the public and the uninterrupted operation of businesses within the Proposed Development boundary.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Some private car use by construction personnel is expected during periods of peak construction activity. Site working hours are anticipated to be 08:00–19:00 from Monday to Friday and 08:00–17:00 on Saturdays, meaning that the peak site movements are likely to occur outside of the usual AM and PM rush hours, thereby minimising disruption to local traffic. **HGV Movements:** For rigid HGVs transporting materials from the site, the total turnaround time—from arriving at the site entrance to travelling to the loading area, completing loading operations, and exiting—is estimated to be approximately 15 minutes per vehicle. Wherever practicable, HGV movements should be scheduled outside peak traffic periods. The Contractor must also prepare detailed traffic management plans for project stages that will generate high volumes of HGV activity, such as site clearance and regrading works, with particular attention given to temporary pedestrian management and ensuring safe access to neighbouring properties and businesses.		
MM31	CEMP Section 3.11.3	› Contractor, subcontractor, and supplier vehicles are not permitted to park on local access routes, and all site parking must be accommodated within the site boundaries as outlined in the Contractor's site setup layout strategy. Because of the spatial constraints within the site extents, the availability of on-site parking will be very limited. › No unloading or blockage of access routes—including those designated for emergency vehicles—is permitted, and any vehicle that obstructs these routes must be instructed to move immediately to ensure that site operations and emergency access are not impeded. › The Contractor must carry out a vehicle tracking analysis to confirm that all construction vehicles have sufficient turning space. This analysis should demonstrate safe entry and exit manoeuvres for every vehicle, with the goal of minimising—or, where possible, eliminating—the need for reversing. › The Contractor shall ensure that all traffic management requirements outlined in this CTMP are fully implemented and adhered to throughout the duration of the Proposed Development.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
MM32	CEMP Section 3.11.3.2	The Contractor shall undertake monthly logistics coordination meetings to review and update the traffic management strategy. These meetings will: › Discuss and agree on traffic management coordination measures. › Review the implementation of any required temporary traffic management schemes. › Identify any potential conflicts or operational issues and agree on corrective actions. › Ensure alignment between all Contractors, subcontractors, and stakeholders regarding traffic management requirements.		
MM33	CEMP Section 3.11.3.3	All loading and unloading activities must be carried out entirely within the demised site area, meaning within the defined site boundary or red line. Contractors are strictly prohibited from conducting any loading or unloading on the public roadway. This requirement is in place to: › Reduce risk to the public › Minimise congestion › Limit disruption or potential hazards to passing vehicles and other road users All deliveries and collections must be overseen and managed by a nominated competent person appointed by the Contractor. In addition, Contractors are required to assess and clearly outline the measures they will implement to manage impacts on cyclists, pedestrians, other road users, and any affected roadway infrastructure, ensuring the safety and continuity of public access around the site.		
MM34	CEMP Section 3.11.3.4	› Access for emergency vehicles via the designated primary haul roads must be maintained at all times throughout the construction period. The Contractor must ensure that no works, parking, or material storage obstruct these routes and that emergency access remains clear and immediately available in the event of an incident. To support this, the Contractor shall establish procedures to		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		coordinate site activities so that emergency vehicle access is never compromised under any circumstances.		
MM35	CEMP Section 3.11.3.5	› The Contractor is required to take all necessary precautions to prevent damage to roads, footpaths, grass margins, walls (including protected walls), structures (including protected structures) and their curtilage, as well as trees, lighting fixtures, and all other street furniture both within and outside the site boundary. The Contractor is fully liable for the cost of repairing or replacing any such damage caused by its operations, and all remedial work must meet the satisfaction of RCC. › Precautions must also be taken to prevent any spillage of diesel, contaminated water, solvents, or other hazardous materials. Should any damage or contamination occur, it must be rectified at the Contractor's expense, and the Contractor may additionally be held responsible for breaches of related planning conditions. › The use of tracked plant on road surfaces outside the site is strictly prohibited unless approved protective measures are in place to safeguard the integrity of these surfaces. › The Contractor's Construction Management Plan must specify the required quality of temporary reinstatements of roads, pavements, and other affected surfaces, as well as the timeline for completing permanent reinstatements to ensure that all affected areas are restored promptly and to the required standard.		
MM36	CEMP Section 3.11.4, EIAR Chapter 14 Material Assets	A number of design measures are proposed to mitigate construction phase traffic impacts, these include: › Phasing of construction activities to maintain access to existing facilities; › Maintaining access to the hotel, marina, businesses and adjacent properties throughout construction; › Locating construction compounds within the development site; › Scheduling major deliveries to avoid periods of peak visitor demand where possible;		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Maintaining pedestrian and cyclist routes through temporary traffic management; › Minimising the duration of temporary traffic management arrangements. Preliminary traffic management measures for the construction of the Proposed Development are set out below: › Construction and Delivery Programme – a programme of construction and deliveries will be submitted to RCC in advance of deliveries of material to the site. Liaison with the relevant local authorities and TII will be carried out where required. › Information to locals – Locals in the area will be informed of any upcoming traffic related matters via letter drops and posters in public places. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided. Local access to all properties located within the proximity of the proposed works will be maintained at all times. › Identification of delivery routes – The delivery routes for the transportation of all materials will be agreed and adhered to by all Contractors. › Temporary traffic signs – As part of the traffic management measures temporary traffic signs will be put in place at the location where works are being undertaken. All measures will be in accordance with the 'Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works' (DoT, 2019) and 'Guidance for the Control and Management of Traffic at Roadworks' (DoT). A member of construction staff (flagman) will be present at each construction site location along the route. › Additional measures - Various additional measures will be put in place in order to minimise the effects of the construction traffic on the surrounding road network including wheel washing facilities at the entrance to the site and sweeping/cleaning of local roads as required. › Road Opening Licence – All roads' works will be undertaken in line with the requirements of a road opening licence as agreed with RCC.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
MM37				

7. MONITORING PROPOSALS

The Monitoring Proposals to be implemented are presented in Table 7-1 below. A monitoring plan will be implemented and carried out by the ECoW and Environmental Manager. This CEMP will be updated to incorporate auditing and reporting requirements, including frequency, in coordination with the Contractor. The proposed monitoring framework is designed to provide a structured, easily auditable format, ensuring efficient review and reporting throughout future Proposed Development phases.

Table 7-1 Monitoring Measures

Monitoring Measure	Reference Location	Monitoring Measure	Audit Result	Action Required
Field Monitoring				
MX 1	EIAR Chapter 8 Hydrology and Hydrogeology	During the construction stage, a field monitoring campaign will be undertaken in Lough Ree. Monitoring will involve visual checks of drains, swales, settlement ponds and streams, and measurements of field water quality parameters (temperature, pH, specific electrical conductivity, alkalinity and turbidity). The field measurements will be taken at locations upstream and downstream of the construction activity. Frequency of measurement will be judged in the field by the resident/supervising engineer but will be done at least on a weekly basis (potentially more frequently during storm events). The field measurement campaign will begin two weeks prior to the proposed commencement of works and will cease up to four weeks after the proposed works are completed, unless observations dictate that measurements should continue. Regular inspections of all installed drainage components will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. If visible impact occurs, works will be suspended at the discretion of the resident/supervising engineer, in which case the problem will be identified and corrective action taken before recommencing works. Surface water samples will also be collected to monitor for effects and any shifts in baseline conditions. The sampling locations proposed are the ones presented in included in Appendix 8-2; SW01, SW02, SW03, and SW04. The samples will be collected on a monthly schedule during construction. The Environmental Manager will be responsible for sample collection. Periodic review will determine the need for, or recommended amendments to, the monitoring		

Monitoring Measure	Reference Location	Monitoring Measure	Audit Result	Action Required
		programme in line with principles of adaptive monitoring (guided by the data review and findings). The monthly samples will be analysed for general physico-chemical parameters, nutrients, dissolved organic carbon, true colour, and suspended solids and screened against environmental quality standards (EQS) for surface waters. Adaptive monitoring will be practiced, whereby analytes and frequency of monitoring may change based on periodic review of results. All sampling events will be accompanied by field measurements of water temperature, pH, SEC, alkalinity and turbidity. The broader purpose of the proposed monitoring is to track baseline conditions and how these might evolve under prevailing conditions. The baseline monitoring will begin three months prior to commencement of the construction stage. The data will be periodically reviewed to assess whether changes (trends) to water quality are occurring.		
Vibration Monitoring				
MX 2	CEMP Section 3.6, EIAR Chapter 11 Noise and Vibration	It is proposed to carry out construction phase vibration monitoring at the hotel and at any other structure while vibro-rolling is undertaken within 100 m. The following is proposed: › Vibration monitoring in accordance with *Measurement and assessment of groundborne noise and vibration* (Association of Noise Consultants, 2012). › Measurement using a calibration vibrograph with tri-axial transducer. › Measurement of PPV levels, frequency and displacement. › Measurement at nearest point of hotel to vibro-rolling area. › Measurement for duration of vibro-rolling. › Prior agreement with hotel management. Alert system to notify where PPV levels exceed 10 mm/s.		
Ecological Monitoring				

Monitoring Measure	Reference Location	Monitoring Measure	Audit Result	Action Required
MX3	CEMP Section 3.8.5, EIAR Chapter 6 Biodiversity	**Ecological Oversight of Works/ Supervision** › A toolbox talk will be delivered to all site personnel to ensure awareness of legal protections, identification of bats, and procedures to follow should bats be encountered. › Roof removal works around the bat roost entrance will be undertaken under ecological supervision, where required, to ensure appropriate safeguards are implemented. › In the event that bats are encountered during works, activities will cease and the licensed ecologist will advise on appropriate actions.		
Archaeological Monitoring				
MX4	CEMP Section 3.9, EIAR Chapter 12 Cultural Heritage	The following mitigation measures proposed are subject to approval by the National Monuments Service and the planning authority. › A suitably qualified archaeological consultant under licence, will monitor sub-surface groundworks in green areas only during the construction phase. This will target sub-surface groundworks in green areas which were not the subject of the preceding test excavation under Licence Number 26E0466. › Should any archaeological material be encountered during archaeological monitoring and archaeological testing, the extent of such features/deposits will be determined, a GPS location of the site will be established and works at this location will cease. A strategy will be proposed to the Local Authority and National Monuments Service to preserve the site in situ, where possible. Where preservation in situ cannot be achieved, either in whole or in part, then a programme of full archaeological excavation will be proposed, to ensure the preservation by record of the portion of the site that will be directly impacted upon. This work should be carried out by a suitably qualified archaeologist under license and in accordance with the provisions of the National Monuments Acts 1930–2014.		

Monitoring Measure	Reference Location	Monitoring Measure	Audit Result	Action Required
Weather Conditions				
MX5	CEMP Section 3.1	Continuous monitoring of weather conditions and regular communication with local stakeholders (including the Hodson Bay Hotel and local residents) will be maintained to ensure the estimated 30-month construction phase does not cause a nuisance.		
Environmental Monitoring and Audits				
MX6	CEMP Section 4.1	The duties of the Site Manager will include the following: › Ensure that all works are completed safely and with minimal environmental risk; Approve and implement the CEMP and supporting environmental documentation, and ensure that all environmental standards are achieved during the construction phase of the Proposed Development; › Take advice from the site Environmental Manager on legislation, codes of practice, guidance notes and good environmental working practice relevant to their work; › Ensure compliance through audits and management site visits; › Ensure timely notification of environmental incidents; › Monitor the impact of construction traffic on local traffic conditions; › Ensure that all construction activities are planned and performed such that minimal risk to the environment is introduced; › Provide full and adequate supervision and site administration during the progress of the works; and › Appoint suitably qualified foreman, craftsman, domestic subcontractors, and specialists.		
MX6	CEMP Section 4.3	The duties of the appointed Environmental Manager are summarised as follows: › Maintain and update as required the CEMP and supporting environmental documentation and review/approval of contractor method statements.		

Monitoring Measure	Reference Location	Monitoring Measure	Audit Result	Action Required
		› Undertake inspections and reviews to ensure the works are carried out in compliance with the CEMP. › Monitor the implementation of the CEMP, particularly all proposed/required environmental mitigation measures. › Ensure proper mitigation measures are initiated and adhered to during the construction phase. › Ensure adequate arrangements are in place for site personnel to identify potential environmental incidents. › Ensure that details of environmental incidents are communicated in a timely manner to the relevant regulatory authorities, initially by phone and followed up as soon as is practicable by email. › Support the investigation of incidents of significant, potential or actual environmental damage, and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties. › Identify environmental training requirements and arrange relevant training for all levels of site-based staff/workers; and › Fulfil the role of Waste Manager and implement the objectives of the Resource Waste Management Plan as set out in Section 3.9 above.		
Traffic and Transport Monitoring				
MX7	CEMP Section 3.11.2	An appointed person at the site entrance will issue traffic dockets and maintain a record of all vehicles entering and leaving the site. The site manager will periodically review these records to ensure compliance with traffic management procedures and to identify any opportunities for operational improvement.		
MX8	CEMP Section 3.11.1	Construction traffic shall be monitored at key points remote from the site to verify compliance with CTMP requirements. Detailed traffic management plans shall be submitted to RCC in advance of construction and incorporated into the overall Construction Management Plan.		

8. PROGRAMME OF WORKS

8.1 Construction Programme

The construction phase will take approximately 30 months to complete. This is typically broken down into several phases. The indicative construction timeline for construction of the Proposed Development is outlined in Figure 2-3 above.

It is estimated that the construction phase of the Proposed Development will take approximately 30 months to complete. In the interest of minimising disturbance to breeding birds, construction will not commence during the bird breeding season which runs from the 1st of March to the 31st of August inclusive.

The construction schedule for the project will primarily depend on the availability of financial resources, with the assumption that full funding will be secured for the timeframe specified by RCC. Given the sensitive nature of the site and its importance as a tourist attraction, it is expected that the construction works will be undertaken in a phased approach.

The construction phase can be divided into specific work elements:

1. *Upgrade and extension of existing parking spaces and site roads– 9 months;*
2. *Pedestrian Active Travel corridor enhancements – 5 months;*
3. *Demolition of existing water sports building and construction of new Water Sports Pavilion Buildings - 21 months;*
4. *Construction of Marina Redevelopment and Extension – 6 months;*
5. *Public Realm upgrades including landscaping – 9 months.*

Note that overlap is expected between the commencement of certain phases.

The construction programme will be finalised on the appointment of a Contractor before commencement of works.

9. COMPLIANCE AND REVIEW

9.1 Site Inspections and Environmental Audits

Routine inspections of activities will be carried out on a daily and weekly basis by the Site Environmental Manager/Site Manager as appointed by the applicant to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place.

Environmental inspections will ensure that the works are undertaken in compliance with this CEMP. Environmental site inspections will be carried out by suitably trained staff.

9.2 Environmental Compliance

The following definitions shall apply in relation to the classification of Environmental Occurrences during the infilling works:

Environmental Near Miss

An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

Environmental Incident

Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the site boundary.

Environmental Non-Compliance

Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the CEMP.

A corrective action is implemented to rectify an environmental issue on-site. Corrective actions will be implemented by the Site Manager, as advised by the Environmental Manager. Corrective actions may be required as a result of the following.

- Environmental Audits.
- Environmental Inspections and Reviews.
- Environmental Incidents; and,
- Environmental Complaints.

9.3 Corrective Action Procedure

A Corrective Action Notice will be used to communicate the details of the action required to the main Contractor. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on site that requires immediate attention direct communications between the Site Manager and the Environmental Manager will be conducted. This in turn will be passed down to the site staff involved. A Corrective Action Notice will be completed at a later date.

APPENDIX 1

SITE LAYOUT DRAWINGS

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All dimensions to be checked on site. Figured dimensions take preference over scaled dimensions. Any errors or discrepancies to be reported to the Architects. This drawing is not to be copied or modified by the recipient.

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Notes

Site Boundary
sqm 89273
(8.9273ha)

1. Water Sports Pavilion
2. Café Pavilion
3. Permanent Marquee
4. Temporary Marquee
5. Maintenance store
6. ESB Substations + Intake Room
7. Swimming Changing Pavilion
8. Marina Pavilion

N

Key Plan



Government of Ireland

Co-funded by the European Union

Eastern and Midland Regional Assembly

Fáilte Ireland

ROSCOMMON County Council

Waterways Ireland

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REV	DATE	DRAWN	DESCRIPTION
P1	21.07.26	HB	Planning Submission

STATUS: PLANNING

PROJECT: Hodson Bay Waterfront Park

PROJECT ADDRESS: Hodson Bay, Co. Roscommon

DWG TITLE: Proposed Site Layout Plan A

DWG NO	REV	PROJECT NO	SCALE
HB-RKD-ZZ-ZZ-DR-A-1020	P1	2512	1:500

DATE: JULY 2026 | BY: SR | CHK: HB

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P1	21.07.26	HB	Planning Submission

STATUS: PLANNING

PROJECT: Hodson Bay Waterfront Park

PROJECT ADDRESS: Hodson Bay, Co. Roscommon

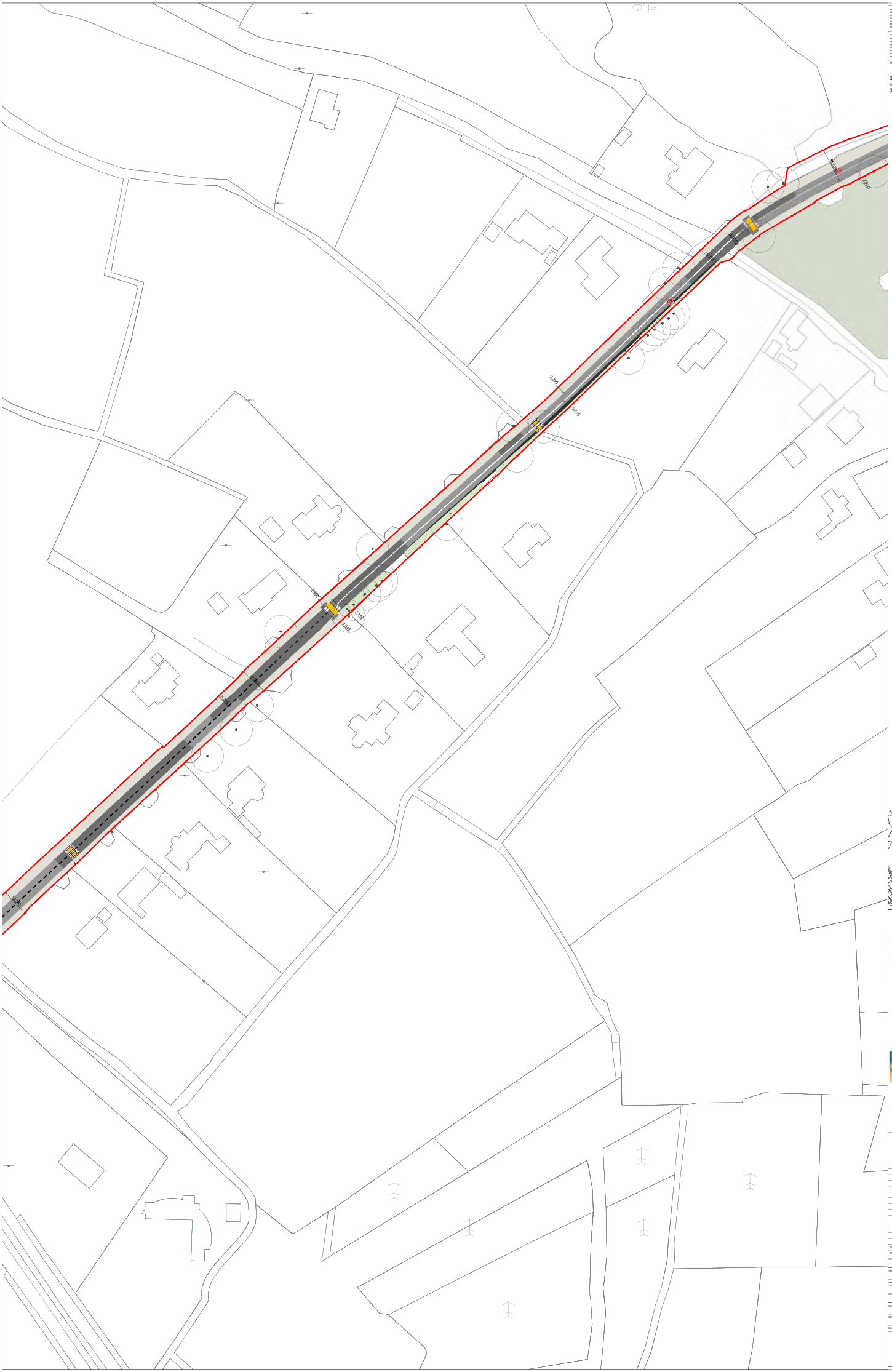
DWG TITLE: Proposed Site Layout Plan B

DWG NO: HB-RKD-ZZ-ZZ-DR-A-1021

REV	PROJECT NO	SCALE
P1	2502	1:500

DATE: JULY 2026 | DRN: SR | CHK: HB

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REV	DATE	BY	DESCRIPTION
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PROJECT ADDRESS: Hodson Bay, Co. Roscommon

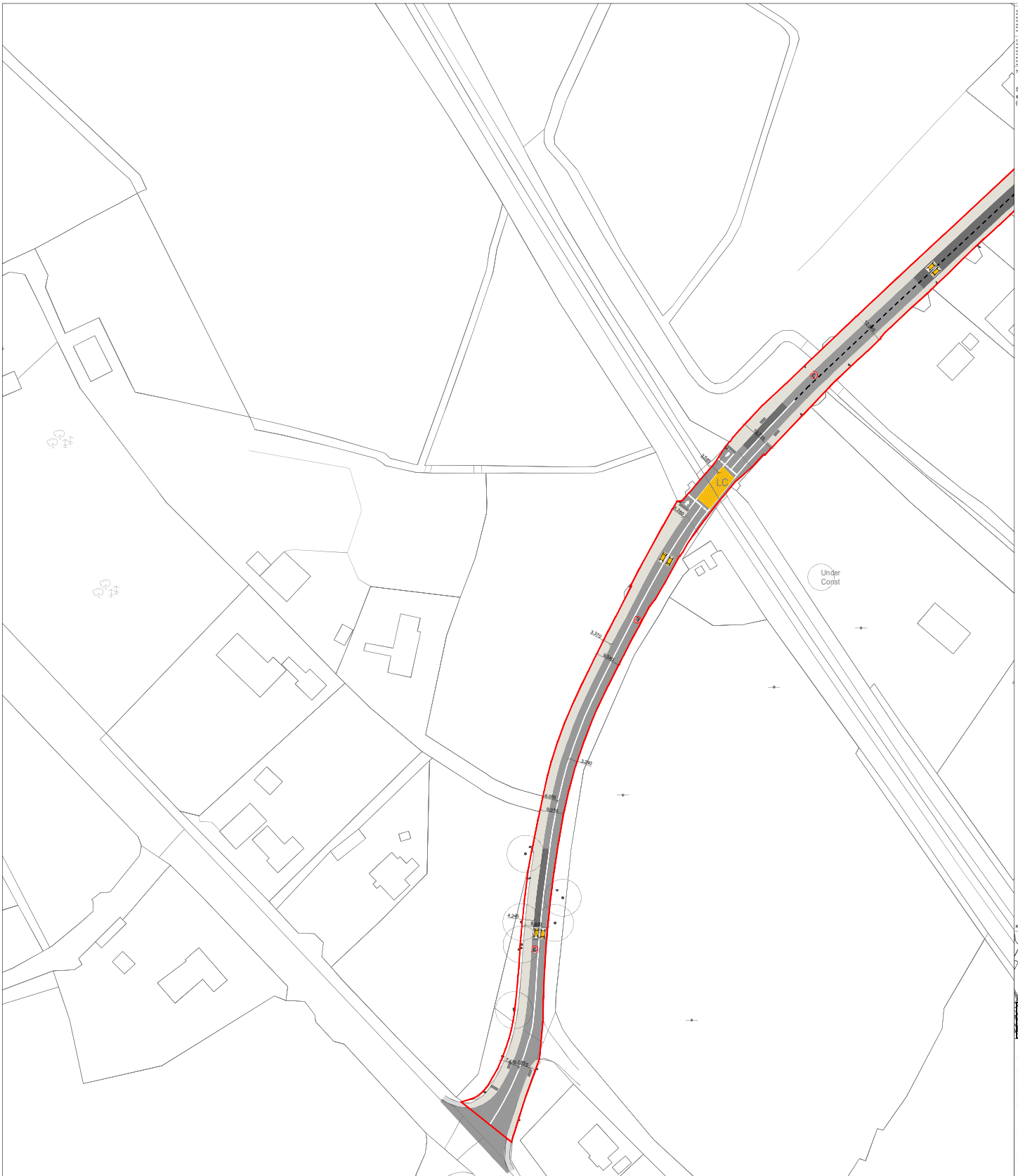
DWG TITLE: Proposed Site Layout Plan C

DWG NO: HB-RKD-ZZ-ZZ-DR-A-1022

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P1	25012	1:500

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APPENDIX 4-3

OPERATIONAL MANAGEMENT PLAN

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Operational Management Plan (OMP)

Hodson Bay Waterfront Park, Co. Roscommon

DOCUMENT DETAILS

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Project Title:	**Hodson Bay Waterfront Park, Co. Roscommon**
Project Number:	**241220**
Document Title:	**Operational Management Plan (OMP)**
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Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

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1. INTRODUCTION

This Operational Management Plan (OMP) has been prepared by MKO on behalf of Roscommon County Council (RCC) (the applicant) for the redevelopment of an existing Waterfront and Marina (Proposed Development) located at Hodson Bay, Athlone, County Roscommon. A description of the Proposed Development is outlined in Section 2 below. This OMP has been prepared to accompany the Environmental Impact Assessment Report (EIAR).

1.1 Scope of the Operational Management Plan

This report is presented as a guidance document for the management of the operational phase of the Proposed Development including management of waste which will be generated during the operational phase.

The report is divided into six sections as outlined below:

- **Section 1** provides a brief introduction as to the scope of the report detailing the targets and objectives of the OMP.
- **Section 2** provides the site location details and a description of the Proposed Development.
- **Section 3** provides the organisational structure and outlines the operational maintenance proposals in place for the Proposed Development.
- **Section 4** provides the maintenance schedule for elements of the Proposed Development,
- **Section 5** outlines the operational health and safety procedures in place,
- **Section 6** is an Operational Waste Management Plan that details the relevant legislation, guidance, and policy, the estimated waste types and quantities, and the waste management proposals for the Proposed Development.
- **Section 7** consists of a concluding statement of the OMP which shall be implemented during the operational phase of the Proposed Development.

1.2 Objectives

The OMP has been prepared to set out the operational proposals for the Proposed Development and ensure that the management of waste during the operational phase is undertaken in accordance with all relevant waste management policy and legislation.

The objectives of the OMP are listed below:

- The OMP sets out the organisational structure of the Proposed Development.
- The OMP sets out the maintenance and operating proposals and the relevant responsible parties for each element of the Proposed Development.
- The OMP provides a strategy for the storage, handling, collection and transport of waste generated at site during the operational phase of the development.
- The OMP outlines measures to maximise recycling, reuse, and recovery of waste with diversion from landfill wherever possible.

1.3 Statement of Authority

The OWMP has been compiled by Eleanor Chapman and reviewed by Feargal Lennon, Karen Mulryan, and Eoin O'Sullivan, all of MKO. Eleanor is a Graduate Environmental Scientist with MKO. Eleanor holds a Degree in Geographical and Archaeological Sciences from University College Cork. Prior to taking up her position with MKO in September 2025, Eleanor has undertaken ecology-based work including desktop research, use of GIS, and ecological surveys. Since joining MKO, Eleanor has joined the Environment Team and worked on a series of projects including Operational Waste Management Plans, Environmental Impact Assessment Screening Determinations, Preliminary Environmental Impact Assessment Screenings, and Traffic Infrastructure Ireland Road Projects.

Feargal Lennon is a Project Environmental Scientist with MKO with over 3 years of experience in environmental consultancies. Feargal holds MSc in Environmental Resource Management from University College Dublin. Over his time at MKO Fergal has developed strong skills in environmental fieldwork, report writing and project management. Feargal has contributed to a wide range of projects over his time with MKO preparing Environmental Impact Assessments, Construction and Environmental Management Plans, and Construction Waste Management Plans. Feargal has been involved in a variety of projects including greenways, quarries, waste facilities, industrial and residential developments. Through his work on projects such as the Dexcom Athenry Pharmaceutical Plant and Ulster Canal restoration project, Feargal has gained extensive experience in coordinating and preparation of EIARs.

Karen is a Senior Environmental Scientist with MKO with over 10 years' experience in the consultancy sector. Karen holds a BA International in Archaeology from NUI Galway and a MSc in Archaeology from the University of Edinburgh. Karen's professional consultancy experience comprises project management, environmental impact assessment reporting and peer reviewing, site selection, feasibility assessment, client liaison and stakeholder engagement. Karen's project management and EIA coordination experience includes large scale renewable energy developments, specifically wind and solar, grid infrastructure, large scale flood relief schemes and residential developments. Karen holds memberships with the Chartered Institute for Archaeologists (ACIfA) and the Institute of Archaeologists of Ireland (IAI).

Eoin O'Sullivan is Project Director Environment at MKO with over 15 years of experience in the assessment of a wide range of energy and infrastructure related projects and working in the fields of environmental and human health risk assessment, waste management, waste policy and permitting. Eoin has wide experience in the project management of large-scale infrastructural projects and brownfield developments which includes all aspects of geo-environmental and geotechnical investigation. Eoin holds a BSc (Hons) in Environmental Science & Technology and a MSc in Environmental Engineering. Eoin is a Chartered Member of the Chartered Institute of Water and Environmental Management and Chartered Environmentalist with the Society of Environment.

2. SITE LOCATION AND PROJECT DESCRIPTION

The Proposed Development site is located within the townland of Barrymore and is located approximately 4 kilometres (km) to the northwest of Athlone, Co. Roscommon. The Proposed Development site measures approximately 8.7 hectares (ha). The Irish Transverse Mercator (ITM) coordinates for the approximate centre of the site are X 600814, Y 746366. The site location is shown in Figure 2-1. The site is accessed via the L2020 Local Road from the N61 National Road which runs in a northwest-southeast direction to the southwest of the site. The N61 National Road serves as a key transportation corridor linking Athlone and Roscommon.

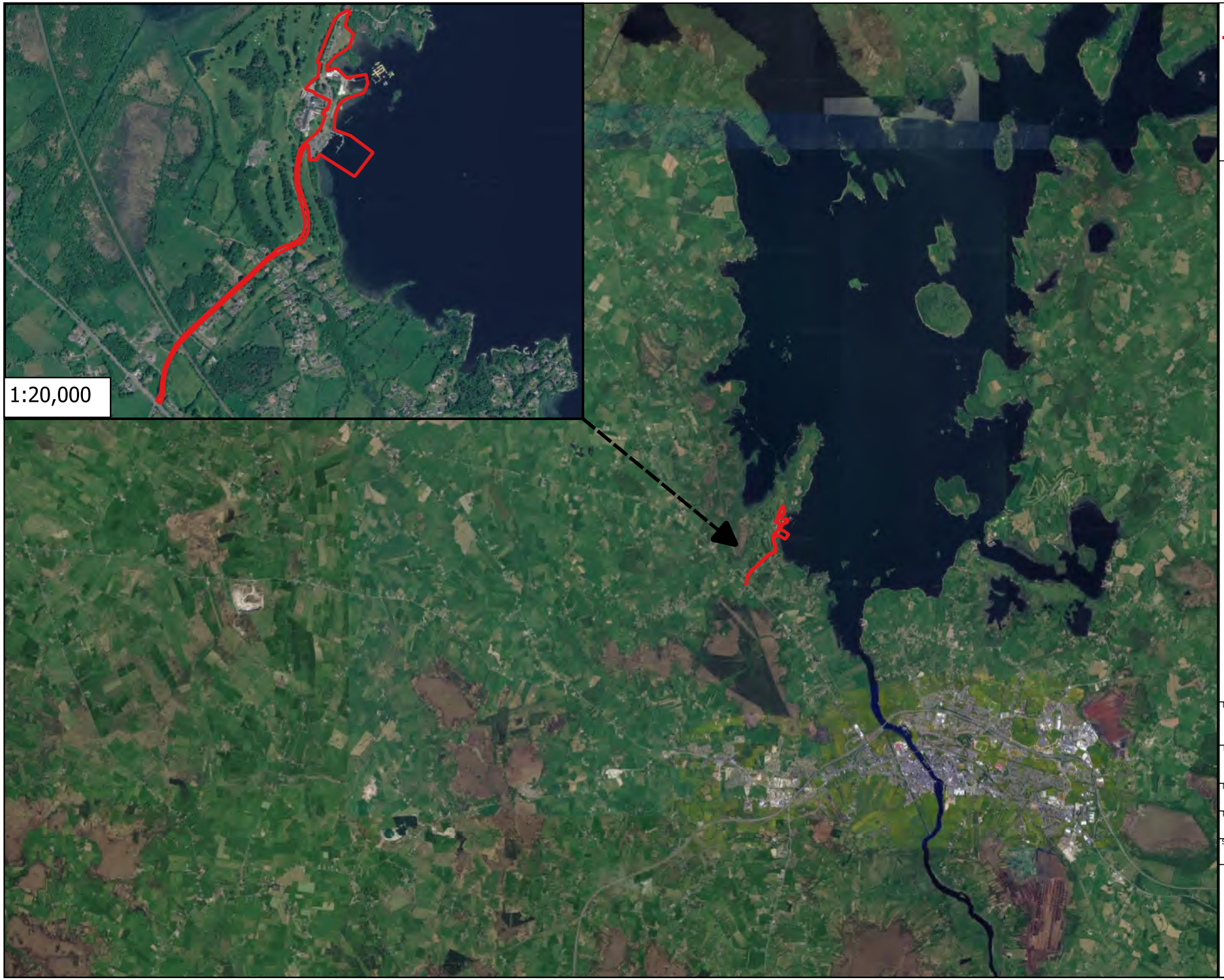
The Proposed Development comprises the existing Waterways Ireland-operated marina facility, the Baysports water sports facility, areas of land currently owned by Roscommon County Council, Athlone Golf Club, the Hodson Bay Hotel, Inland Properties Ltd and other parties as outlined in the Planning Statement, car parking, landscaped public realm areas and an Uisce Éireann pumping station. The site forms part of an established recreational and tourism hub on the shores of Lough Ree. The Athlone Golf Club and the Hodson Bay Hotel are located adjacent to the site.

2.1 Site Description

Planning permission is sought by RCC for the re-development of an existing Waterfront and Marina. The Proposed Development will consist of the following:

- **Water Sports Pavilion Development:** The demolition of the existing water sports building on site, and temporary relocation of the water sports facility to provide for the construction of a new Water Sports Pavilion;
- **Marina Redevelopment and Extension:** The redevelopment of an existing Waterways Ireland-operated marina including an upgraded breakwater and jetty to increase marina capacity to approximately 59 berths;
- **Public Realm Upgrades:** Construction of a playground, nature observation space, picnic areas, benches, bicycle storage & service areas, wellness meadow, outdoor changing shelter and events spaces including the development of a continuous promenade pathway along the lakeshore along with secondary connection path;
- **Active Travel and Site Access Improvements:** Alterations and upgrade to the L2020 Local Road to include to provide for a 3m wide shared cycle / pedestrian pathway along the length of the L2020 from the N61 National Road junction to the Hodson Bay Marina; Implementation of traffic calming measures along the L2020 Local Road accessing the site including vertical deflection ramps & raised crossings at key pedestrian crossing locations. Creation of a pedestrian priority environment resulting in the re-location of 57 no. car parking spaces from the lakefront areas to improve landscape and visual context of the site. Alterations to existing car parking & provision of new carparking at Hodson Bay; and
- The Proposed Development includes for all associated ancillary site development infrastructure including site clearance, boundary treatments, associated public lighting, electrical substation, bin storage, hard and soft landscaping, site drainage upgrades, connections to existing utilities to include foul and surface water drainage, water supply, electrical & telecommunications networks. Boundary treatments involve upgrades to the existing golf course boundary safety netting (between 10m to 20m in height) and fencing in sections where the boundary is altered to accommodate the proposed development and maintain public safety.

A full description of the Proposed Development is detailed in Chapter 4 of this EIAR.



Map Legend

Application Boundary

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title

Site Location

Project Title

Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Drawn By	Checked By
EC	FL
Project No.	Drawing No.
241220	Figure 2-1
Scale	Date
1:100,000	31.07.2026

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3. OPERATIONAL MAINTENANCE

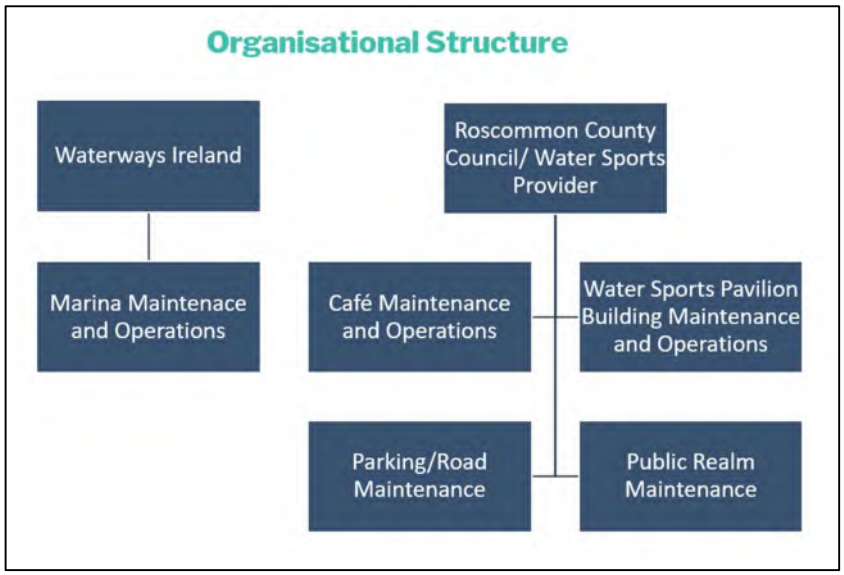


Figure 3-1 Organisational Structure

3.1 Management of Public Realm

The Public Realm Upgrades will provide a flexible public space at the centre of the site, providing a space for programmed activity and events while serving as a functional amenity for marina activities.

The following is proposed as elements of the Public Realm Upgrades:

- Amenities including;
  - A playground,
  - Nature observation space,
  - Picnic areas,
  - Benches,
  - Wellness meadow,
  - Bike storage and service areas,
  - Changing shelter and
  - Events space including the development of a continuous promenade along the lakeshore.
- Provision of extensive natural landscaping including;
  - Sustainable Drainage Systems (SuDS) planting zones,
  - Integrated planter boxes with public seating,
  - Open grassed areas including the wellness meadow in the north of the site and green lake shore areas.
- A lighting scheme.

RCC (or an operator appointed by RCC) will be responsible for the maintenance of the Public Recreation Areas at Hodson Bay. This will include regular maintenance of landscaping and meadow areas and maintenance and upkeep of the playground area and public realm facilities including benches. RCC (or an RCC-appointed operator) will be responsible for the monitoring and maintenance of Sustainable Drainage Systems (SuDS) features throughout the Proposed Development site, with any issues to drainage features being repaired as soon as possible. RCC (or an RCC-appointed operator) will also be responsible for emptying bins in the area and litter removal during operation. The Public Realm maintenance schedule is set out in Appendix 1 and Table 4-1 below.

3.2 Parking and Road Maintenance

It is proposed to provide additional electric vehicle (EV) charging spaces, car parking spaces, accessible parking spaces bicycle parking spaces, bus parking bays, boat trailer parking bays, and a 3 m wide shared cycle/pedestrian pathway along the length of the L2020 Local Road from the N61 National Road junction to the Hodson Bay Marina. RCC will be responsible for the maintenance of car and bicycle parking spaces, and road maintenance including the cycle/pedestrian pathway. The parking and road maintenance schedule is set out in Table 4-1 below.

3.3 Water Sports Pavilion Building

It is proposed that RCC will lease the Water Sports Pavilion to an appointed operator. The appointed operator will be responsible for the day-to-day operation, management and maintenance of the building and associated facilities. This will include the management of public access (where applicable), cleaning, routine building maintenance, servicing of mechanical and electrical systems, health and safety compliance, security and the maintenance of all internal facilities to an appropriate operational standard. The Water Sports Pavilion Building maintenance schedule is set out in Table 4-1 below.

3.4 Café Building

As part of the Proposed Development, a café building measuring approximately 171 m^2 with a maximum height of 7.45 m is proposed for construction.

It is proposed that RCC will lease the café building to an appointed operator (potentially the same operator appointed to the Water Sports Pavilion). The appointed operator will be responsible for the day-to-day operation, management and maintenance of the café building and associated facilities.

It is also proposed to install approximately 9 no. of solar panels on the café building. Maintenance requirement for the panels will be minor and will be the responsibility of the RCC-appointed operator; the main requirement for maintenance consists of periodic cleaning of the panels. The maintenance schedule for the Café Building, including the Solar Panels, is set out in Table 4-1 below. The waste generation and waste management proposals during the operation of the café are detailed in Section 6 below.

3.5 Marina Maintenance and Operations

Operation and maintenance of the marina at Hodson Bay will continue to be the responsibility of Waterways Ireland. Waterways Ireland will ensure provision of all facilities for marina users including the cleaning of bathrooms and shower facilities in the marina services block building. Waterways Ireland will also ensure the functioning and adequate capacity of services provided for boat users of the marina including water, electricity and waste pump-out facilities. The Marina maintenance schedule is set out in Table 4-1 below.

4. PROPOSED MAINTENANCE SCHEDULE

The proposed maintenance schedule for the Proposed Development as set out in Appendix 1, comprises a maintenance schedule for formal grass areas, recreational grass areas, long grass areas, meadow areas, bedding, hedges, shrubs, herbaceous areas, rocks, woodland and tree areas, raingardens, timber decking, footpaths, playground, furniture (including seating, picnic benches, litter bins, signage, gates, and railings), lighting, building exteriors, and toilets. The maintenance requirements for the remaining elements of the Proposed Development are set out in Table 4-1 below.

Further details on the maintenance requirements of the Proposed Development are set out in the Maintenance Plan (Document Reference: HBWP-ZZ-ZZ-RP-OKR-LA-001502) prepared by OKRA Landscape Architects which is included as Appendix 1 of this OMP. Frequency of maintenance tasks may be revised slightly when the Proposed Development is operational.

Table 4-1 Maintenance Requirements

Element	Responsibility	Frequency
Water Sports Pavilion		
Internal maintenance and cleaning (main WSP building, café, maintenance building)	RCC	Daily
Mechanical and Electrical Servicing	RCC	As required
Changing facilities cleaning	RCC	Daily
Plaza canopy maintenance	RCC	As required
Seasonal erection and dismantling of temporary marquees	RCC	Bi-annually
Litter picking and waste bin servicing (café external waste area)	RCC	Weekly
Window cleaning	RCC	Monthly
Marina Redevelopment and Extension		
Floating breakwater inspection	Waterways Ireland	Annually
Wire rope and rubber buffer inspection and replacement as required	Waterways Ireland	Annually
Jetty and pontoon inspection and upkeep	Waterways Ireland	Annually
Canoe step launch platform maintenance	Waterways Ireland	Annually
Pile inspection	Waterways Ireland	Annually
Marina service block building maintenance and toilet cleaning	Waterways Ireland	Schedule to be confirmed
Potable water connection servicing	Waterways Ireland	As required
Electrical service point servicing	Waterways Ireland	As required
Foul water pump-out system servicing and testing	Waterways Ireland	As required
Berth maintenance	Waterways Ireland	Annually
Public Realm Upgrades		
Weeding	RCC	Weekly
Hydrocarbon interceptor servicing checks	RCC	Monthly
SuDS feature inspection (tree pits, bioretention systems)	RCC	Monthly
Filter strip maintenance	RCC	Monthly
Gully clearing	RCC	Monthly
Electrical substation inspection, servicing, monitoring and repair	ESB	As required
Active Travel Site Access Improvements		
Road cleaning	RCC	As required
Road markings maintenance	RCC	Annually
Signage maintenance	RCC	Annually
Lighting maintenance	RCC	Bi-annually
Footpath/pathway surface repair	RCC	As required
Speed hump repair	RCC	As required
Raised crossing repair	RCC	As required
Litter picking	RCC	Weekly
Ball stop netting inspection and repair	RCC	Bi-annually

Element	Responsibility	Frequency
Extension of Existing Parking Provision		
Road markings painting (parking bays)	RCC	Annually
Signage maintenance	RCC	Annually
Surface repair	RCC	As required
Lighting maintenance	RCC	Bi-annually
EV charging point servicing checks	RCC	Bi-annually
Litter picking	RCC	Weekly
Boundary fencing maintenance	RCC	As required
Solar Panels (Located on Café Building and WSP Building)[1]		
PV modules		
Inspecting for dust/residue on external surface of modules and cleaning	RCC	Bi-annually
Inspecting for any physical damage and indentations on modules and replacing if required	RCC	Bi-annually
Cabling		
Inspecting the condition of cable for damage and replacing cable if damaged	RCC	Bi-annually
Inspecting all cable terminations for damage, burn marks, hot spots and loose connections. Replacing cable if damaged or tightening loose connections.	RCC	Bi-annually
PV inverter		
Inspecting for loose cable connections, tightening loose connections.	RCC	Bi-annually
Inspecting ventilation system condition and clearing all dust and dirt in ventilation system.	RCC	Bi-annually
Inspecting invertor functionality and replacing if required.	RCC	Bi-annually
Inspecting for abnormal operating temperature and replacing if required.	RCC	Bi-annually
Junction boxes		
Checking cable terminals for loose connections and for wear and tear. Replacing if required or tightening all loose connections	RCC	Bi-annually
Checking for warning notices and replacing warning notice if required.	RCC	Bi-annually
Inspecting for physical damage and replacing if required	RCC	Bi-annually
Earthing of solar PV system		
Inspecting earthing cable conditions and replace if required.	RCC	Bi-annually
Inspecting the physical earthing connection and tightening if required	RCC	Bi-annually
Inspecting the continuity of the bonding to lightning earth and troubleshooting or replacing if required	RCC	Bi-annually
Means of isolation		
Inspecting functionality	RCC	Bi-annually
Bonding of the exposed metallic structure to lightning earth		
Checking bonding cable connections and replacing if required	RCC	Bi-annually
Checking physical bonding connection and tightening loose connections	RCC	Bi-annually
Checking continuity of the bonding to lightning earth and troubleshooting or replacing if required	RCC	Bi-annually

[1] SEIA (2021) *Solar PV for Businesses Best Practice Guide.* Available at: https://www.seai.ie/sites/default/files/publications/SEAI-Solar-PV-Guide-For-Business.pdf

5. HEALTH AND SAFETY

The Proposed Development will be operated in accordance with all relevant Health and Safety Legislation, including:

- Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);
- Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007), as amended;

5.1.1 Emergency Procedures

5.1.1.1 Contacting the Emergency Services

All staff members will know the address and location of the site as it may be necessary to liaise with the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services.

5.1.1.1.1 *Emergency Communication Procedure*

In the event of requiring the assistance of the emergency services the following steps should be taken:

- **Stay calm.** It is important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.
- **Know the location of the emergency and the number you are calling from**. This may be asked and answered a couple of times but do not get frustrated. Even though many emergencies call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.
- **Wait for the call-taker to ask questions, then answer clearly and calmly**. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.
- **If you reach a recording, listen to what it says**. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.
- **Let the call-taker guide the conversation**. He or she is typing the information into a computer and may seem to be taking forever. There is a good chance, however, that emergency services are already being sent while you are still on the line.
- **Follow all directions.** In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.
- **Keep your eyes open**. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.
- **Do not hang up the call** until directed to do so by the call taker.

5.1.1.1.2 *Contact Details*

A list of emergency contacts is presented in Table 5-1.

Table 5-1 Emergency Contacts

Hazard	Emergency Situation
Emergency Services – Ambulance, Fire, Gardaí, Coast Guard	999/112
Doctor – Clonbrusk Primary Care Centre	090 6424 840

Hospital – Portiuncula University Hospital	090 964 8200
ESB Emergency Services	1850 372 999
Bórd Gais Emergency	1850 20 50 50
Gardaí – Athlone Garda Station	090 6498 550
Health and Safety Coordinator - Health & Safety Services	TBC
Health and Safety Authority	1890 289 389
Project Supervisor Construction Stage (PSCS): TBC	TBC
Project Supervisor Design Stage (PSDS): TBC	TBC
Client – RCC	TBC

5.1.2 Invasive Species

As stated in Chapter 6 (Biodiversity) of this EIAR, the objective of operational biosecurity measures is to limit the further spread of invasives throughout Lough Ree and other waterbodies. Biosecurity signage outlining the presence of invasive aquatic species and the mandatory Check–Clean–Dry protocol will be installed at several locations on and around the Proposed Marina Redevelopment and extension, including launching points and mooring areas. This will aid in awareness of the issue of invasive species within the area and provide guidance to the public on how to minimise the spread of invasive alien species.

In line with the Birds and Natural Habitats Regulations 2011 (as amended), any invasive species found on the Proposed Development site will be recorded and reported to the relevant authorities.

6. OPERATIONAL WASTE MANAGEMENT

6.1 Legislation, Guidance and Policy

A summary of the European, National, Regional and Local legislation, guidance and policy relevant to the Proposed Development is outlined in the sections below. It should be noted that this summary identifies those elements of the policy or guidance applicable to waste management within the Proposed Development.

6.1.1 Legislation

6.1.1.1 European Legislation

The primary legislative instruments that govern waste management in the European Union and are applicable to the Proposed Development are as follows:

- EU Waste Framework Directive (EU WFD)
- EU Landfill Directive
- EU Waste Electrical and Electronic Equipment (WEEE) Directive

The **EU WFD** provides the overarching legislative framework for the collection, transport, recovery and disposal of waste, and includes a common definition of waste. It encourages the prevention and reduction of harmful waste by requiring that Member States put waste control regimes into place. These waste management authorities and plans ensure that necessary measures exist to recover or dispose of waste without endangering human health or causing harm to the environment and includes permitting, registration and inspection requirements.

The directive requires Member States to take appropriate measures to encourage firstly, the prevention or reduction of waste production and its harmfulness and secondly the recovery of waste by means of recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials, or the use of waste as a source of energy. The directive also puts an end to co-disposal of waste streams. The EU WFD establishes a waste hierarchy that consists of prevention, preparing for reuse, recycling, other recovery, and finally disposal.

The definition of waste as governed by the EU WFD as:

"any substance or object, which the holder discards or intends or is required to discard."

It should be noted that it is the responsibility of the holder of a substance or object to decide whether or not they are handling waste. The Environmental Protection Agency (EPA) is the authority responsible for enforcing waste management legislation in Ireland however, where there is a disagreement as to whether or not something is waste, it is ultimately a matter for the courts to decide.

In 2018, the WFD was amended by Amending Directive (EU) 2018/851. The amendment listed targets and objectives which EU countries shall take in order to ensure compliance with the WFD. The amendment dictates that the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55%, 60% and 65% by weight by 2025, 2030 and 2035, respectively.

In 2025, the WFD was further amended by Amending Directive (EU) 2025/1892. The transposition deadline for these amendments is the 17th of June 2027. The amendments set out the following targets and waste management provisions:

- Legally binding food waste reduction for 2030 by 30% for households compared to the 2021-2023 average,
- Establishes Extended Producer Responsibility (EPR) for textiles and footwear by 17th of April 2028 (micro-enterprises extended to 17th of April 2029),

- Requires separately collected textiles and footwear be considered waste upon collection.

The **EU Landfill Directive** entered into force in 1999. The Landfill Directive aims to reduce the negative effects of landfilling on the environment and human health by encouraging waste minimisation and increased levels of recycling and recovery. In 2018, the Landfill Directive was amended by Amending Directive (EU) 2018/850. The amendment introduces restrictions on the landfilling of all waste suitable for recycling or energy recovery from 2030 onwards, and limits the share of municipal waste landfilled to 10% by 2035.

The **EU WEEE Directive** entered into force in 2002. Since then, the directive has been recast and substantially amended. The Directive aims to protect the environment and human health by encouraging sustainable production and consumption. It achieves this by preventing the creation of WEEE, promoting reuse, recycling, and recovery of waste from electrical and electronic equipment, and supporting the efficient use of resources and recovery of secondary raw materials. In 2024, the WEEE Directive was amended by Amending Directive (EU) 2024/884. The amendment requires the commission to assess the need for a revision of the directive and present a legislative proposal in that respect no later than 31st December 2026.

The **Single-Use Plastics (SUP) Directive** aims to lessen the environmental and health impacts of specific plastic products, especially in marine areas. It also fosters a circular economy by promoting sustainable business models, innovative materials, and a well-functioning internal market. The 10 items addressed by SUP Directive comprise the following:

- Cotton bud sticks
- Cutlery, plates, straws and stirrers
- Balloons and sticks for balloons
- Food containers
- Cups for beverages
- Beverage containers
- Cigarette butts
- Plastic bags
- Packets and wrappers
- Wet wipes and sanitary items

The specific targets of the SUP Directive include the following:

- By 2025, a 77% separate collection target for plastic bottles,
- By 2029, a 90% separate collection target for plastic bottles,
- By 2025, incorporation of 25% of recycled plastic in polyethylene terephthalate (PET) beverage bottles,
- By 2030, incorporation of 30% of recycled plastic in all plastic beverage bottles

6.1.1.2 National Legislation

The primary legislative instruments that govern waste management in Ireland and applicable to the Proposed Development are:

- Waste Management Act 1996 (No. 10 of 1996), as amended (most recently by the Waste Management Act 1996 (End-of-Waste) Regulations 2024 (S.I. No. 660 of 2024));
- Environmental Protection Agency Act 1992 (No. 7 of 1992), as amended;
- Litter Pollution Act 1997 (Act No. 12 of 1997), as amended;
- Planning and Development Act 2000 (No. 30 of 2000), as amended, and as progressively replaced by the Planning and Development Act 2024 (No. 34 of 2024) on a phased basis;
- Circular Economy and Miscellaneous Provisions Act 2022 (No. 26 of 2022), as amended (including by the Environment (Miscellaneous Provisions) Act 2026 (No. 5 of 2026));
- European Union (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011), as amended;
- Waste Management (Landfill Levy) (Amendment) Regulations 2024 (S.I. No. 442 of 2024);
- Circular Economy (Waste Recovery Levy) Regulations 2024 (S.I. No. 441 of 2024);
- Environment (Miscellaneous Provisions) Act 2026 (No. 5 of 2026).

The **Waste Management Act 1996 (as amended)** establishes a General Duty of Care under Section 32, which requires that any person who holds, transports, recovers or disposes of waste must do so in a manner that does not cause environmental pollution and may only transfer waste to an appropriately licenced or permitted waste contractor. The waste producer is responsible for the waste from the time its generated through until its legal disposal.

Following on from this is the concept of "Polluter Pays Principle" whereby the waste producer is liable to be prosecuted for pollution incidents arising from the incorrect management of waste, including the actions of any contractors engaged for transportation, disposal, recovery or recycling of waste.

Other requirements are as follows:

- A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO).
- Waste receiving facilities must also be appropriately permitted or licensed.
- Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments, or a Waste or Industrial Emissions licence granted by the EPA.
- The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the receiving facility.

The concept of a by-product was established by the WFD. This concept has been transposed into Irish law through **Regulation 27 of the European Communities (Waste Directive) Regulations 2011**, as amended. The assessment of whether a production residue is a by-product or a waste is to be determined by the material producer. The criteria for qualifying as a by-product include the following:

- The material can have a further use and will not be defined as waste.
- The material can be used as a secondary resource in place of and fulfilling the same role as a non-waste derived or virgin 'primary' resource.
- The material can be used without causing overall adverse impacts to the environment or human health.

The material producer/economic operator is required to notify the EPA if they decide the material is a by-product.

Under the **Waste Management (Food Waste) Regulations 2009, S.I. 508 of 2009**, as amended by **S.I. 294 of 2024** (transposing the EU WFD), all commercial premises where food is prepared, consumed, or supplied are considered "producers" of food waste and are legally required to segregate food waste and ensure it is either:

- Collected by an authorised waste collector for treatment,
- Treated on-site through an authorised process, or
- Sent directly to an authorised facility (with documentary evidence available for inspection).

All commercial waste is required to be segregated into three waste streams:

- Mixed Residual Waste (general waste bin)
- Mixed Dry Recyclables (recycling bin)
- Organic Waste (food waste bin)

The **European Union (WEEE) Regulations 2014** (S.I. No. 149 of 2014) was designed to promote the recovery of WEEE and to facilitate achievements of targets for collection, treatment, recovery and disposal of WEEE in an environmentally sound manner. The Regulations introduced obligations on those supplying electrical and electronic equipment including the requirement for free take-back household WEEE on a one-for-one basis and ensuring that electrical and electronic equipment that is distributed is from registered producers. The **European Union (Batteries and Accumulators) Regulations 2014** (S.I. No. 283 of 2014) govern the management of WEEE and waste batteries. These regulations set out the requirement for retailers to take back waste batteries from members of the public free of charge.

In 2020, the EU WFD amendments (Directive 2018/851) were transposed into Irish legislation through the **European Union (Waste Directive) Regulations 2020** (S.I. No. 323/2020). The Regulations primarily amend two existing pieces of legislation; the Waste Management Act 1996 and the European Communities (Waste Directive) Regulations 2011. The Regulations introduce new and updated definitions for a number of terms, strengthen waste management plans and the waste hierarchy, and establish waste prevention programmes. This includes the recycling targets set out in Section 6.1.1, requirements for the separate collection of textiles by 1st January 2025, and the separate collection of hazardous household waste fractions by 1st January 2025. The Regulations also introduce requirements for EPR schemes and require the separate collection of bio-waste by 31st December 2023.

The **Circular Economy and Miscellaneous Provisions Act 2022** (No. 26 of 2022) underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption. The Act defines Circular Economy for the first time in Irish law, streamlines the national processes for End-of-Waste and By-Products decisions under the European Union (Waste Directive) Regulations 2011, and introduces mandatory segregation obligations. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering. Additional provisions of the Act were commenced in February 2024, covering the use of CCTV by local authorities for waste enforcement purposes.

The SUP Directive was transposed into national legislation through the **European Union (Single Use Plastics) (No. 2) Regulations 2021 (S.I. No. 516 of 2021)**, as amended by the **European Union (Single Use Plastics) (Amendment) Regulations 2022 (S.I. No. 136 of 2022).** Since July 2021, the following products cannot be placed on the Irish market:

- Cotton bud sticks
- Cutlery
- Plates
- Stirrers
- Straws
- Balloon rods
- Expanded polystyrene single use food and beverage containers
- All oxo-degradable plastic products

6.1.1.3 Local Bye-Laws

The **Roscommon County Council Bye-Laws for the Segregation, Storage and Presentation of Household and Commercial Waste 2019** entered into force in November 2019. These Bye-Laws were made pursuant to Section 35 (1) of the Waste Management Act 1996 (as amended) and Section 199 of the Local Government Act 2001 (as amended) in accordance with Part 19 of the same Act. These Bye-Laws repeal the 2008 Bye-Laws on Waste Management. The following are the primary provisions of the Bye-Laws relating to the Proposed Development:

Maintenance and Management of Waste Containers

Containers used for the presentation of kerbside waste shall be maintained in such condition and state of repair that the waste placed therein will not be a source of nuisance or litter. Waste shall not be presented in a container where:

> (a) the wheels or lid have been removed or damaged to such an extent that it is not able to contain the waste without spillage, is otherwise unfit for the purpose for which it was designed or is not capable of being conveniently emptied.

Location for Container Storage

Other than on the day before and the designated waste collection day, containers used for the presentation of kerbside waste shall be held within the curtilage of the premises where the waste is

produced. They shall not be stored on a roadway, footway, footpath or any other public place unless the location has been expressly authorised in writing by an authorised person.

Collection Times and Container Removal

Kerbside Waste presented for collection shall not be presented for collection earlier than 6.00 pm on the day immediately preceding the designated waste collection day.

All containers used for the presentation of kerbside waste and any uncollected waste shall be removed from any roadway, footway, footpath or any other public place no later than 9:00am on the day following the designated waste collection day.

Provisions affecting Multi-user Buildings, Apartment Blocks, etc

A management company, or another person if there is no such company, who exercises control and supervision of residential and/or commercial activities in multi-unit developments, mixed-use developments, flats or apartment blocks, combined living/working spaces or other similar complexes shall ensure that:

(a) separate receptacles of adequate size and number are provided for the proper segregation, storage and collection of recyclable household kerbside waste and residual household kerbside waste,

(b) additional receptacles are provided for the segregation, storage and collection of food waste where this practice is a requirement of the national legislation on food waste,

(c) the receptacles referred to in paragraphs 10(a) and 10(b) are located both within any individual apartment and at the place where waste is stored prior to its collection,

(d) any place where waste is to be stored prior to collection is secure, accessible at all times by tenants and other occupiers and is not accessible by any other person other than an authorised waste collector,

(e) written information is provided to each tenant or other occupier about the arrangements for waste separation, segregation, storage and presentation prior to collection,

(f) an authorised waste collector is engaged to service the receptacles referred to in this section of these bye-laws, with documentary evidence, such as receipts, statements or other proof of payment, demonstrating the existence of this engagement being retained for a period of no less than two years. Such evidence shall be presented to an authorised person within a time specified in a written request from either that person or from another authorised person employed by Roscommon County Council,

(g) receptacles for kerbside waste are presented for collection on the designated waste collection day,

(h) adequate access and egress onto and from the premises by waste collection vehicles is maintained.

Interference with Orderly Waste Collection

(a) Employees of an authorised waste collector or of Roscommon County Council involved in the removal of waste shall not be wilfully obstructed, disturbed, interrupted or otherwise interfered with in the course of their engagement in waste collection.

(b) Unless the following activities have been subject to approval by the authorised waste collector responsible for the container, a microchip attached to an appropriate waste container or any non-time expired identification mark, badge, label, tag, disc or other thing attached to that container or to a refuse bag or to another container shall not be removed, damaged, destroyed, tampered with or otherwise rendered inoperative.

(c) Waste stored or presented for the purposes of collection shall not be:

(i) supplemented by waste added by another person unless that person has been authorised to do so by the person storing or, as the case may be, presenting the container of waste for collection, or

(ii) otherwise interfered with by another person.

(d) Waste shall not be deposited into a refuse collection vehicle by any person other than by an employee of an authorised waste collector or a local authority.

Additional Provisions for Commercial Waste

Commercial waste shall not be deposited at any bring facility provided by or on behalf of Roscommon County Council

6.1.2 Guidance and Policy

6.1.2.1 European Level Context

The **European Green Deal** was launched in 2019 and is a plan of action to make the EUs economy sustainable by turning climate and environmental challenges into opportunities. The European Green Deal includes a roadmap with actions to ensure there are no net emissions of GHG by 2050, boost efficient use of resources by moving to a clean and circular economy, restore biodiversity, and cut pollution.

The **EU's Circular Economy Action Plan (CEAP)** adopted in March 2020, plays a key role in delivering the European Green Deals ambitious vision of a climate neutral, resource efficient and competitive economy. The action plan aims to ensure that the EU continues to lead the way towards a global circular economy. The circular economy approach is key for global sustainable consumption and production.

The CEAP aims to halve the total amount of municipal waste not recycled by 2030 in the EU. By then, all EU Member States must recycle at least 60% of their municipal waste. Still, even if all EU Member States reach their 60% recycling target by 2030, trends indicate that the target to halve the absolute amount of municipal waste not recycled will not be achieved unless considerably less municipal waste is generated.

The EPA's '**Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous**' provides the framework for classifying waste in Ireland. The classification system is based on Commission Decision 2014/955/EU (as amended), Commission Regulation (EU) No. 1357/2014, and Council Regulation (EU) 2017/997 (which updated criteria for Hazardous Property HP 14 'Ecotoxic', valid from 5 July 2018). This system applies across the EU and is the basis for all national and international waste reporting.

6.1.2.2 National Level Context

The Government issued a policy statement in September 1998 titled as '**Changing Our Ways**' which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. A heavy emphasis was placed on reducing reliance on landfill and finding alternative methods for managing waste. Amongst other things, Changing Our Ways stated a target of at least 35% recycling of municipal (i.e. household, commercial and non-process industrial) waste.

A further policy document '**Preventing and Recycling Waste – Delivering Change'** was published in 2002. This document proposed a number of programmes to increase recycling of waste and allow diversion from landfill. The need for waste minimisation at source was considered a priority.

In order to establish the progress of the Government policy document Changing Our Ways, a review document was published in April 2004 entitled '**Taking Stock and Moving Forward'**. Covering the period 1998 – 2003, the aim of this document was to assess progress to date with regard to waste management in Ireland, to consider developments since the policy framework and the local authority waste management plans were put in place, and to identify measures that could be undertaken to further support progress towards the objectives outlined in Changing Our Ways.

In September 2020 the government released a new national policy document outlining a new action plan for Ireland and its waste to cover the period of 2020-2025. This plan '**A Waste Action Plan for a Circular Economy'** (WAPCE) was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities. Replacing the previous national waste management plan "A Resource Opportunity (2012)" which was drafted by the Department of the Environment, Community and Local Government, and was prepared in response to the 'European Green Deal' (EU, 2011) which sets a roadmap for a transition to an altered economical model, where climate and environmental challenges are turned into opportunities.

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority. The WAPCE also set out the measure to replace the regional waste management plans with a national plan, this was subsequently achieved through the implementation of the National Waste Management Plan for a Circular Economy 2024-2030.

The WAPCE contains over 200 measures across various waste sectors including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

In 2021, the EPA released the Circular Economy Programme 2021 – 2027. This programme is the driving force for Ireland to move to a circular economy and focuses on decreasing resource use and preventing waste.

In 2024, the **Connacht Ulster Regional Waste Management Plan 2015-2021** alongside the other two regional plans were replaced by the **National Waste Management Plan for a Circular Economy 2024-2030**. The Plan outlines key national and European targets.

This plan sets out the following targeted policies (TP) for Municipal Commercial Waste:

- **TP1.1** Identify and promote new means, methods and key drivers of sustainable consumption practices to reduce waste generation.
- **TP1.2** Ensure that all non-household municipal waste settings adopt best practice on waste segregation and are serviced with a segregated waste collection system to maximise the quantity and quality of materials collected.
- **TP1.3** Strengthen the monitoring and accurate measurement of commercial municipal waste flows.
- **TP1.4** Implement appropriate engagement and /or enforcement measures in response to non-compliances identified.
- **TP1.5** Promote the consistent application of an appropriate incentivised charging system for non-household municipal waste, through awareness and enforcement.

6.1.2.3 Local Level Context

The Proposed Development is located in the local authority area of RCC. As stated in Section 6.1.2.2, the regional waste management plans were replaced by the **National Waste Management Plan for a Circular Economy 2024-2030** in 2024. As a result, the **Roscommon County Development Plan 2022-2028 (RCDP)** sets out a number of policy objectives for Roscommon County in line with the objectives of the Connacht Ulster Region Waste Management Plan 2015-2021 as opposed to the National Waste Management Plan. The following is a list of the relevant infrastructure, transport and communications (ITC) policy objectives as outlined in Section 7.10 (Waste Management) of the RCDP.

- **ITC 7.52** Support the implementation of the Connacht Ulster Region Waste Management Plan 2015- 2021 and any subsequent updates;
- **ITC 7.53** Encourage and support waste prevention, minimisation, reuse, recycling and recovery as methods of managing waste.
- **ITC 7.54** Facilitate the transition from a waste management economy to a green circular economy to increase the value recovery and recirculation of resources.

- **ITC 7.55** Promote the principles of the circular economy in minimising waste going to landfill and maximise waste as a resource, with prevention, preparation for reuse, recycling and recovery prioritised in that order, over the disposal of waste.
- **ITC 7.56** Promote and support the provision of separate collection of waste in accordance with the requirements of the Waste Management (Food Waste) Regulations 2009, the Waste Framework Directive Regulations 2011 and other relevant legislation.

Additionally, the RCC Local Authority Climate Action Plan (LACAP) identifies a number of other waste objectives including a community resilience and transition (CRT) objective to '*Engage with the business community in the management of food and other wastes in support of a circular economy*'.

6.2 Estimated Waste Types and Volumes

6.2.1 Typical Waste Categories

The typical non-hazardous and hazardous wastes that will be generated at the Proposed Development will include the following:

- Mixed Residual Waste;
- Dry Mixed Recycling – includes wastepaper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic Waste;
- Glass and;
- Foul Water

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated in small quantities/ less frequently which will be managed separately including:

Drink Cans and Bottles: Most drinks containers can be recycled via the Deposit Return Scheme (DRS). Bottles and cans made from plastic, aluminium or steel can be returned via a Reverse Vending Machine (RVM), provided they are between 150 ml and 3 litres in capacity and carry the Re-turn logo, regardless of where they were originally purchased.

Green/garden waste: Green waste generated from internal plants, flowers or external landscaping will be placed in the organic waste bins.

Batteries (both hazardous and non-hazardous): In order to comply with Statutory Instrument 283/2014 – European Union (Batteries and Accumulators) Regulations 2014 (as amended), batteries may be collected by an authorised waste collector or brought to an authorised waste facility.

Waste electric and electronic equipment (WEEE) (both hazardous and non-hazardous): In accordance with the WEEE Directive (Directive 2002/96/EC) and associated Waste Management (WEEE) Regulations, WEEE generated by the café may be collected free of charge directly from the premises via WEEE Ireland's business collection service. Commercial grade WEEE will be managed via an authorised waste contractor. In addition, WEEE can be brought back within 15 days to retailers when they purchase new equipment on a like for like basis. Retailers are also obliged to collect WEEE within 15 days of delivery of a new item, provided the item is disconnected from all mains, does not pose a health and safety risk, and is readily available for collection.

Chemicals: Chemicals (Paints, adhesives, resins, detergents etc.) are generally classified as hazardous waste. This will be managed through an authorised waste collector or facility.

Textiles (Towels, linen, cleaning towels): Textiles can be donated to a charitable organisation for reuse, or otherwise disposed of via the café's authorised waste collector.

Furniture (including occasionally, bulky waste): Furniture and other bulky waste items can be collected and disposed of via the café's authorised waste collector for appropriate management.

Waste cooking oil: Waste cooking oil generated by the café shall be collected by a licensed waste cooking oil contractor.

The responsibility to dispose of the waste types listed above in a legally compliant manner lies with the holder of the waste.

6.2.2 European Waste/ List of Waste Codes

In 1994, the European Waste Catalogue and Hazardous Waste List were published by the European Commission. In 2002, the EPA published a document titled the European Waste Catalogue and Hazardous Waste List, which was a condensed version of the original two documents and their subsequent amendments. This document has recently been replaced by the EPA 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2018). This waste classification system applies across the EU and is the basis for all national and international waste reporting, such as those associated with waste collection permits and licences and the EPA National Waste Database.

Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) codes (previously referred to as European Waste Catalogue (EWC)) for typical waste materials expected to be generated during the operation of the Proposed Development are provided in Table 6-1 below.

Table 6-1 Expected Waste Types Arising from the Operational Phase and LoW Code

LoW Code	Materials
20 01 Separately Collected Fractions (Except packaging (including separately collected municipal packaging waste))	
20 01 01	Paper and cardboard
20 01 02	Glass
20 01 08	Biodegradable kitchen and canteen waste
20 01 10	Clothes
20 01 11	Textiles
20 01 13*	Solvents
20 01 25	Edible oil and fat
20 01 26*	Oil and fat other than those mentioned in 20 01 25
20 01 27*	Paint, inks, adhesives and resins containing hazardous substances
20 01 28	Paint, inks, adhesives and resins other than those mentioned in 20 01 27
20 01 29*	Detergents containing hazardous substances
20 01 30	Detergents other than those mentioned in 20 01 29

LoW Code	Materials
20 01 33*	Batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries
20 01 34	Batteries and accumulators other than those mentioned in 20 01 33
20 01 35*	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components2
20 01 36	Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 37*	Wood containing hazardous substances
20 01 38	Wood other than that mentioned in 20 01 37
20 01 39	Plastics
20 01 40	Metals
20 01 99	Other fractions not otherwise specified
20 02 Garden and park wastes (including cemetery waste)	
20 02 01	Biodegradable waste
20 02 02	Soil and stones
20 02 03	Other non-biodegradable wastes
20 03 Other municipal wastes	
20 03 01	Mixed municipal waste
20 03 02	Waste from markets
20 03 03	Street-cleaning residues
20 03 07	Bulky waste
20 03 99	Municipal wastes not otherwise specified
13 Oil Wastes and Wastes of Liquid Fuels (except edible oils, and those in chapters 05, 12 and 19)	
13 05 02*	Sludges from oil/water separators
13 05 03*	Interceptor sludges
13 05 07*	Oily water from oil/water separators

*may contain hazardous substances

6.2.3 Estimated Waste Volumes

Café Building

Waste volumes expected to be generated by the café building have been estimated based on the British Standards guidance document "Waste Management in Buildings – Code of Practice BS 5906:2005"[2] and the EPA's "2022 Commercial Municipal Waste Characterisation"[3].

BS 5906:2005 states that in order to calculate weekly waste arising for restaurant waste, of which the proposed café building falls under the following formula should be used:

Number of covers × [75 l (litres)][4]

The café within the Proposed Development site has an estimated 50 no. covers. Therefore, the following calculation produces the weekly estimated waste arisings for the café building.

50 × 75 (L) = 3,750 L

According to the 2022 Commercial Municipal Waste Characterisation Report prepared by the EPA, Mixed Residual Waste (MRW) contributes to 73%, Dry Mixed Recyclables (DMR) to 18%, and Organic Waste to just 9% of the total commercial waste managed in Ireland.

For the Food Services sector specifically (which includes cafés), waste segregation remains a significant challenge; organic material, primarily food waste, makes up 34.2% of the average general waste (MRW) bin and 19.9% of the recycling (DMR) bin. On a national commercial level, glass represents 0.9% of the total waste profile, of which 83.8% is found in general waste (MRW), 16.1% in recycling (DMR), and 0.1% in Organic Waste collection.

The following calculations were used to determine the accurate percentage of each waste stream:

1. *(0.9/100) *(Waste Stream Percentage in Glass Stream) = Glass in Stream*
2. *Waste Stream percentage – Glass in Stream = Final Waste Stream Percentage*

The breakdown between the four streams is presented in Table 6-2 below.

Table 6-2 Estimated Waste Volumes in % for the Café Building

Mixed Residual Waste (MRW)	Dry Mixed Recyclables (DMR)	Organic Waste	Glass
72.3%	17.9%	8.9%	0.9%

The anticipated weekly waste volumes at the café building are expected to be 3,750 L, and the daily waste volumes at approximately 535.7 L. The estimated volumes of the waste streams generated on a daily basis at the Proposed Development are set out in Table 6-3 below.

Table 6-3 Estimated Waste Volumes for the Café Building

Waste Type	Estimated Volumes (L)* Generated per Day
MRW	387.3

[2] British Standards (2005), *Waste Management in Buildings – Code of Practice BS 5906:2005,* available at: https://knowledge.bsigroup.com/products/waste-management-in-buildings-code-of-practice
[3] EPA (2023), *2022 Commercial Municipal Waste Characterisation,* available at: https://www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/2022-Non-Houshold-Municipal-Waste-Characterisation-Report-(CTC-2023).pdf
[4] *75 L is the estimated volume of waste generated per cover*

DMR	95.9
Organic Waste	47.7
Glass	4.8

* One litre has a mass of almost exactly one kilogram when measured at its maximal density, which occurs at about 4°C.

Water Sports Pavilion Building

Waste volumes expected to be generated at the WSP building have been estimated based on the British Standards guidance document "Waste Management in Buildings – Code of Practice BS 5906:2005" and the EPA's "2022 Commercial Municipal Waste Characterisation".

BS 5906:2005 shows that weekly waste arisings for 'entertainment complex/ leisure centre' buildings are estimated using the following example:

> Entertainment complex/ leisure centre with a floor area of 3,500m² equates to a weekly waste estimate of 17,500 L.

Therefore, the following calculation can be assumed and applied for the WSP building: volume of waste per m² of floor area [5 litres] × floor area.

The proposed floor area of the WSP building is 683m². Therefore, the following calculation produces the weekly estimated waste arisings for the WSP building.

5 × 683 (L) = 3,415 L

In relation to the 2022 Commercial Municipal Waste Characterisation Report prepared by the EPA, the WSP building has been considered under the 'Sports, Arts and Entertainment sector' category for the purpose of this estimation. Table 6-4 below shows a breakdown of expected waste materials from the Sports, Arts and Entertainment sector based on correct segregation based on the EPA's "2022 Commercial Municipal Waste Characterisation".

Table 6-4 Estimated Waste Volumes in % for the Water Sports Pavilion Building

Mixed Residual Waste (MRW)	Dry Mixed Recyclables (DMR)	Organic Waste	Special/Irregular Wastes
21%	62%	13%	4%

The anticipated weekly waste volumes at the WSP building are expected to be 3,415 L, and the daily waste volumes at approximately 487.9 L. The estimated volumes of the waste streams generated on a daily basis at the Proposed Development are set out in Table 6-5 below.

Table 6-5 Estimated Waste Volumes for the Water Sports Pavilion Building

Waste Type	Estimated Volumes (L)* Generated per Day
MRW	102.5
DMR	302.5
Organic Waste	63.4
Glass	19.5

* One litre has a mass of almost exactly one kilogram when measured at its maximal density, which occurs at about 4°C.

Public Realm

Wastes will be generated from the public realm areas of the Proposed Development during the operational phase. The two primary sources of public realm waste will be

- Waste from bins located throughout the public realm areas; and
- Waste from maintenance of vegetation and grassed areas.

Public Realm Bins

It is anticipated that 7 no. bins will be located throughout the public realm with an estimated size of 178 litres per bin. The exact number of public realm bins with be confirmed at detailed design stage. For a conservative estimate of frequency of bin emptying (typically 2-3 times per week in public realm locations), it is assumed that bins will be emptied 3 times per week at the Proposed Development site.

Based on the following assumptions (and assuming worst-case scenario where bins are always full) the following calculation provides an estimate for volume of waste generated by public realm bins each week.

7 x 178 litres = 1,246 litres x 3 times per week = 3,738 litres of waste per week.

Daily volume of waste generated by public realm bins is estimated at approximately 534 litres/day.

It is proposed that public realm waste bins will not be segregated and all waste collected from public realm bins will be classified as mixed residual waste.

Vegetation Maintenance and Grass Cutting

Organic waste will be generated from vegetation maintenance and grass cutting within the public realm areas of the Proposed Development site. Grass cuttings from mowing and light vegetation maintenance clippings will be left in place when cut.

6.3 Waste Storage, Handling, Collection and Transport

6.3.1 Introduction

This section provides information on the waste storage, handling, collection and transport at the Proposed Development. This includes how the waste hierarchy will be implemented at the Proposed Development. This has been prepared with due consideration of the proposed site layout as well as best practice standards, local and national waste management requirements including those of RCC. In particular, consideration has been given to the following documents:

- British Standards (2005), BS 5906:2005 Waste Management in Buildings – Code of Practice.
- RCC (2019), Bye-Laws for the Segregation, Storage and Presentation of Household and Commercial Waste 2019.
- Regional Waste Management Planning Offices (2024), National Waste Management Plan for a Circular Economy 2024-2030.
- Department of the Environment, Housing, Local Government and Heritage (2022), Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities.

6.3.2 Waste Storage

The data provided in Table 6-3 above outlines the estimated waste volumes that will be generated during the operational phase of the Proposed Development. All waste for the Proposed Development will be segregated prior to storage in the appropriate waste receptacle.

Waste storage areas (WSAs) will be located within the Proposed Development site. All bins in the WSA will be clearly labelled and there will be additional signage within the WSA to guide residents to dispose of their refuse in the correct refuse bins. In line with BS 5906:2005, bins in the WSA will consist of 120 litre bins, 240 litre bins and 1100 litre bins.

The WSA will be provided at the exterior of the café. Additionally, adequate waste and recycling bins will be distributed throughout the Proposed Development site, and will ensure sufficient capacity to manage any potential additional generated waste.

The RCC Waste Management Bye-Laws 2019 set out provisions for waste management arrangements at multi-user buildings and apartment blocks. These provisions are set out in Section 6.1.1.3 above and summarised as follows:

- Separate receptacles of adequate size and number are provided for the proper segregation, storage and collection of recyclable commercial waste and residual commercial waste. These receptacles are to be located at the WSA prior to collection. Receptacles for kerbside waste be presented for collection on the designated waste collection day. Adequate access and egress onto and from the premises by waste collection vehicles be maintained.
- The WSA prior to collection be secure and accessible by staff and not accessible by any other person than an authorised waste collector.
- Written information be provided to staff about the waste arrangements prior to collection.
- Authorised waste collector engaged to service the receptacles set out above is required to documentary evidence, including receipts, statements or other proof of payments that demonstrate the existence of the engagement being retained for a period of less than two years. Such evidence shall be presented to an authorised person within a time requested in writing from that authorised person or another authorised person employed by RCC.

The redevelopment of the marina includes new sections of the jetty and will include provisions of services for boat users including foul water pump out-facilities. Waterways Ireland will ensure the functioning and adequate capacity of these services. Foul water from these sections of the jetty will connect to the existing Uisce Éireann operated on-site pumping station. It is anticipated that no upgrade to the surrounding infrastructure is required.

6.3.3 Waste Handling

RCC will be responsible for emptying bins in the area and litter removal during operation. Waste handling will align with the waste management requirements set out in RCC's Waste Management Bye-Laws 2019. The following provisions apply to the Proposed Development in relation to waste handling:

- Waste containers used for presentation of kerbside waste will be maintained in good condition and will not be a source of nuisance or litter,
- Containers will be held within the curtilage of the premises other than on the day before and the designated waste collection day, and will not be stored on a public roadway, footway or footpath without written authorisation,
- Waste will not be presented for collection earlier than 6:00pm on the day preceding the designated collection day, and containers will be removed no later than 9:00am on the day following collection,
- Waste stored or presented for collection will not be supplemented by waste added by another person unless authorised to do so, and employees of an authorised waste collector will not be obstructed or interfered with in the course of collection,
- Commercial waste will not be deposited at any bring facility provided by or on behalf of Roscommon County Council.

6.3.4 Waste Collection and Transport

The collection of waste from the Proposed Development will be undertaken by an appointed appropriately licensed waste contractor. There are six domestic waste collection operators that service Roscommon currently[5]. These are provided, alongside their associated National Waste Collection Permit Office (NWCPO) reference number, in the list below:

- AES Recycling - NWCPO-08-10601-07
- Barna Recycling - NWCPO-08-03604-07
- Mulleady's Ltd - NWCPO-09-10621-08
- Oxigen Environmental Unlimited Company - NWCPO-08-01106-06
- Panda Green - NWCPO-13-11193-06
- The Binman - NWCPO-20-12446-01

The aforementioned waste collection operators offer MRW, DMR, and Organic Waste collection services. AES Recycling provides glass collection services in addition to MRW, DMR, and organic waste collection. The remaining waste operators do not explicitly indicate the provision of domestic glass collection services however; glass collection services may be available subject to operator capacity and site-specific arrangements.

There are no thermal treatment facilities in Co. Roscommon, however, there are two in the Eastern-Midlands Region; one in Duleek, Co. Meath and a second facility in Poolbeg, Co. Dublin.

6.3.5 Waste Hierarchy

This section outlines how the Proposed Development will maximise recycling, composting, and recovery, with diversion from landfill, where possible. Foul water including generated at the Proposed Development site will be pumped to the existing Uisce Éireann operated on-site pumping station. Table 6-5 below sets out the percentages and quantities of waste anticipated to be recycled/ composted/ anaerobically digested, recovered, and sent to landfill at the Proposed Development. Approximately 81% of the waste generated at the Proposed Development will be recycled, composted, anaerobically digested, or recovered while approximately 19% of the generated waste will be sent to landfill. Furthermore, less frequent/lower quantity waste streams generated at the Proposed Development will be managed via recycling, reuse and recovery mechanisms in accordance with Section 6.2.1.

*Table 6-5 Estimated Percentages and Volumes of Waste for Recycling/Composting/Anaerobic Digestion, Recovery, and Landfill**

Waste Stream	Volume (Vol)	Recycling/ Compositing/ Anaerobic Digestion		Recovery		Landfill	
		%	Vol	%	Vol	%	Vol
MRW	387	-	-	74.7	289.33	25.3	97.99232143
DMR	95.89285714	100	95.89285714	-	-	-	-
Organic Waste	47.67857143	100	47.67857143	-	-	-	-
Glass	4.821428571	100	4.821428571	-	-	-	-
Total	535.714287		148.3928571		289.33		97.99232143

Note: These are preliminary estimated percentages and quantities working under the assumption that all glass and DMR will be recycled and all organic waste will be composted. The MRW percentage and quantities are based on 2023 EPA Data whereby the municipal waste category did not wholly apply to MRW due to its inability to be recycled, composted or reused, and the remaining

[5] My Waste, *Waste Management Providers in Roscommon.* Available at: https://mywaste.ie/dispose-waste/at-home/who-can-collect-your-waste/contae/roscommon/

waste management types were recalculated to account for the waste management types that did apply to MRW (Landfill and Recovery) [6]

[6] EPA (2025) *2023 Municipal Waste Statistics for Ireland.* Available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/municipal/

7. CONCLUSION

In conclusion, this OMP outlines the organisational structure and responsible parties for the maintenance and operation of the Proposed Development and demonstrates that the Proposed Development will be operated in full compliance with all applicable waste management legislation, guidance, and policy.

Waterways Ireland will have continued responsibility for the operation and maintenance of the Marina including all facilities for marina users including cleaning of bathrooms and shower facilities and ensuring the functioning and adequate capacity of services for boat users such as water, electricity and pump-out services.

RCC (or an operator appointed by RCC) will be responsible for the maintenance of car and bicycle parking spaces, and road maintenance including the cycle/pedestrian pathway, and the Public Recreation Areas including regular maintenance of landscaping, meadow areas, the playground, public benches, emptying bins, and litter removal, and monitoring and maintenance of SuDS drainage features throughout the Proposed Development.

RCC intends to lease the Water Sports Pavilion to an appointed operator. The appointed operator will be responsible for the day-to day operation, management and maintenance of the building and associated facilities. An appointed operator will be responsible for the management of the café. The maintenance will include but is not limited to waste management and periodic cleaning of the solar panels.

Waste storage will be managed through the WSA provided at the café's exterior, with supplementary bins provided throughout the Proposed Development site for any additional generated waste. Foul water pump-out facilities will be managed by Waterways Ireland and will connect to the existing Uisce Éireann operated on-site pumping station, with no anticipated upgrades required to the surrounding infrastructure. RCC will be responsible for emptying bins and removal of litter throughout the Proposed Development site. Waste handling will align with RCC's Waste Management Bye-Laws. Maintenance of waste storage areas will be the responsibility of RCC. Waste collection and transport will be carried out on a regular basis by an appropriately licensed contractor.

This OMP sets out the maintenance and operational proposal and details a plan for waste management including waste storing, handling, collection and transport, which aims to minimise waste generation by promoting maximum recycling and recovery with diversion from landfill where possible.

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APPENDIX 1

MAINTENANCE SCHEDULE

Project Title: HODSON BAY WATERSPORT PARK
File Reference HBWP-ZZ-ZZ-RP-OKR-LA-001502
LANDSCAPE MAINTENANCE AND MANAGEMENT REPORT. APPENDIX: MAINTENANCE SCHEDULE
Issue: 17/07/2026

OKRA

Key	Area	Action	Responsibility	Frequency	Occ.
	Formal Grass	20mm cut - cylinder - boxed	Park team	36	36
		Consider 20mm cut mulched	Park team		
		Remove leaves	Park team	Three per year	3
		Solid tine	Park team	Annually	1
		Scarify	Park team	Annually	1
		Apply selective pesticide (as required)	Park team	As required	
		Edge with long handled shears	Park team	Fortnightly	26
		Edge with half moon tracer / spade	Park team	Annually	1
		Litter picked and visually checked	Park team	Daily	260
		Clear leaves	Park team	Five per year	5
		Make good damaged or worn areas	Park team	Annually	1
		Top dress	Park team	Annually	1
	Recreational grass areas	50mm cut - let fly	Grounds maintenance	21	21
		Remove leaves	Park team	Five per year	5
		Mechanical edging	Park team	Annually	1
		Edge with half moon tracer / spade	Park team	Annually	1
		Litter picked and visually checked	Park team	Daily	260
		Make good damaged or worn areas	Park team	Annually	1
		Slit damp areas	Park team	Annually	1
	Long grass	Litter picked and visually checked	Park team	Daily	260
		Flail	Grounds maintenance	Annually	1
		Mechanical collection of arisings	Grounds maintenance	Annually	1
		Or rake and remove arisings	Park team		
	Meadow	Litter picked and visually checked	Park team	Daily	260
		Flail	Grounds maintenance	Annually	1
		Mechanical collection of arisings	Grounds maintenance	Annually	1
		Or rake and remove arisings	Park team		
		Wildflower Plug plant / bulbs	Park team	Two per year	2
	Bedding	Litter picked and visually checked	Park team	Daily	260
		Strip plants / bulbs	Park team	Twice per year	2
		Prepare border - clear debris	Park team	Twice per year	2
		Prepare border - incorporate organic matter	Park team	Annually	1
		Prepare border - dig over / deep rotovate	Park team	Twice per year	2
		Prepare border - shape surface / obtain tilth	Park team	Twice per year	2
		Plant	Park team	Twice per year	2
		Irrigate	Park team	Six per year	6
		Apply fertiser / liquid feed	Park team	Three per year	3
		Hoe, weed	Park team	Fortnightly	26
		Remove leaves	Park team	Six per year	5
		Edge with long handles shears	Park team	Fortnightly	26
		Edge with half moon tracer / spade	Park team	Annually	1
		Reinstate turf edging / reduce border.	Park team	Annually	1
	Hedges	Litter picked and visually checked	Park team	Daily	260
		Gap up with appropriate species	Park team	Annually	1
		Cut with powered equipment (formal)	Park team	Three per year	3
		Cut with powered equipment (high informal)	Grounds maintenance	Annually	1
		Cut with powered equipment (low informal)	Park team	Annually	1
		Remove shred and compost arisings	Park team	As required	
		Remove alien species	Park team	Annually	1
		Weed control	Park team	Three per year	3
	Shrubs	Litter picked and visually checked	Park team	Daily	260
		Gap up with appropriate species	Park team	Annually	1
		Spot weed	Park team	Fortnightly	26
		Spot spray herbicide	Park team	Three per year	3
		Edge with long handles shears	Park team	Fortnightly	26
		Edge with half moon tracer / spade	Park team	Annually	1
		Prune as scheduled within species schedule	Park team	As required	
		Shred and compost arisings	Park team	As required	
		Mulch with composted wood chip / bark	Park team	Annually	1

	Herbaceous	Litter picked and visually checked	Park team	Daily	260
		Hoe weed	Park team	Fortnightly	26
		Spot weed herbicide	Park team	Fortnightly	26
		Stake and tie plants	Park team	As required	
		Irrigate	Park team	Six per year	6
		Cut back	Park team	Annually	1
		Prune	Park team	As required	
		Lightly fork	Park team	Monthly	12
		Remove leaves	Park team	Five per year	5
		Mulch with soil improver	Park team	Annually	1
		Edge with long handles shears	Park team	Fortnightly	26
		Edge with half moon tracer / spade	Park team	Annually	1
		Gap up with appropriate species	Park team	Annually	1

	Rocks	Litter picked and visually checked	Park team	Daily	260
		Strim around	Park team	Fortnightly	26
		Remove graffiti	Parks team / Graffiti team	As required	

	Woodland and tree management	Litter picked and visually checked	Park team	Daily	260
		Inspect current tree cover in respect of health and safety	Park team	Annually	1
		Remove deadwood, crown clean and lift (2.5m) trees over footpaths, chip and dispose if arisings	Arboricultural team	As required	
		Remove deadwood, crown clean and lift (5.0m) trees over vehicular service roads, chip and dispose if arisings	Arboricultural team	As required	
		Prune back trees that oversail neighbouring gardens, chip and dispose of arisings	Arboricultural team	As required	
		Monitor footpath condition for root damage	Park team	Monthly	12
		Removal of epicormic / basal / suckers	Park team	Annually	1
		Planting of new trees	Park team	As required	
		Check and make good damage to newly planted trees and structures	Park team	Monthly	12
		Irrigate newly planted trees (up to 3 years)	Park team	Four per year	4
		Formatively prune young trees , chip and dispose of arisings	Parks team / Arboricultural team	Annually	1
		Removal of programmed, dead, diseased trees - stump grind, dispose or retain deadwood on site as applicable,	Arboricultural team	As required	

	Raingardens	Remove litter from waters edge	Park team	Daily	260
		Remove debris from sluice	Park team	Weekly	52
		Hoe weed	Park team	Fortnightly	26
		Spot weed herbicide	Park team	Fortnightly	26
		Stake and tie plants	Park team	As required	
		Cut back	Park team	Annually	1
		Prune	Park team	As required	
		Lightly fork	Park team	Monthly	12
		Remove litter from surrounding area	Park team	Daily	260
		Remove litter / debris from island	Park team	Weekly	52
		Surrounding footpath cleaned	Park team	Weekly	52
		Dredging	External contract	Annually	1
		Vegetation management	Park team	Annually	1

	Timber decking	Visual defect checks	Park team	Daily	260
		Recorded defect checks	Park team	Monthly	12
		Report defects	Park team	Daily	260
		Make good defects	Parks team / asset management	As required	
		Wash with high pressure wash	Park team	Annually	1
		Remove debris and litter	Park team	Weekly	52
		Remove / report graffiti	Park team	As required	0

	Footpaths	Visual defect checks	Park team	Daily	260
		Recorded defect checks	Park team	Monthly	12
		Report defects	Park team	Daily	260
		Remove litter	Park team	Daily	260
		Benches - remove debris / litter	Park team	Weekly	52
		Make good defects	Parks team / asset management	As required	
		Dress Whinstone	Park team	Annually	1
		Dress bark / wood chip	Park team	Monthly	12
		Monitor footpath condition for root damage	Park team	Monthly	12

	Playground	Visual defect check equipment	Park team	Daily	260
		Visual defect check fencing	Park team	Daily	260
		Recorded defect checks	Park team	Monthly	12
		Report defects	Park team	Daily	260
		Make good defects	Play team	As required	
		Cleaned	Park team	Monthly	12
		Remove litter	Park team	Daily	260
		Remove graffiti	Parks team / Graffiti team	As required	
		Recorded visual inspection, moving parts, lubricated	Play team	Fortnightly	26
		Full repainting	Play team	Three years	
		Independent annual inspection	External contract	Annually	1

	Furniture incl. Seats, picnic benches, litter bins, signage, gates, railings	Visual defect check	Park team	Daily	260
		Recorded defect checks	Park team	Monthly	12
		Washed clean	Park team	Monthly	12
		Emptying of litter bins	Park team	Daily	260
		Touch up paintwork / treatment as required	Park team	As required	
		Moving mechanisms oiled	Park team	Monthly	12
		Report defects	Park team	Daily	260
		Make good defects	External contract / parks team	As required	
		Pest control	Pest control team	Monthly	12
		Remove graffiti	Parks team / Graffiti team	As required	
	Lighting	Check for visual faults	Park team	Weekly	52
		Report defects	Park team	Daily	260
		Make good defects	External contract	As required	
		Remove graffiti	Parks team / Graffiti team	As required	
	Building External	Cleaning of gutters and hopper heads	Asset management	Annually	1
		Painting of exterior painted areas	Asset management	Every 5 years	
		Spot painting of exterior	Asset management	As required	
		Washing of paintwork / exterior surfaces	Asset management	Four per year	4
		Floor and steps to be kept brushed down and kept free from growths	Asset management	Weekly	52
		Shutters to be oiled, eased and maintained as operational	Asset management	Monthly	12
		Roof windows to be eased occasionally in order to be operational	Asset management	Monthly	12
		Roof to be kept clear of debris	Asset management	As required	
		Cleaning of windows externally	External contractor	Four per year	4
		Remove / report graffiti	Parks team	As required	
		All accesses building to be kept clear	Parks team	Daily	260
	Toilets	Empty all waste receptacles except feminine hygiene and nappy bins	Cleaning team	Daily	260
		Thoroughly clean hand basins, toilet bowls, urinals, showers and all pipe work	Cleaning team	Daily	260
		Clean splash backs to hand basin	Cleaning team	Daily	260
		Clean and polish all mirrors	Cleaning team	Daily	260
		Replenish toilet commodities	Cleaning team	Daily	260
		Spot clean walls and toilet partitions	Cleaning team	Daily	260
		Remove any graffiti	Cleaning team	Daily	260
		Thoroughly mop / mechanically scrub all floors	Cleaning team	Daily	260
		Monitor throughout theday	Cleaning team	Four times daily	1456
		Clean all waste receptacles	Cleaning team	Weekly	52
		Wash or polish all furniture, ledges. Skirting, pipes and radiators	Cleaning team	Weekly	52
		Clean all telephone handsets	Cleaning team	Weekly	52
		Dust venetian blinds	Cleaning team	Weekly	52
		Wash paint work to doors	Cleaning team	Weekly	52
		Clean glass to doors, internal windows and circulation	Cleaning team	Weekly	52
		Remove marks to walls, internal glass and light switch area	Cleaning team	Weekly	52
		Thoroughly vacuum all carpeted areas	Cleaning team	Weekly	52
		Spray clean all hard surfaces	Cleaning team	Weekly	52
		De-scale all toilets, except stainless steel.	Cleaning team	Weekly	52
		Spot paint / fill any damge to walls / surfaces	Parks team	As required	0
		Clean insides of internal windows	Cleaning team	Four per year	4
		Shampoo upholstered furniture, to remove stains marks and spillages, restoring general condition	Cleaning team	Annually	1
		Clean light fitting, include shades, flourescent diffuser shades	Cleaning team	Annually	1
		Shampoo all carpeted areas (including loose fitting carpets, mats, rugs) to remove stain, marks and spillages, restoring general condition	Cleaning team	Annually	1
		Restore / maintain hard floor coverings, dry and reapply polish sealant, where necessary	Cleaning team	Annually	1

APPENDIX 4-4

DRAINAGE STRATEGY REPORT

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

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Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

Fáilte Ireland

ROSCOMMON
Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

Hodson Bay Waterfront Park

Drainage Strategy

AUGUST 2026

PREPARED FOR

Roscommon County Council

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund



Drainage Strategy

Prepared By	Maria Fraser BEng GMICE & Emma Bayfield BEng GMICE
Reviewed By	Katrina Wylie CEng MICE
Report Reference	Drainage Strategy Report
Issuing Company	Civic Engineers Limited
Issued	07/08/2026 – Rev04

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07/08/2026	04	For Planning	Emma Bayfield

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1. Introduction

Roscommon County Council has appointed Civic to prepare a Drainage Strategy report to support the planning submission for the Hodson Bay Waterfront Park. This report will review and present the following:

- Surface water drainage strategy; and
- Foul water drainage strategy.

The following data informs the report:

- Topographic survey information by TST Engineering
- Asset records from Uisce Éireann
- Existing Hodson Bay Hotel layout plans
- Proposed Development layout plans prepared by OKRA (Landscape Architect) and RKD (Architect)
- Flood Risk Assessment prepared by Civic

This report sets out the anticipated measures to be incorporated into the detailed design stage to control both the quantity and quality of surface water discharge from the Proposed Development.

2. Existing Site

2.1. Site Description

The site is located along the waterfront of Hodson Bay, Lough Ree, including the connecting road between Hodson Bay and N61. The waterfront is currently utilised by several facilities including the Hodson Bay Marina and Bay Sports. Hodson Bay Hotel is adjacent, and Hodson Bay Golf Course is to the west of the northern half of the site. The Proposed Development falls within the Roscommon County Council area.

The centre of the site is located at Irish National Grid Reference N 00849 46361. The Proposed Development covers an area of approximately 8.927ha and is shown in the red line boundary in Figure 1. Figure 1a shows an aerial drone survey completed by MKO, focusing on the marina area where the development is located.



Figures 1 and 1a Existing Site Boundary and Drone Survey

2.2. Existing Watercourse

The site is adjacent to Lough Ree, a large freshwater lake forming part of the River Shannon system. Water levels within the lough are subject to seasonal variations and can be elevated during prolonged wet weather periods, as evidenced by historical flood events. The Office of Public Works (OPW) monitors and manages water levels within the River Shannon system, with ongoing development of flood relief schemes.

2.3. Existing Drainage

Information on the existing foul sewer network has been obtained from Uisce Éireann and is shown in Appendix A. An Uisce Éireann wastewater pump station has been identified within the site boundary. The gravity sewer in the vicinity serves the Hodson Bay area, which drains southward toward the N61 to a wastewater treatment plant.

A survey has been undertaken by TST Engineering which identified manhole locations within the site as shown in Appendix B. Additional gully locations were added to the map after a site visit by Civic dated 20.11.25. Further information on cover levels, invert levels and pipe sizes is required to fully assess the capacity of the existing network

and the feasibility of connection points. Any necessary upgrades will be identified and coordinated with Uisce Éireann and Roscommon County Council.

Existing surface and foul water infrastructure for the Hodson Bay Hotel Athlone Spa/Leisure Centre is shown in Appendix C. The existing layout plans have been overlaid with the TST Engineering survey in Appendix B to determine the existing network routes. Appendix C identifies MHF34 which connects via gravity to the Uisce Éireann wastewater pump station. These drawings identify two surface water outfall pipes into Lough Ree with a diameter of 225mm.

2.4. Topography

The topographic survey of the site dated September 2025 was prepared by TST Engineering. The survey indicates that ground levels across the Proposed Development range from approximately 35.0m OD along the Lough Ree shoreline to ~40.0m OD to the north of Hodson Bay Hotel. The road corridor linking to N61 rises gradually inland reaching ~45.0m OD. The general gradient indicates that surface water runoff naturally drains toward Lough Ree. The promenade and marina represent the lowest point of the development before the receiving waterbody.

2.5. Geology and Ground Conditions

A review of mapping from the Geological Survey Ireland Spatial Resources indicates that the northern and southern extents of the site are mapped as till derived from limestone, the central area is gravels derived from limestone and a section of the road corridor is identified as cutover raised peat. The gravel deposits exhibit variable permeability, while the till and peat soils are generally less permeable and prone to seasonal saturation and shallow groundwater.

Bedrock comprises limestone. Limestone within the Shannon basin can act as a regionally important aquifer where fractured, although the overlying subsoils may locally limit vertical groundwater movement. Groundwater vulnerability mapping classifies the site as having moderate and high vulnerability, indicating that the subsoil provides a reasonable degree of protection to the underlying aquifer in moderate areas. Given the proximity to Lough Ree, groundwater levels are likely influenced by lake levels during prolonged high-water conditions.

2.6. Flood Risk Assessment

A Flood Risk Assessment (FRA) has been prepared to support the planning application for the Proposed Development. Flood risk at the site arises from elevated lake levels within Lough Ree during extreme, catchment-wide rainfall events. The proposed Finished Floor Level of 38.0m OD incorporates a 0.5m freeboard allowance above the design flood level. The design flood level of 37.5m OD was derived from Catchment Flood Risk Assessment and Management predictive modelling and long term OPW hydrometric analysis providing resilience to 0.1% Annual Exceedance Probability inclusive of climate change and residual uncertainty. While sections of the retained promenade access may be inundated during extreme events, the gradual nature of lake flooding and the non-residential use of the building ensure that residual risk is low and manageable.

For more details refer to Civic's FRA report 31022-RP-CIV-CE-00200.

3. Proposed Development

The Hodson Bay Waterfront Project is a multi-disciplinary project aimed at enhancing the Hodson Bay area into a flagship tourism facility. The project's key objectives include improving the visitor experience, developing a continuous promenade, extending the marina, reimagining the water play experience, and creating a sustainable access, parking, and transport strategy.

The project is funded by Roscommon County Council and Waterways Ireland, with support from Failte Ireland under the EU Just Transition Fund.

The primary goals of the Hodson Bay Waterfront Project are to:

- Enhance the visitor experience and increase dwell time.
- Improve physical and visual connectivity with the River Shannon and Lough Ree.
- Enhance the functionality and attractiveness of the waterfront area.
- Improve access arrangements through sustainable transport measures and parking solutions.

The project scope comprises the following key elements:

- **Promenade Development:** Development of a continuous promenade along the shoreline, including a sun deck and marina square with gardens.
- **Marina Development:** Extension and improvement of the existing marina, including new berths, boat servicing facilities, and improved access to the water.
- **Reimagined Water Play Experience:** Redevelopment of the water sports facility, including amenities such as toilets, showers, and a café.
- **Access, Parking & Transport Strategy:** Implementation of a revised access strategy, including a transport mobility hub, active travel hubs, improved pedestrian and cycle access, and a revised parking strategy.

The new water sports facilities and café are proposed to have Finished Floor Levels at 38.0m OD in line with site specific flood risk analysis. Carriageway levels throughout Hodson Bay are proposed to be retained at their existing levels. All new landscaping and infrastructure below 38.0m OD will be designed to be flood resilient in scenarios of extreme flood conditions.

4. Legislation, Policy and Guidance

The surface and foul water drainage strategy has been prepared in accordance with the following policies and guidelines

- National Planning Framework (NPF), Project Ireland 2024 (April 2025);
- Roscommon County Development Plan 2022-2028
- Greater Dublin Strategic Drainage Study; Technical Document Volume Two (2005)
- Uisce Éireann Code of Practice for Wastewater Infrastructure (August 2025)
- Implementation of Urban Nature-based Solutions; Guidance Document for Planners, Developers and Developer Agents (January 2025)
- CIRIA Sustainable Urban Drainage Systems (SuDS) Manual C753 (2015)
- CIRIA Control of Water Pollution from Construction Sites C532 (2001)
- CIRIA Control of Water Pollution from Linear Construction Sites C648 (2006)

4.1. National Planning Framework

The NPF sets out the Governments planning policies for Ireland and provides guidance on its application. The NPF outlines National Policy Objectives (NPO), where NPO 77-81 relate to water resource management as follows:

- NPO 77 - Enhance water quality and resource management by ensuring that River Basin Management Plan objectives are fully considered throughout the physical planning process. Integrating sustainable water management solutions, such as SuDS, non-porous surfacing and green roofs, and nature-based solutions, to create safe places.
- NPO 78 - Promote sustainable development by ensuring flooding and flood risk management informs place-making by: Avoiding inappropriate development in areas at risk of flooding that do not pass the Justification Test, in accordance with the Guidelines on the Planning System and Flood Risk Management; Taking account of the potential impacts of climate change on flooding and flood risk, in line with national policy regarding climate adaptation.
- NPO 79 - Support the management of stormwater, rainwater and surface water flood and pollution risk through the use of nature-based solutions and sustainable drainage systems, including the retrofitting of existing environments to support nature-based solutions.
- NPO 80 - Support the retrofitting of existing environments to cater for surface water run-off through the use of nature-based solutions.
- NPO 81 - Support the implementation by Uisce Éireann, Local Authorities and other parties with drainage responsibilities of Integrated Wastewater and Drainage Management Plans on a prioritised risk basis in accordance with the requirements of the RBMP and EU Water Directives.

The core objectives established in the NPF can be summarised to the following:

- Avoiding inappropriate development in areas at risk of flooding;
- Avoiding new developments increasing flood riskelsewhere, including that which may rise from surface run off;
- Ensuring effective management of residual risks for developments permitted in floodplains;
- Avoiding unnecessary restriction of national, regional or local economic and social growth;
- Improving the understanding of flood-risk and ensure flood risk management in accordance with best practice;
- Prioritising nature-based solutions to manage water in terms of both quantity and quality and promote climate change mitigation strategies.

4.2. Roscommon County Development Plan

The Council will require that surface water be disposed of onsite (where possible), and the on-site drainage infrastructure will subsequently regulate the rate of discharge to established water bodies. Developers will also be required, in all cases to provide separate surface water and foul water drainage systems. Section 14.6 of the Roscommon County Development Plan (CDP) sets out the following applicable flood risk management policy objectives:

- ITC 7.47 – Support the improvement of storm water infrastructure to improve sustainable drainage and reduce the risk of flooding in urban environments.
- ITC 7.48 – Ensure new development is adequately serviced with surface water drainage infrastructure which meets the requirements of the Water Framework Directive, associated River Basin Management Plans and

CFRAM Management Plans. Furthermore, the Council will undertake its obligations under the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2017.

- ITC 7.49 – Ensure that developments in urban areas, both within developments and within the public realm, seek to minimise and limit the extent of hard surfacing and paving and require the use of sustainable drainage techniques for new development or for extensions to existing developments, in order to reduce the potential impact of existing and predicted flooding risks.
- ITC 7.50 – Require the provision of separate foul and surface water drainage systems.

The Roscommon CDP states that one of its objectives is to "For new developments, Roscommon County Council will require that all developments incorporate SuDS as part of the development proposals. SuDS are effective technologies which aim to reduce flood risk, improve water quality and enhance biodiversity and amenity. New developments should also minimise the areas of impermeable surfaces such as road, parking and patio surfaces and porous surface materials (e.g. permeable paving) should be utilised where practicable".

4.3. Greater Dublin Strategic Drainage Study

In lieu of hydraulic guidance the Greater Dublin Strategic Drainage Study (GDSDS) which outlines regional drainage policies and design criteria for SuDS in the Greater Dublin Area has been used. GDSDS aligns with broader environmental and planning policies stating SuDS is mandatory for new development unless proven infeasible, with alternative pollutant controls required where it can't be provided. SuDS require that surface water runoff be separated from foul flows and controlled on site, with the view of minimising discharge of stormwater from the site.

Drainage systems must be hydraulically controlled before discharge, with Table 1 below detailing control objectives for different storm return periods in line with this guidance. All designs should also incorporate allowances related to climate change.

Table 1 Drainage Hydraulic Criteria Requirements

Return Period (years)	Requirements
<1	Minimum 5mm (10mm preferred) interception storage, where runoff to receiving waters can be prevented.
1	Maximum discharge rate equal to 1-year greenfield site peak runoff rate or 2l/s/ha whichever is the greater.
30	No flooding on site except where specifically planned flooding is approved.
100	Maximum discharge rate equal to 100-year greenfield site peak runoff rate.
	No internal property flooding. Planned flood routing and temporary flood storage accommodated on site for short high intensity storms.
	Floor levels at least 500mm above maximum river level and adjacent on-site storage retention.
	No flooding of adjacent urban areas. Overland flooding managed within the development.

The drainage design is structured around four tiers of control which are pollution prevention, source control, site control, and regional control. This ensures both runoff quantity and quality are addressed at appropriate scales.

4.4. Uisce Éireann Code of Practice for Wastewater Infrastructure

The Uisce Éireann (formerly Irish Water) Code of Practice outlines the technical requirements for the design, construction, and commissioning of wastewater infrastructure associated with commercial, industrial, and private developments intended for adoption by Uisce Éireann. The process for Wastewater Infrastructure given by Uisce Éireann is as follows:

- Pre-Connection Enquiry;
- Design Submission;
- Connection Application;
- Connection Offer (followed by acceptance and payment);
- Construction Stage (including Irish Water supervision, inspection, etc.);
- Commissioning Stage (including infrastructure documentation inspection, etc.);
- Connection of infrastructure to Irish Water asset (on issue of a Conformance Certificate);
- Vesting;
- Defects Liability Stage;
- Completion (on issue of a Completion Certificate).

5. Surface Water Drainage Strategy

5.1. Point of Discharge

Surface water is proposed to discharge to Lough Ree via existing outfalls. Appendix C identifies two 225mm diameter outfalls, one in the marina carpark and one by the marina ramp. A site inspection was carried out on 18.11.25 where the marina ramp outfall was visually identified as shown in Figure 2. Three other outfall locations have been assumed based on a historic survey which shows existing surface water manhole covers and levels in Appendix B. In total there are assumed to be five outfalls for the site. A survey of the foreshore is required to confirm the location, condition and capacity of existing outfalls. Subject to survey findings, existing outfalls will be reused where feasible. Where existing outfalls are found to be unsuitable or insufficient, new outfalls to Lough Ree will be constructed. All outfalls are proposed to have non-return valves to prevent backup of the network during high water levels in Lough Ree.



Figure 2 Existing Surface Water Outfall at Coordinates X 600858.83, Y 746382.36 (ITM).

5.2. Drainage Hierarchy and Management Levels

A hierarchy of preferred drainage discharge methods is outlined in Implementation of Urban Nature-based Solutions. Table 2 evaluates how the site runoff can be discharged according to the hierarchy.

Table 2 Drainage Hierarchy and Suitability for the Site.

	Discharge Method	Suitability for the Proposed Development
1	Use surface water runoff as a resource.	Applicable – Partial. Tree pits, rain gardens and bioretention systems will utilise surface water runoff to support planting and landscaping across the site.
2	Provide interception of rainfall through the use of nature-based SuDS approaches.	Applicable – Primary Strategy. The drainage strategy is centred on having source and site control SuDS measures including permeable/porous surfacing, tree pits, rain gardens and bioretention depressions. These features intercept, store and attenuate rainfall across the developed portion of the site prior to discharge.
3	Where appropriate, infiltrate runoff into the ground.	Not Applicable – Permeable paving and bioretention features are designed to attenuate and discharge with no infiltration at this stage.
4	Discharge to an open surface water drainage system.	Applicable – Preferred Discharge Route. Residual surface water runoff, following attenuation through the SuDS network, will discharge to Lough Ree via the existing outfalls and overland drainage regime.
5	Discharge to a piped surface water drainage system.	Not Preferred. No piped public surface water sewer is available in the vicinity of the site. The existing system outfalls to Lough Ree.
6	Discharge to a combined sewer.	Not Applicable. Discharge to a combined sewer is not proposed and would be contrary to best practice and guidance.

Effective surface water management follows a hierarchy which prioritises source control, with site control second, followed by regional control measures as described in Table 3. Nature-based solutions (NBS) are integral to this hierarchy, often referred to under the umbrella term SuDS.

Table 3 Nature-Based Solutions Management Levels

Management Level	Goal	NBS/SuDS Examples
Source Control (Priority 1)	Manage runoff at the point where rain falls.	Permeable/porous surfacing, Rain Gardens (Bioretention areas), Green Roofs, Rainwater Harvesting.
Site Control (Priority 2)	Manage runoff from small areas (e.g., parking lots, small developments).	Swales, Filter Strips, Detention/Infiltration Basins.
Regional Control (Priority 3)	Manage runoff from larger catchments.	Constructed Wetlands, Large Detention Ponds, Floodplain Restoration.

NBS offer a sustainable and resilient approach to managing surface water runoff, moving away from conventional infrastructure like pipes and drains. They utilise natural processes to infiltrate, filter, store, and evaporate rainwater, reducing flood risk, improving water quality, and creating ecological and amenity benefits.

5.3. Proposed Strategy

The site is located in close proximity to Lough Ree, the surface water drainage strategy has been developed with water quality as a primary consideration alongside NBS and SuDS hierarchy. The overall strategy for the site follows a best endeavours approach, involving intentional grading of the site to convey runoff to SuDS features, therefore reducing surface water runoff entering conventional drainage systems and attenuating the runoff at source and reducing discharge to Lough Ree via five assumed outfalls. Catchments will be routed as far as practicable to a nature-based attenuation solution. Where select areas of new development cannot be routed to attenuation due to topographical constraints a pragmatic approach has been taken to not introduce below ground attenuation measures to ensure gravity discharge to Lough Ree can be maintained. All surface water runoff from car parking and other vehicular areas will be routed through hydrocarbon interceptors combined with a full retention silt/suspended solids trap prior to discharge. The proposed surface water drainage layouts can be seen in Appendix D.

The greenfield runoff rate for the site calculated using IH124 method is 20l/s. The proposed drainage strategy delivers significant betterment relative to the existing developed condition through nature-based SuDS measures and source control. While the proposed total discharge rate outlined in Table 5 is above the greenfield runoff rate, this represents a pragmatic and robust approach given the site's constraints. Due to existing topography, the site levels in relation to Lough Ree and the reliance on gravity network drainage achieving full greenfield runoff rates is not considered practicable without substantial additional storage infrastructure and a possible pumped surface water drainage system, which would have considerable power requirements, and increase flood risk should failure of the system occur.

The SuDS solutions have been developed in close coordination with the OKRA, the Landscape Architect and the public realm plan is shown in Appendix E. The undeveloped portion of the site retains its existing drainage characteristics, and the SuDS strategy delivers a demonstrable betterment in both runoff rate and water quality over the existing situation. Green infrastructure has been prioritised across the site to attenuate more common rainfall events. Rainwater pipes are proposed to route externally down the façade of buildings to enable connection to the SuDS features on the site.

The Proposed Development for the drainage strategy is ~3.73ha of the total site area of 8.927ha. The remaining ~5.197ha is the active travel corridor which retains its existing network and drainage regime, with no material alteration to runoff behaviour from these areas. Existing gullies along the active travel corridor will be relocated to the carriageway to accommodate proposed footway widening.

5.4. Drainage Modelling

The surface water network has been modelled in Causeway Flow, adopting a 100-year (1% Annual Exceedance Probability) return period for pipe sizing throughout, with a further 20% allowance built in for climate change. Modelling of the proposed development was carried out using the FSR method. The following should be noted:

- The pipe network is initially sized against a 5-year return period storm, applied under the model's Design Settings.

- Network performance is then checked against a 100-year storm incorporating a 20% climate change allowance, together with the relevant M5-60 rainfall depth, ratio R, and winter/summer volumetric runoff coefficients (Cv). This is applied under the model's Simulation Settings.

SuDS features will incorporate connections to inspection chambers/manholes fitted with flow control devices where appropriate to restrict discharge and allow for full utilisation of SuDS attenuation.

Due to the increase in contributing catchment areas of the post-development scheme, the existing drainage network will require upgrades in part to accommodate the additional surface water flows generated.

5.4.1. Catchment Areas

Contributing catchment area for each assumed outfall, pre-development and post-development.

Table 4: Comparison of Pre- and Post-Development Catchment Areas

Outfall	Pre-Dev Area (ha)	Post-Dev Area (ha)	Change (ha)	Change to Pre-Dev (%)
SMH-OUT1	0.906	0.869	−0.037	−4.1%
SMH-OUT2	1.283	1.588	+0.305	+23.8%
ASSOUT_N_1	0.299	0.160	−0.139	−46.5%
ASSOUT_N_2	0.345	0.349	+0.004	+1.2%
ASSOUT_N_3	0.411	0.764	+0.353	+85.9%
Total	**3.244**	**3.730**	**+0.486**	**+15.0%**

5.4.2. Total Discharges from Development (Peak Outflows)

The pre-development critical storm outflows were compared to that of the post-development. The outfall location and references are shown on the proposed surface water layout plans in Appendix D.

Table 5: Comparison of Pre- and Post-Development Outflow During Critical Storm Periods (l/s)

Outfall	Pre-Dev Critical (l/s)	Post-Dev Critical (l/s)	Δ Critical (l/s)	Δ Critical (%)
SMH-OUT1	249.6	33.8	-215.8	−86.5%
SMH-OUT2	294.6	34.2	-260.4	−88.4%
ASSOUT_N_1	92.9	57.8	-35.1	−37.8%
ASSOUT_N_2	114.7	25.2	-89.5	−78.0%
ASSOUT_N_3	137.2	98.1	-39.1	-28.50%
Total	**889.0**	**249.1**	**-639.9**	**−72.0%**

As can be seen from Table 5 with the addition of SuDS attenuation and suitable flow control measures, the outflow from the site was reduced by a value of 596.7l/s for the design rainfall event including a 20% allowance for climate change.

The proposed development reduced discharge rate to a total value of 249.1l/s over five outfalls in the critical storm event.

5.4.3. Summary of Storm Water Drainage Design

The following table describes the stormwater drainage design parameters used for modelling with Causeway Flow.

Table 6: Drainage Design Parameters Summary

Description	Value
Return Periods	Pipe Design: 1 in 5 Year (20% AEP) Network Design: 1 in 100 year (1% AEP)
Climate Change Factor	20%
M5-60	14.500
Ratio, R	0.271
SAAR	965mm
Flow Reductions and Outflow Control Devices	Flow restricted to a minimum of 2l/s (to account for minimum allowable orifice size of 50mm). Flow control devices have been used where suitable.

5.5. Sustainable Urban Drainage Systems

The surface water management proposals for Hodson Bay will aim to implement NBS as a priority throughout the project area, particularly in landscaped areas and in the proposed additional car parks. A source and site control SuDS strategy is proposed and has been developed with the Landscape Architect to maximise NBS/SuDS including the following:

- Permeable/porous surfacing for car parking and shared surface areas providing storage. Porous asphalt contains a higher percentage of interconnected air voids than conventional asphalt, allowing water to pass through.
- Rain gardens and bioretention systems/depressions, providing surface ponding storage, filtration and passive treatment prior to discharge. Treatment is provided in the form of engineered media to remove certain urban pollutants.
- Tree pits with structural cells, providing interception, storage and amenity.

The proposed surface levels will be designed to drain over a shallow gradient towards the edge of the impervious area and into a SuDS features. The surface water strategy delivers betterment through approximately 9,390m2 of SuDS features including rain gardens, permeable/porous surfacing, bioretention systems and tree pits. These features collectively provide distributed attenuation and multi-stage water quality treatment across the developed portion of the site. Treatment of runoff prior to discharge is a key objective of the strategy given the sensitivity of the receiving waterbody.

5.5.1. Sustainability

The CIRIA SuDS Manual report C753 states that “surface water run-off should be managed for maximum benefit.” The types of benefits that can be achieved by SuDS can be put into four categories, the four pillars of SuDS: water quantity, water quality, amenity and biodiversity. This is outlined in Table 7 below.

Table 7 SuDS Likely Benefits

	SuDS Feature	Water Quantity	Water Quality	Amenity	Biodiversity
Most Benefits	Living roofs	√	√	√	√
↕	Infiltration systems	√	√	√	√
	Dry planted features – Swales, bioretention areas, rain gardens, trees, detention basins	√	√	√	√
	Ponds and wetlands	√	√	√	√
	Pervious & reservoir pavements	√	√		
	Filter strips	√	√		
	Filter drains	√	√		
	Proprietary treatment systems		√		
Least Benefits	Attenuation storage tanks	√			

5.6. Attenuation Strategy

Surface water runoff from the developed area is attenuated through the combined storage across SuDS features. The approximate volume of storage provided by each type of feature is presented in the Table 8 below. The drainage model (Section 5.4) accounts for attenuation storage from permeable/porous surfacing and rain gardens only. Tree pits and bioretention systems can provide attenuation and are proposed on the site, although have been excluded from the model to reflect a worst-case scenario; their contribution will be detailed further at the next design stage.

Given the site location, limited information on the existing network and levels, and the priority of maintaining gravity outfalls to Lough Ree, attenuation tanks have not been considered.

Table 8 Proposed SuDS Features Storage Volume

Proposed SuDS Feature	Layer	Area (m^2) Top Area / Base Area	Depth	Porosity	Storage Volume (m^3)	Total Storage Volume (m^3)
Raingarden	Void storage	3010	0.15	1	452	1084
	Topsoil		0.4	0.3	361	
	Sub-base		0.3	0.3	271	
Permeable/Porous Surfacing	Sub-base	3680	0.35	0.3	386	386
Modelled Storage Volume						1,470
Tree Pits	Topsoil	800	0.5	0.2	80	80
	Sub-base		0	0.3	0	
	Trench		0	0.3	0	
Bioretention Systems	Void storage	1900 / 1730	0.2	1	363	526
	Topsoil		0.3	0.3	163	
	Sub-base		0	0.3	0	
Additional Estimated Storage Volume						606

5.7. Water Quality

Given the proximity of the site to Lough Ree and the obligations of the Water Framework Directive, water quality treatment is embedded throughout the drainage train. A formal Water Quality Assessment has been undertaken using the Simple Index Approach, in accordance with the CIRIA SuDS Manual (C753). Designing for water quality involves the specification of SuDS components which adequately cleanse and filter pollutants arising from runoff draining into the system. The proposed development comprises areas of non-residential car parking with infrequent change. The pollution hazard level of runoff from the carpark site is low with the hazard indices shown in Table 9.

Table 9 CIRIA Pollution Hazard Indices for Different Land Use Classifications (Table 26.2)

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Individual property driveways, residential car parks, low traffic roads (e.g. cul-de-sacs, home zones and general access roads) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day	Low	0.5	0.4	0.4

The proposed drainage strategy collects the surface water runoff via permeable/porous surfacing and conveys it through perforated pipes to a piped network then through a hydrocarbon interceptor before the runoff outfalls to Lough Ree. The associated mitigation indices are shown in Table 10.

Table 10 Indicative SuDS Mitigation Indices for Discharges to Surface Water (Table 26.3)

Type of SuDS Component	TSS	Metals	Hydrocarbons
Permeable Pavement	0.7	0.6	0.7
Proprietary Treatment Systems	Hydrocarbon and integrated full retention silt separation interceptor		
Sufficient Treatment Provided	✓	✓	✓

For the proposed SuDS the permeable/porous surfacing inlet feature provides an appropriate level of treatment such that the required mitigation indices are achieved or exceeded for all pollutant types (TSS, metals, and hydrocarbons).

Surface water from car parking and other vehicular areas will be routed through a hydrocarbon and integrated full-retention silt separation interceptor in line with policy requirements and given the sensitivity of the receiving waterbody. As a proprietary treatment system, this is assessed under CIRIA C753 not by mitigation index but by demonstrated performance: it must address TSS, metals and hydrocarbons to acceptable levels for frequent events up to approximately the 1-in-1-year return period, for inflow concentrations relevant to the contributing drainage area. Such combined units are a standard, readily available solution and will be sized at detailed design stage based on the extent of proposed car parking.

5.8. Operation and Maintenance

The maintenance regime for the surface water drainage can be divided into three categories: regular maintenance, occasional tasks and remedial works. The frequency of regular maintenance will depend on the specific drainage or SuDS feature, with occasional tasks and remedial works carried out as required. Interceptors will be inspected and desludged regularly in accordance with manufacturer's guidance. Outfalls and non-return valves will be inspected regularly to confirm they remain clear and operational, particularly following storm events or high-water levels in Lough Ree. Specific maintenance needs of the SuDS should also be monitored with schedules adjusted to suit requirements.

Appendix F contains a schedule providing guidance on the type of operational and maintenance requirements that may be appropriate, based on the CIRIA SuDS Manual report C753. The activities listed are generic to the relative SuDS types and represent the minimum maintenance and inspection requirements; the frequency and scope may be adjusted by Roscommon County Council as required.

5.9. Construction Phase Drainage Measures & Prohibited Activities

The below measures should be implemented by the contractor during the construction phase to ensure the protection of drainage systems and management of runoff and pollutants during the construction phase:

- The installation of free-draining aggregate subbase for permeable pavements shall be immediately followed by the installation of a geotextile separating membrane and, where feasible, the laying course and finished surfacing.
- The storage of materials directly onto permeable pavements shall be prohibited. Where storage of materials is unavoidable an impermeable separating membrane shall be laid onto the pavement surface first to prevent silting or contamination of the permeable pavement layers.
- Any fuel, substances or generators that pose a risk of pollution shall be properly stored within appropriately sized containment bunds in line with best practice.

These measures along with the full suite of construction-phase environmental controls will be documented in the Construction Environmental management Plan (CEMP) for the project. Additional measures may be required and shall be agreed upon with the contractor prior to mobilisation on site.

6. Foul Water Drainage Strategy

A pre-connection enquiry for the foul water requirements was submitted to Uisce Éireann on 05.06.26 to assess the technical feasibility and review the available capacity of the Uisce Éireann infrastructure to accept discharge from the site. The application reference number is CDS26004773.

Uisce Éireann sewer network records, provided in Appendix A, show an existing foul water network near the site, but no public sewers within the site boundary. The gravity sewer in the vicinity serves the Hodson Bay area, which drains southward toward the N61 to a wastewater treatment plant. The asset map also shows an existing Uisce Éireann Wastewater Pump Station within the site boundary. Appendix C shows the existing foul water infrastructure for the Hodson Bay Hotel Athlone Spa/Leisure Centre which connects to the pumping station via MHF34. A survey of the existing foul water network is required to confirm the location, condition and capacity.

The proposed development will connect to the existing foul manholes and pipe network to convey to the Uisce Éireann Wastewater Pump Station.

6.1. Proposed Strategy

Foul water will be collected from the water sports pavilion buildings and connected to an existing foul water manhole MHF34 (Appendix C), which connects to the foul water pumping station operated by Uisce Éireann. A sewerage pump out system is proposed on the marina which will convey via a pressure network to the marina washroom facilities. The foul water will be collected from the marina washroom facilities and pumped to a proposed break chamber manhole. It will then be conveyed via gravity into the existing foul water network to the pumping station. The proposed foul water layout plans are included in Appendix G.

6.2. Estimated Foul Loads

The Proposed Development comprises of 16 wash basins, 4 showers, 2 urinals, 15 toilets and an industrial sink. Following the Uisce Éireann Code of Practice for Wastewater Infrastructure, the average and peak flows for the Proposed Development has been estimated. Two separate methods were used to estimate the foul flows, with the most conservative values being taken in each case. The average flow for the development is calculated as 1.63l/s and the peak flow is calculated as 4.9l/s. The full calculations can be found in Appendix H.

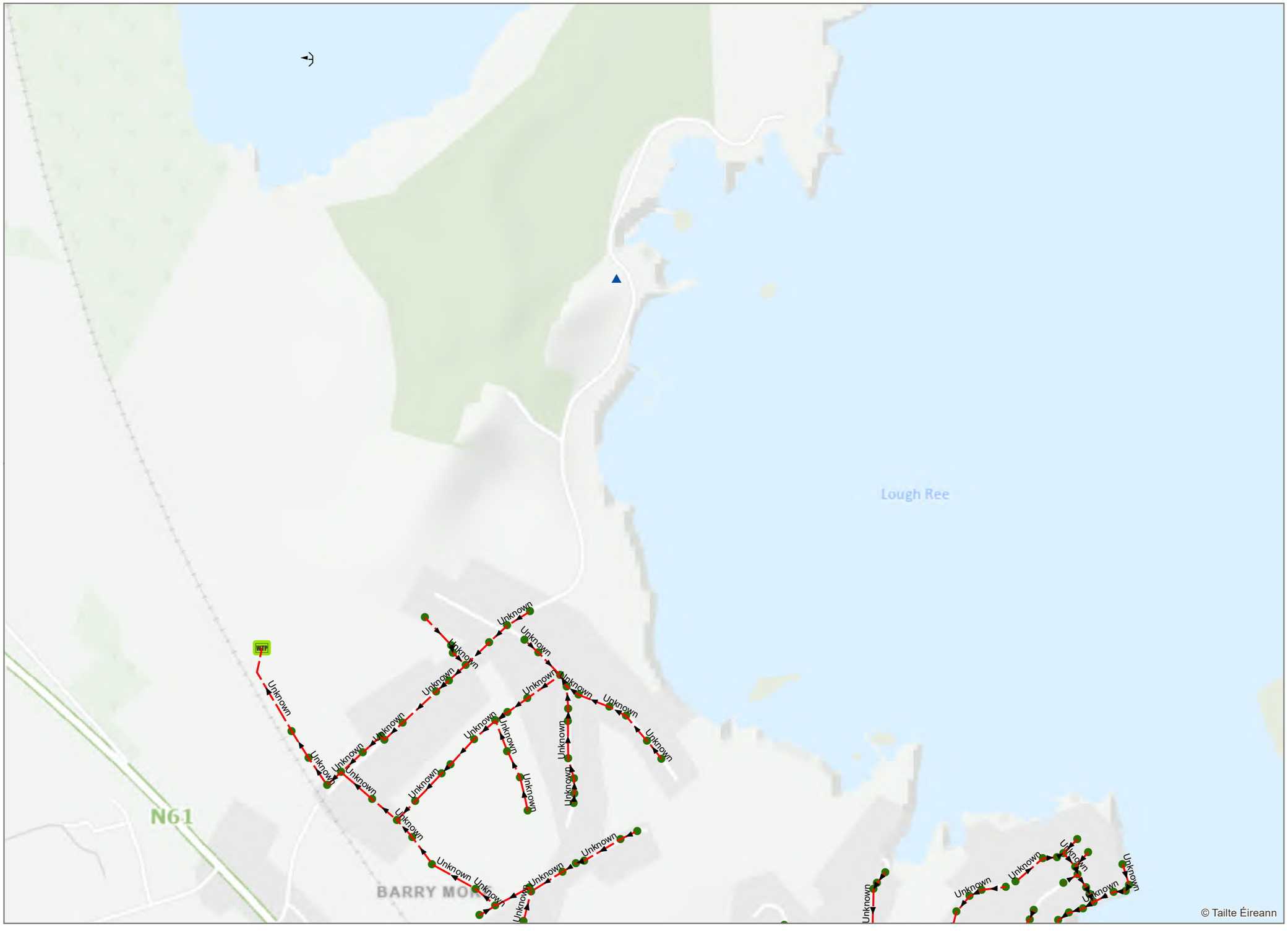
7. Conclusions and Recommendations

Separate foul and surface water drainage systems are proposed. Foul water will connect to the existing Uisce Éireann network, and surface water will discharge to Lough Ree. Further survey works are required to confirm the location, levels and capacity of all existing networks and outfalls.

The surface water strategy delivers betterment through approximately 9,390m^2 of SuDS features including rain gardens, permeable/porous surfacing, bioretention systems and tree pits. These provide approximately 1,470 m^3 of attenuation storage. This attenuation restricts discharge to 249.1l/s across five outfalls in the critical storm event. While this remains above the calculated greenfield runoff rate of 20 l/s, achieving full greenfield rates was not considered practicable given the site's topography and reliance on gravity drainage. Hydrocarbon and integrated silt separation interceptors are included to treat runoff from car parking and vehicular areas prior to discharge to Lough Ree.

A pre-connection enquiry has been submitted to Uisce Éireann for the foul water connection. A Confirmation of Feasibility certificate will be submitted following Uisce Éireann consultation and design vetting.

Appendix A - Uisce Éireann Asset Map



Uisce Éireann
Irish Water

Legend

Sewer Gravity Mains (Irish Water owned)

Liquid Type

- Foul

Sewer Manholes

Manhole Type

- Standard

Sewer Discharge Points

Discharge Type

- Outfall
- Treatment plant
- Pump station

0 60 120 240 m

Coordinate System: TM65 Irish Grid
Projection: Transverse Mercator

Scale @ A3:	**1:7,500**
Drawing No.:	**IW-AGG-2018-000**
Drawn By:	**JJ**
Checked By:	**<Add Name>**
Approved By:	**<Add Name>**
Drawn Date	**28/07/2025**
Checked Date:	**<dd/mm/yyyy>**
Approved Date:	**<dd/mm/yyyy>**

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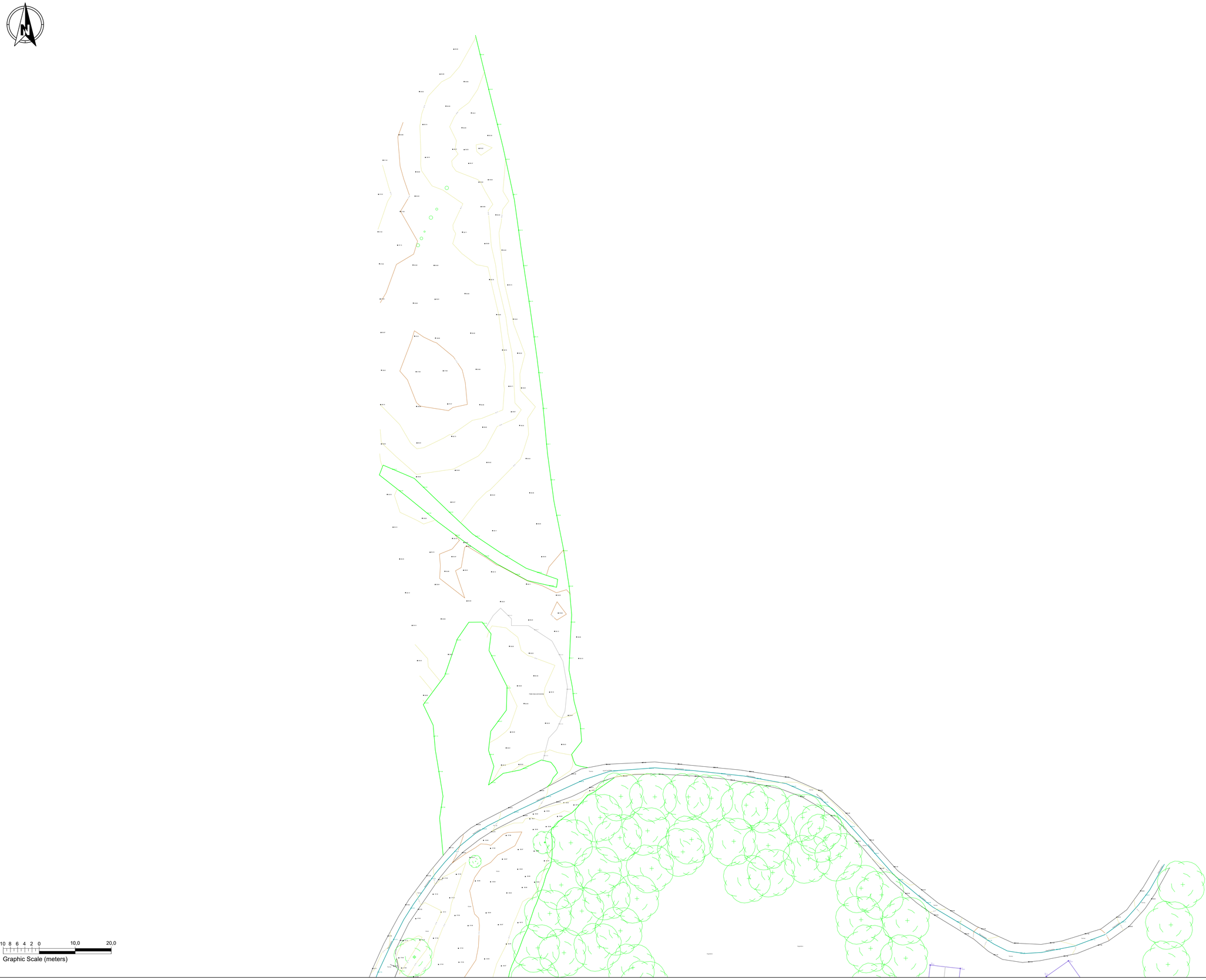
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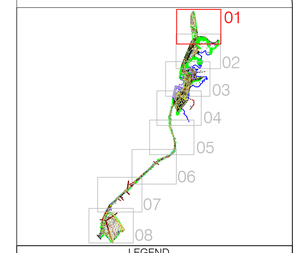
Sewer Network

Appendix B – Existing TST Engineering Survey



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KEYMAP



LEGEND

Street furniture & Services

- Over Head Wires
- Flowerbed
- Pipe
- Lift
- Barrier
- Pump
- Trial Pit
- Bus/Tram Shelter
- Postbox
- Valve - General
- Water Valve
- Unknown Valve
- Foul Manhole
- Surface Water MH
- Manholes
- Air Conditioning Vents
- Services Inspection Cover
- Traffic Inspection Cover
- Cable TV Inspection Cover
- ESAT Inspection Cover
- NTL Inspection Cover
- Eircom Inspection Cover
- Road Sign
- Bus Stop
- Bollard
- Beacon
- Coalhole Cover
- Box Hole
- Electricity Pole
- Telegraph pole
- OCS Pole
- CCTV Camera Pole
- Lamp Post
- LUAS Technical Cubicle
- Ticket Vending Machine
- Water Meter Cover
- Telecom Inspection Cover
- Monument / Toilets
- Tank Storage
- Basement: MH, Cover & Pipe
- Parking Meter
- Plane Aerial Mark
- Smart Card Validator
- Rodding Eye
- Pedestrian Crossing Button
- Gully
- Kiosk
- Duct
- Bench Seat
- U/G Car Park Vent
- Waste Bin
- Hydrant
- Fire Hydrant
- ESB Box
- ESB Inspection Cover
- Traffic Control Box
- Gas Valve
- Sluice Valve
- Air Valve
- Stop Cock
- C P Post
- Marker Post
- Traffic light
- Dished Aerial Mark
- Stay for pole
- Pipe Protection
- Washout
- Phone Box
- Gas Cover
- C P Box

Natural Features

- Contours Lines
- Surface Change
- Land Drain
- Bottom of Slope
- Top of Slope
- Ditch
- Water Edge / Lake / Pond
- Hedge / Trees Drip Line / Vegetation
- Tree Coniferous
- Tree Deciduous
- WLVL Water Level
- CRWN Crown Level
- IL Invert level
- BL Bed Level

Golf

- FWAY Fair Way
- GREEN Green
- TBOX Tee Box

Other

- Survey Station
- Photo point
- TOT Top of Tree

Built Features

Roads & Road Markings

- Building
- Edge of Road
- Kerb Bottom
- Kerb Top
- Bridge Abutment
- Bridge Deck
- Bridge Parapet
- Building Facade
- Footpath / Platform Train & Tram
- Damp Proof Course / Verge
- Bridge Pier / Wall & Gate Pillar / LUAS Trackbed
- Cycleway / Private Landing Area
- Fence
- Gate
- Road Centreline
- Hoarding
- Property Line
- Road Scar
- Ramp
- Wall / Retaining Wall
- Railway / Tram Rail / Grating
- TOW Top of Wall
- TOF Top of Fence
- Spot Level
- Floor Level
- APX Apex Height
- EAV Eaves Height
- PARP Parapet Height
- SOFF Soffit Elevation
- STPL Step Level
- Building Canopy / Roof / Overhang
- Track
- CONC Concrete Pad

OVERVIEW



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Unit F11,
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Dublin 12
Ireland
Tel. (+353) 1 5373905

Client: Civic Engineers

Project: Hodson Bay

Description: Topographical Survey

Drawing No.: 1607D-25-002 | **1 of 8**

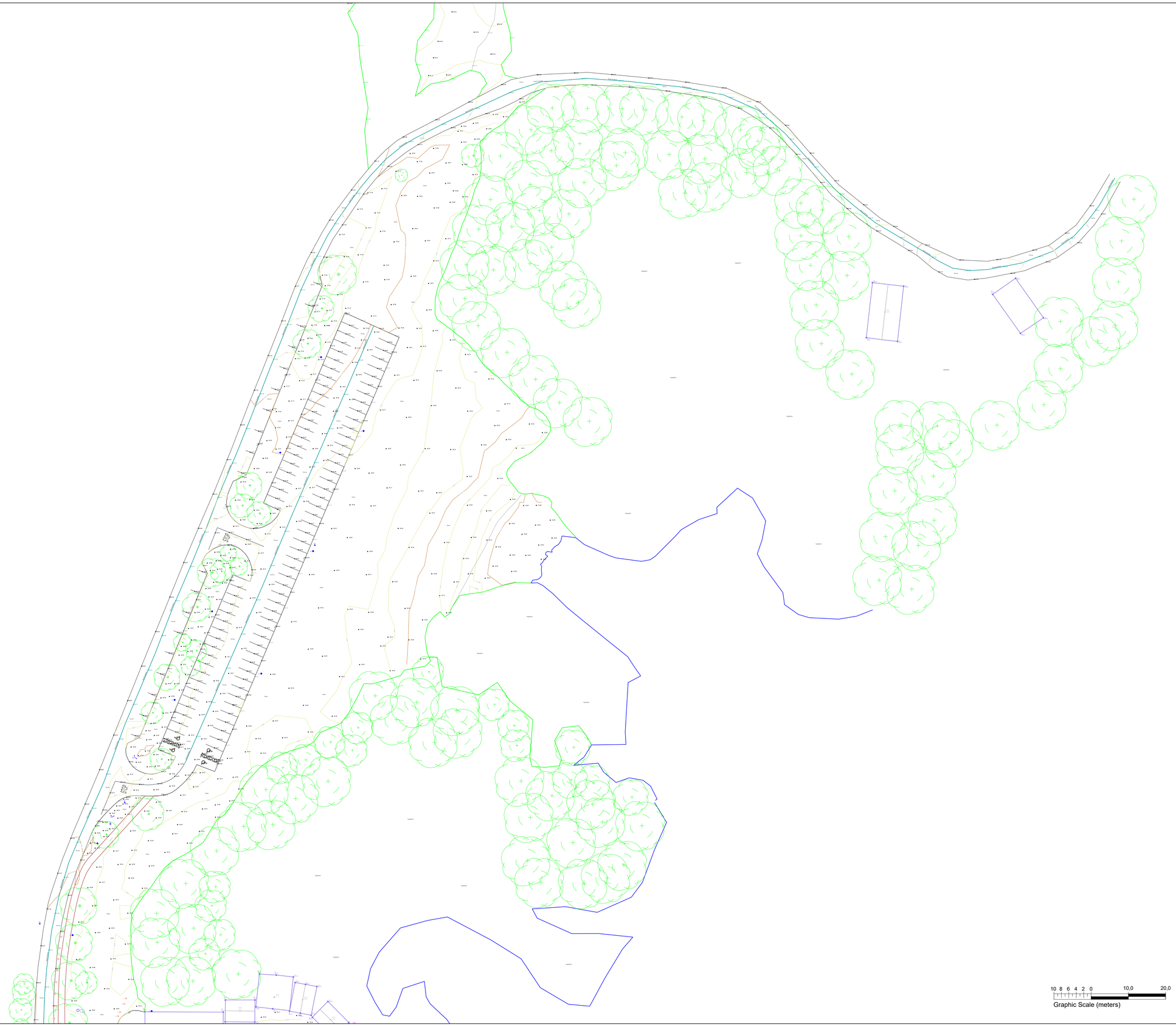
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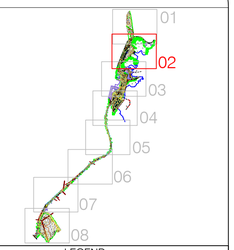
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Approved by: SD **Date:** 17-09-2025

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KEYMAP



LEGEND

Street furniture & Services

Over Head Wires		Road Sign	GY	Gully	PBOX Phone Box
Flowerbed	BS	Bus Stop		Kiosk	GAS Gas Cover
Pipe	BD	Bollard		Duct	CPBox C P Box
Lift	BEA	Beacon		Bench Seat	
Barrier	CH	Coalhole Cover	U/G Vent	U/G Car Park Vent	
Pump	BH	Bore Hole	WB	Waste Bin	
Trial Pit	EPT	Electricity Pole	Hyd	Hydrant	
Bus/Tram Shelter	TPT	Telegraph pole	FH	Fire Hydrant	
Postbox	OCSP	OCS Pole	EBOX	ESB Box	
Valve - General	CPT	CCTV Camera Pole	ICE	ESB Inspection Cover	
Water Valve	LS	Lamp Post	TFB	Traffic Control Box	
Unknown Valve	LUAS	LUAS Technical Cubicle	GV	Gas Valve	
FMH Foul Manhole		Ticket Vending Machine	SV	Sluice Valve	
SMH Surface Water MH	WM	Water Meter Cover	AV	Air Valve	
MH Manholes	ICS	Telecom Inspection Cover	SC	Stop Cock	
AC Air Conditioning Vents		Monument / Toilets	CPP	C P Post	
ICM Services Inspection Cover		Tank Storage	MK	Marker Post	
ICTC Traffic Inspection Cover		Basement: MH, Cover & Pipe	TL	Traffic light	
ICTV Cable TV Inspection Cover	PM	Parking Meter	DAM	Dished Aerial Mark	
ICES ESAT Inspection Cover	PAM	Plane Aerial Mark	STAY	Stay for pole	
ICNC NTL Inspection Cover	SCV	Smart Card Validator	PP	Pipe Protection	
ICEM Eircom Inspection Cover	RE	Rodding Eye	PCB	Pedestrian Crossing Button	WO Washout

Natural Features

Contours Lines	WLVL	Water Level	FWAY	Fair Way	
Surface Change	CRWN	Crown Level	GREEN	Green	
Land Drain	IL	Invert level	TBOX	Tee Box	
Bottom of Slope	BL	Bed Level			
Top of Slope					
Ditch					
Water Edge / Lake / Pond					
Hedge / Trees Drip Line / Vegetation					
Tree Coniferous		Tree Deciduous	TOT	Top of Tree	

Other

Survey Station	
Photo point	

Built Features

Roads & Road Markings

Building	Fence		Spot Level		
Edge of Road	Gate		Floor Level		
Kerb Bottom	Road Centreline		Apex Height		
Kerb Top	Hoarding		Eaves Height		
Bridge Abutment	Property Line		Parapet Height		
Bridge Deck	Road Scar		Soffit Elevation		
Bridge Parapet	Ramp		Step Level		
Building Facade	Wall / Retaining Wall		Building Canopy / Roof / Overhang		
Footpath / Platform Train & Tram	Railway / Tram Rail / Grating		Track		
Damp Proof Course / Verge	Top of Wall		Concrete Pad		
Bridge Pier / Wall & Gate Pillar / LUAS Trackbed	Top of Fence				
Cycleway / Private Landing Area					

OVERVIEW



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Project: Hodson Bay

Description: Topographical Survey

Drawing No.: 1607D-25-002 | **2 of 8**

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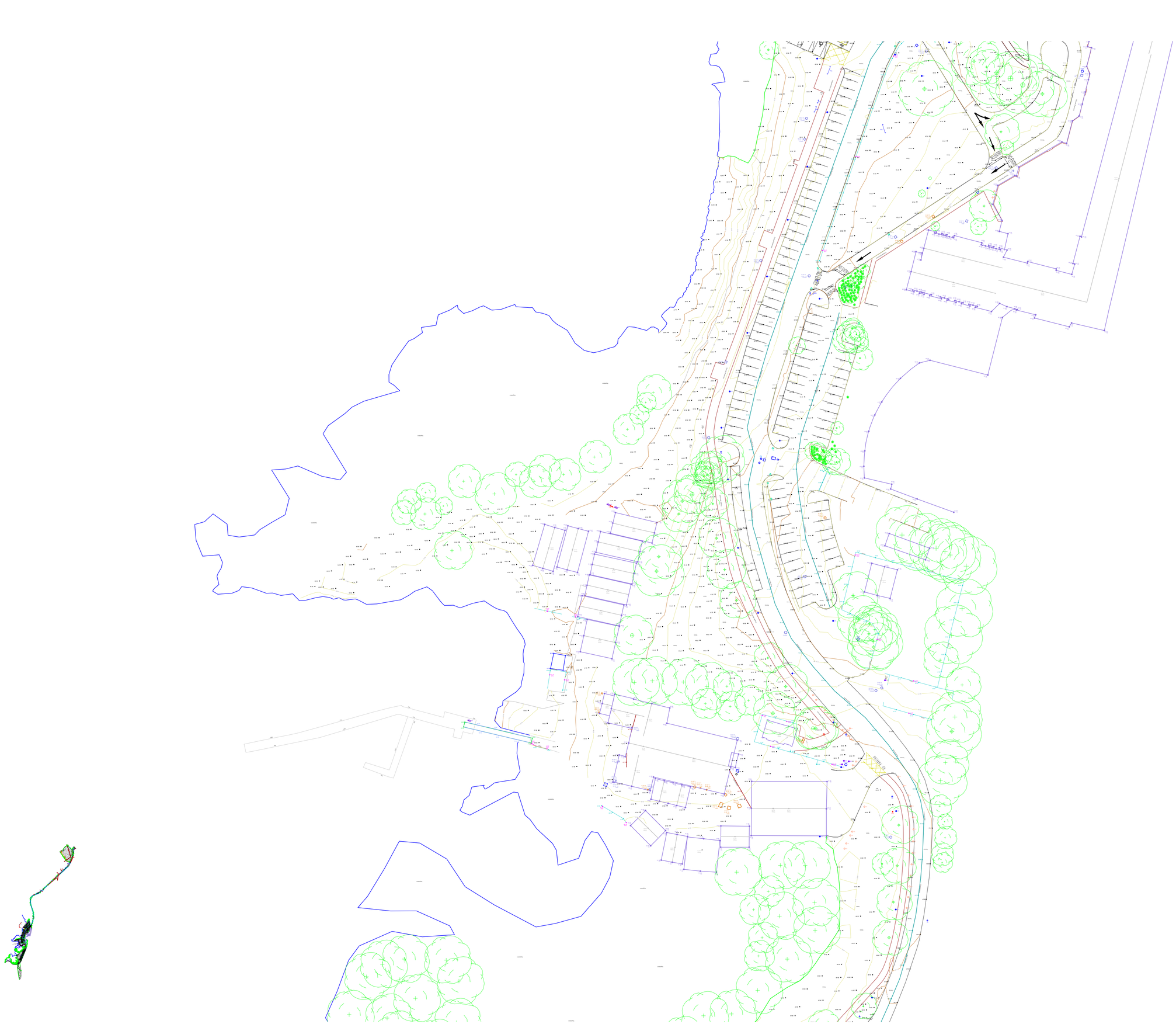
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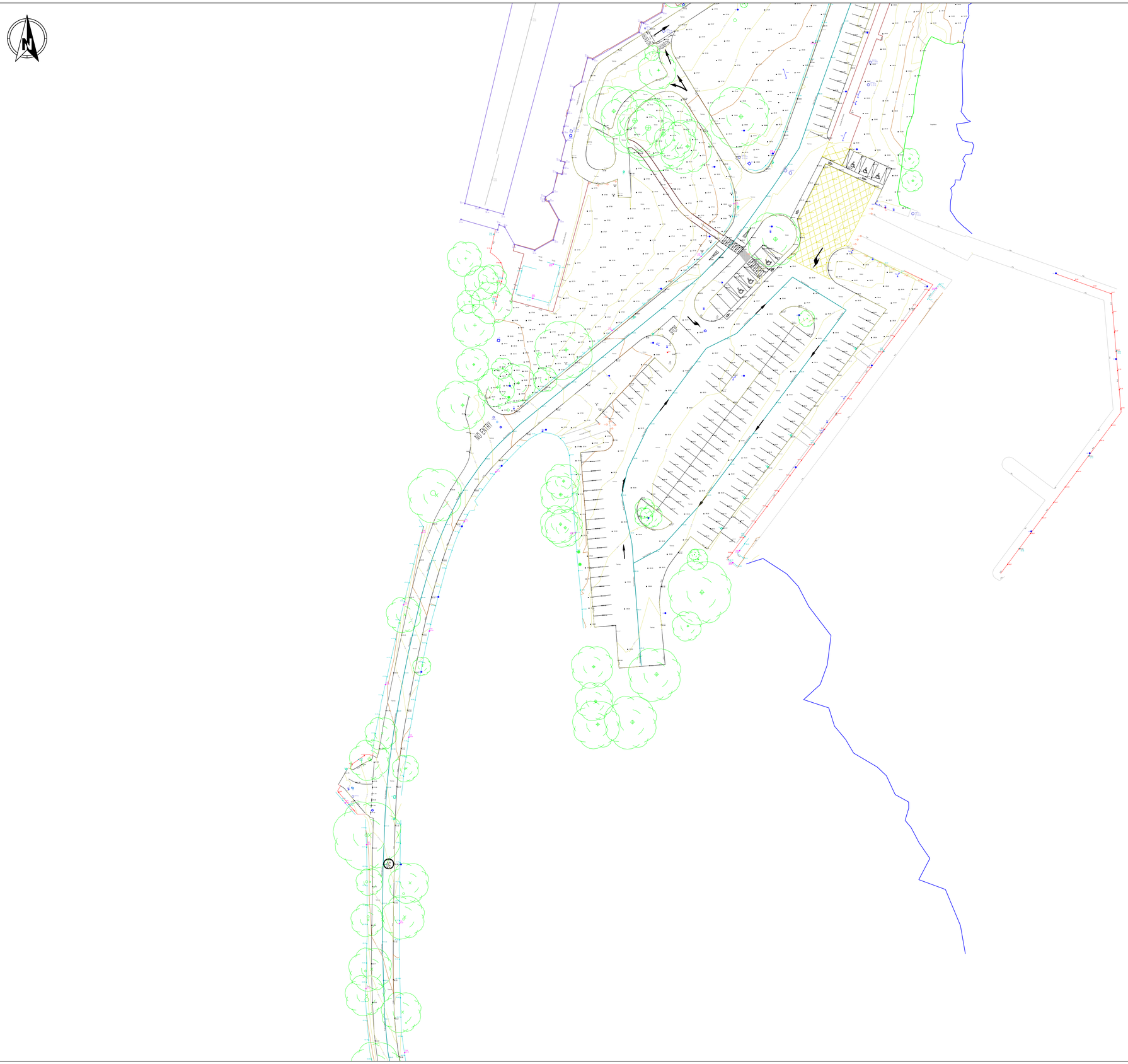
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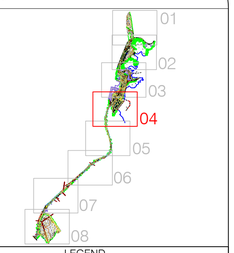
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KEYMAP



LEGEND

Street furniture & Services

- Over Head Wires
- Flowerbed
- Pipe
- Lift
- Barrier
- Pump
- Trial Pit
- Bus/Tram Shelter
- Postbox
- Valve - General
- Water Valve
- Unknown Valve
- FMH Foul Manhole
- SMH Surface Water MH
- MH Manholes
- AC Air Conditioning Vents
- ICM Services Inspection Cover
- ICTC Traffic Inspection Cover
- ICTV Cable TV Inspection Cover
- ICES ESAT Inspection Cover
- ICNC NTL Inspection Cover
- ICEM Eircom Inspection Cover
- RSign RS Road Sign
- BS Bus Stop
- BD Bollard
- BEA Beacon
- CH Coalhole Cover
- BH Boxe Hole
- EPT Electricity Pole
- TP Telegraph pole
- OCSP OCS Pole
- CPT CCTV Camera Pole
- LS Lamp Post
- LUAS LUAS Technical Cubicle
- Ticket Vending Machine
- WM Water Meter Cover
- ICS Telecom Inspection Cover
- Monument / Toilets
- Tank Storage
- Basement: MH, Cover & Pipe
- PM Parking Meter
- PAM Plane Aerial Mark
- SCV Smart Card Validator
- RE Rodding Eye
- PCB Pedestrian Crossing Button
- GY Gully
- BO Kiosk
- Duct
- Bench Seat
- U/G Vent U/G Car Park Vent
- WB Waste Bin
- Hyd Hydrant
- FH Fire Hydrant
- EBOX ESB Box
- ICE ESB Inspection Cover
- TFB Traffic Control Box
- Gas Valve
- Sluice Valve
- Air Valve
- Stop Cock
- CPT C P Post
- MK Marker Post
- TL Traffic light
- DAM Dished Aerial Mark
- STAY Stay for pole
- PP Pipe Protection
- Washout
- PBOX Phone Box
- GAS Gas Cover
- CPBox C P Box

Natural Features

- Contours Lines
- Surface Change
- Land Drain
- Bottom of Slope
- Top of Slope
- Ditch
- Water Edge / Lake / Pond
- Hedge / Trees Drip Line / Vegetation
- Tree Coniferous
- WLVL Water Level
- CRWN Crown Level
- IL Invert level
- BL Bed Level
- Tree Deciduous
- TOT Top of Tree

Golf

- FWAY Fair Way
- GREEN Green
- TBOX Tee Box

Other

- Survey Station
- Photo point

Built Features

Roads & Road Markings

- Building
- Edge of Road
- Kerb Bottom
- Kerb Top
- Bridge Abutment
- Bridge Deck
- Bridge Parapet
- Building Facade
- Footpath / Platform Train & Tram
- Damp Proof Course / Verge
- Bridge Pier / Wall & Gate Pillar / LUAS Trackbed
- Cycleway / Private Landing Area
- Fence
- Gate
- Road Centreline
- Hoarding
- Property Line
- Road Scar
- Ramp
- Wall / Retaining Wall
- Railway / Tram Rail / Grating
- TOW Top of Wall
- TOF Top of Fence
- Spot Level
- Floor Level
- APX Apex Height
- EV Eaves Height
- PAR Parapet Height
- SOF Soffit Elevation
- STPL Step Level
- Building Canopy / Roof / Overhang
- Track
- CONC Concrete Pad

OVERVIEW



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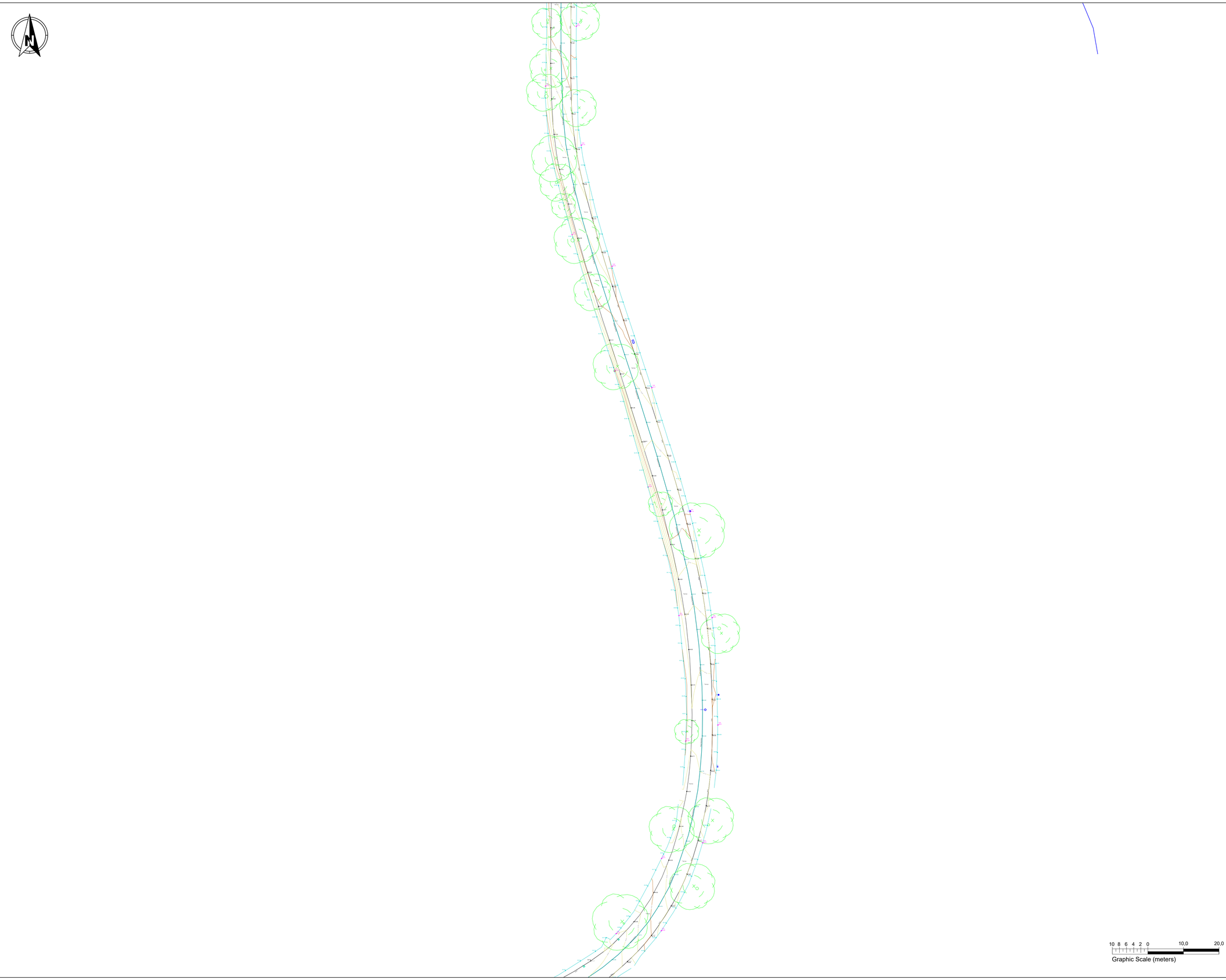
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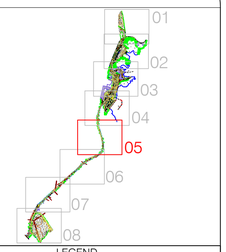
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10 8 6 4 2 0 10.0 20.0
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KEYMAP



LEGEND

Street furniture & Services

Over Head Wires · Flowerbed · Pipe · Lift · Barrier · Pump · Trial Pit · Bus/Tram Shelter · Postbox · Valve - General · Water Valve · Unknown Valve · Foul Manhole · Surface Water MH · Manholes · Air Conditioning Vents · Services Inspection Cover · Traffic Inspection Cover · Cable TV Inspection Cover · ESAT Inspection Cover · NTL Inspection Cover · Eircom Inspection Cover

Road Sign · Bus Stop · Bollard · Beacon · Coalhole Cover · Box Hole · Electricity Pole · Telegraph pole · OCS Pole · CCTV Camera Pole · Lamp Post · LUAS Technical Cubicle · Ticket Vending Machine · Water Meter Cover · Telecom Inspection Cover · Monument / Toilets · Tank Storage · Basement: MH, Cover & Pipe · Parking Meter · Plane Aerial Mark · Smart Card Validator · Rodding Eye · Pedestrian Crossing Button

Gully · Kiosk · Duct · Bench Seat · U/G Car Park Vent · Waste Bin · Hydrant · Fire Hydrant · ESB Box · ESB Inspection Cover · Traffic Control Box · Gas Valve · Sluice Valve · Air Valve · Stop Cock · C P Post · Marker Post · Traffic light · Dished Aerial Mark · Stay for pole · Pipe Protection · Washout

Phone Box · Gas Cover · C P Box

Natural Features

Contours Lines · Surface Change · Land Drain · Bottom of Slope · Top of Slope · Ditch · Water Edge / Lake / Pond · Hedge / Trees Drip Line / Vegetation · Tree Coniferous · Tree Deciduous

Water Level · Crown Level · Invert level · Bed Level

Golf

Fair Way · Green · Tee Box

Other

Survey Station · Photo point · Top of Tree

Built Features

Roads & Road Markings

Building · Edge of Road · Kerb Bottom · Kerb Top · Bridge Abutment · Bridge Deck · Bridge Parapet · Building Facade · Footpath / Platform Train & Tram · Damp Proof Course / Verge · Bridge Pier / Wall & Gate Pillar / LUAS Trackbed · Cycleway / Private Landing Area

Fence · Gate · Road Centreline · Hoarding · Property Line · Road Scar · Ramp · Wall / Retaining Wall Railway / Tram Rail / Grating · Top of Wall · Top of Fence

Spot Level · Floor Level · Apex Height · Eaves Height · Parapet Height · Soffit Elevation · Step Level · Building Canopy / Roof / Overhang · Track · Concrete Pad

OVERVIEW



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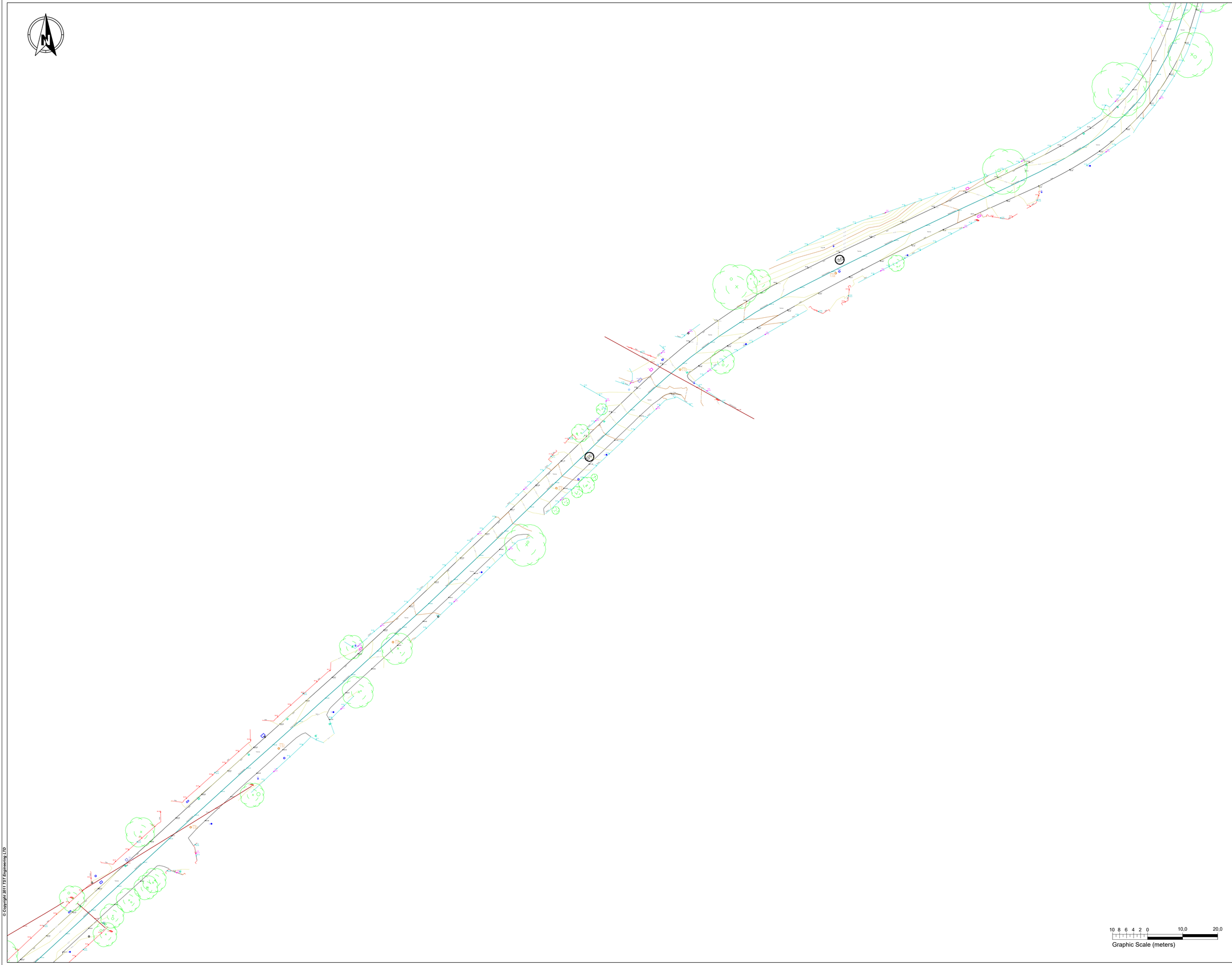
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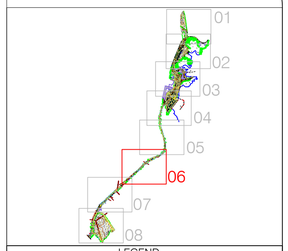
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Approved by: SD **Date: 17-09-2025**

REVISIONS

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KEYMAP



LEGEND

Street furniture & Services

- Over Head Wires
- Flowerbed
- Pipe
- Lift
- Barrier
- Pump
- Trial Pit
- Bus/Tram Shelter
- Postbox
- Valve - General
- Water Valve
- Unknown Valve
- Foul Manhole (FMH)
- Surface Water MH (SMH)
- Manholes (MH)
- Air Conditioning Vents (AC)
- Services Inspection Cover (ICM)
- Traffic Inspection Cover (ICTC)
- Cable TV Inspection Cover (ICTV)
- ESAT Inspection Cover (ICES)
- NTL Inspection Cover (ICNC)
- Eircom Inspection Cover (ICEM)
- Road Sign (RS)
- Bus Stop (BS)
- Bollard (BD)
- Beacon (BEA)
- Coalhole Cover (CH)
- Box Hole (BH)
- Electricity Pole (EPT)
- Telegraph pole (TPT)
- OCS Pole (OCSP)
- CCTV Camera Pole (CPT)
- Lamp Post (LS)
- LUAS Technical Cubicle (LUAS)
- Ticket Vending Machine
- Water Meter Cover (WM)
- Telecom Inspection Cover (ICS)
- Monument / Toilets
- Tank Storage
- Basement: MH, Cover & Pipe
- Parking Meter (PM)
- Plane Aerial Mark (PAM)
- Smart Card Validator (SCV)
- Rodding Eye (RE)
- Pedestrian Crossing Button (PCB)
- Gully (GY)
- Kiosk (KIOSK)
- Duct (DUCT)
- Bench Seat
- U/G Car Park Vent (U/G Vent)
- Waste Bin (WB)
- Hydrant (Hyd)
- Fire Hydrant (FH)
- ESB Box (EBOX)
- ESB Inspection Cover (ICE)
- Traffic Control Box (TFB)
- Gas Valve (GV)
- Sluice Valve (SV)
- Air Valve (AV)
- Stop Cock (SC)
- C P Post (CPT)
- Marker Post (MK)
- Traffic light (TL)
- Dished Aerial Mark (DAM)
- Stay for pole (STAY)
- Pipe Protection (PP)
- Washout
- Phone Box (PBOX)
- Gas Cover (GAS)
- C P Box (CPBox)

Natural Features

- Contours Lines
- Surface Change
- Land Drain
- Bottom of Slope
- Top of Slope
- Ditch
- Water Edge / Lake / Pond
- Hedge / Trees Drip Line / Vegetation
- Tree Coniferous
- Tree Deciduous
- Water Level (WLVL)
- Crown Level (CRWN)
- Invert level (IL)
- Bed Level (BL)

Golf

- Fair Way (FWAY)
- Green (GREEN)
- Tee Box (TBOX)

Other

- Survey Station
- Photo point
- Top of Tree (TOT)

Built Features

Roads & Road Markings

- Building
- Edge of Road
- Kerb Bottom
- Kerb Top
- Bridge Abutment
- Bridge Deck
- Bridge Parapet
- Building Facade
- Footpath / Platform Train & Tram
- Damp Proof Course / Verge
- Bridge Pier / Wall & Gate Pillar / LUAS Trackbed
- Cycleway / Private Landing Area
- Fence
- Gate
- Road Centreline
- Hoarding
- Property Line
- Road Scar
- Ramp
- Wall / Retaining Wall Railway / Tram Rail / Grating
- Top of Wall (TOW)
- Top of Fence (TOF)
- Spot Level
- Floor Level
- Apex Height (APX)
- Eaves Height (EV)
- Parapet Height (PAR)
- Soffit Elevation (SOFF)
- Step Level (STPL)
- Building Canopy / Roof / Overhang
- Track
- Concrete Pad (CONC)

OVERVIEW



10 8 6 4 2 0 10.0 20.0
Graphic Scale (meters)

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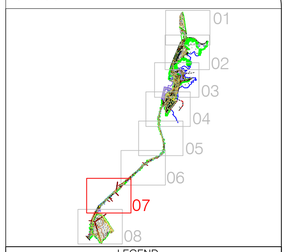
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Approved by: SD **Date: 17-09-2025**

REVISIONS

No.	Date	Description
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KEYMAP



LEGEND

Street furniture & Services

Over Head Wires	Sign	Road Sign	GY	Gully	PBOX Phone Box
Flowerbed	BS	Bus Stop		Kiosk	GAS Gas Cover
Pipe	BD	Bollard		Duct	CPBox C P Box
Lift	BEA	Beacon		Bench Seat	
Barrier	CH	Coalhole Cover	U/G Vent	U/G Car Park Vent	
Pump	BH	Bore Hole	WM	Waste Bin	
Trial Pit	EPT	Electricity Pole	Hyd	Hydrant	
Bus/Tram Shelter	TP T	Telegraph pole	FH	Fire Hydrant	
Postbox	OCSP	OCS Pole	EBOX	ESB Box	
Valve - General	CPT	CCTV Camera Pole	ICE	ESB Inspection Cover	
Water Valve	LS	Lamp Post	TFB	Traffic Control Box	
Unknown Valve	LUAS	LUAS Technical Cubicle		Gas Valve	
FMH Foul Manhole		Ticket Vending Machine		Sluice Valve	
SMH Surface Water MH	WM	Water Meter Cover		Air Valve	
MH Manholes	ICS	Telecom Inspection Cover		Stop Cock	
AC Air Conditioning Vents		Monument / Toilets	CPT	C P Post	
ICM Services Inspection Cover		Tank Storage	MK	Marker Post	
ICTC Traffic Inspection Cover		Basement: MH, Cover & Pipe	TL	Traffic light	
ICTV Cable TV Inspection Cover	PM	Parking Meter	DAM	Dished Aerial Mark	
ICES ESAT Inspection Cover	PAM	Plane Aerial Mark	STAY	Stay for pole	
ICNC NTL Inspection Cover	SCV	Smart Card Validator	PP	Pipe Protection	
ICEM Eircom Inspection Cover	RE	Rodding Eye	PCB	Pedestrian Crossing Button	Washout

Natural Features

Contours Lines	WLVL	Water Level	FWAY	Fair Way	
Surface Change	CRWN	Crown Level	GREEN	Green	
Land Drain	IL	Invert level	TBOX	Tee Box	
Bottom of Slope	BL	Bed Level			
Top of Slope					
Ditch					
Water Edge / Lake / Pond					
Hedge / Trees Drip Line / Vegetation					
Tree Coniferous		Tree Deciduous	TOT	Top of Tree	

Golf

Other

Survey Station

Photo point

Built Features

Roads & Road Markings

Building	Fence		Spot Level		
Edge of Road	Gate		Floor Level		
Kerb Bottom	Road Centreline		Apex Height		
Kerb Top	Hoarding		Eaves Height		
Bridge Abutment	Property Line		Parapet Height		
Bridge Deck	Road Scar		Soffit Elevation		
Bridge Parapet	Ramp		Step Level		
Building Facade	Wall / Retaining Wall		Building Canopy / Roof / Overhang		
Footpath / Platform Train & Tram	Railway / Tram Rail / Grating		Track		
Damp Proof Course / Verge	Top of Wall		Concrete Pad		
Bridge Pier / Wall & Gate Pillar / LUAS Trackbed	Top of Fence				
Cycleway / Private Landing Area					

OVERVIEW



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DRAWING IS IN ITM(Irish Transverse Mercator) COORDINATE WITH QUOTE REFERRING TO Geoid model OSGM15

TST Egineering LTD
www.tstengineering.com

Unit F11,
Riverview Business Park,
Nangor Road
Dublin 12
Ireland
Tel. (+353) 1 5373905

Client: Civic Engineers

Project: Hodson Bay

Description: Topographical Survey

Drawing No.: 1607D-25-002 | **7 of 8**

Scale: 1:500 (on A1)

Enclosed with:

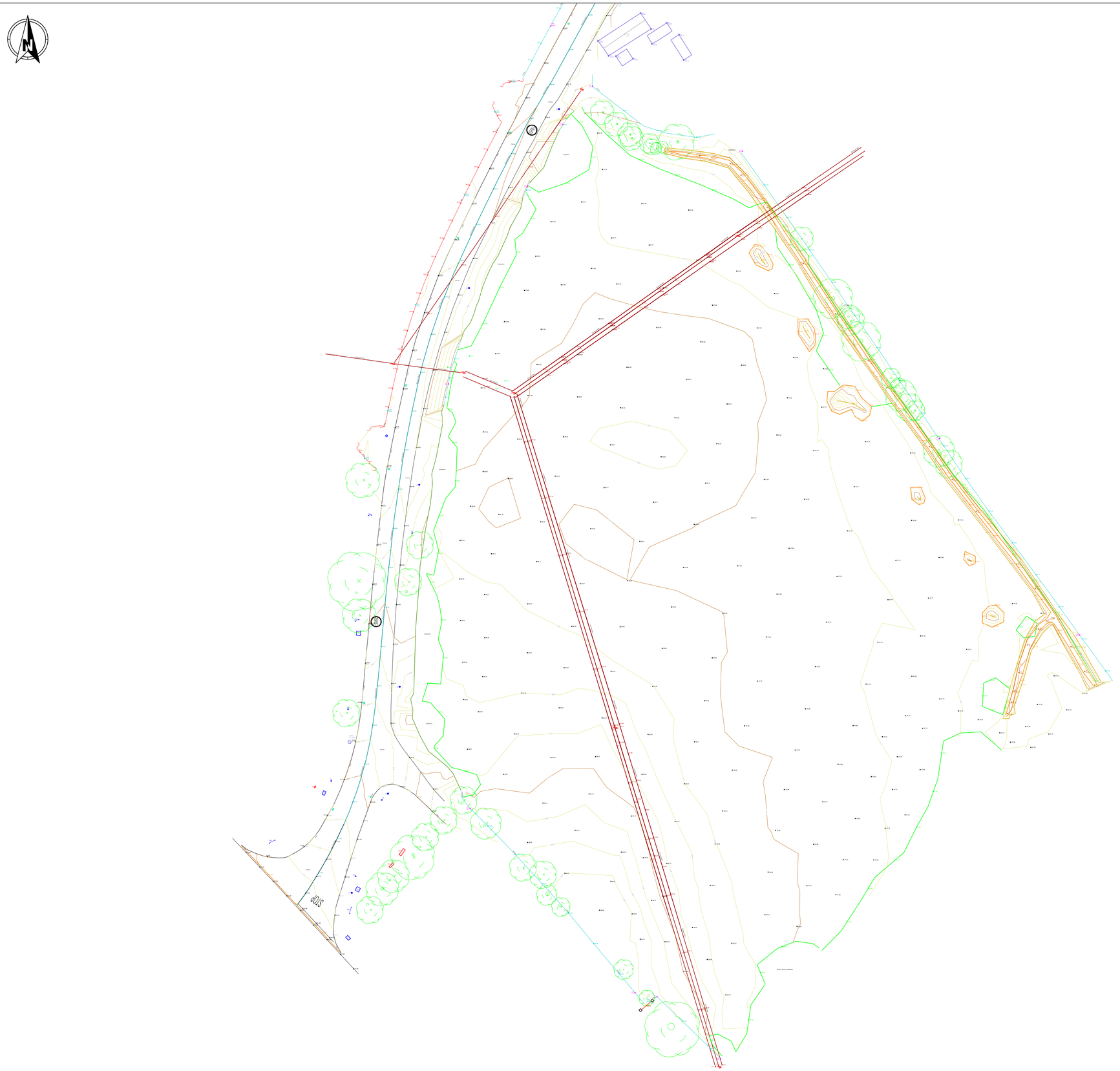
Surveyed by: GM,VF
Drawn by: RL
Approved by: SD **Date: 17-09-2025**

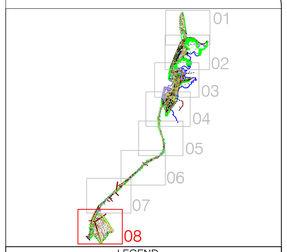
REVISIONS

No.	Date	Description
0	17-09-2025	First version

10 8 6 4 2 0 10,0 20,0
Graphic Scale (meters)

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KEYMAP

LEGEND

Street furniture & Services

- Over Head Wires
- Flowerbed
- Pipe
- Lift
- Barrier
- Pump
- Trial Pit
- Bus/Tram Shelter
- Postbox
- Valve - General
- Water Valve
- Unknown Valve
- FMH Foul Manhole
- SMH Surface Water MH
- MH Manholes
- AC Air Conditioning Vents
- ICM Services Inspection Cover
- ICTC Traffic Inspection Cover
- ICTV Cable TV Inspection Cover
- ICES ESAT Inspection Cover
- ICNC NTL Inspection Cover
- ICEM Eircom Inspection Cover
- Road Sign
- Bus Stop
- Bollard
- Beacon
- Coalhole Cover
- Box Hole
- Electricity Pole
- Telegraph pole
- OCS Pole
- CCTV Camera Pole
- Lamp Post
- LUAS Technical Cubicle
- Ticket Vending Machine
- Water Meter Cover
- Telecom Inspection Cover
- Monument / Toilets
- Tank Storage
- Basement: MH, Cover & Pipe
- Parking Meter
- Plane Aerial Mark
- Smart Card Validator
- Pedestrian Crossing Button
- Gully
- Kiosk
- Duct
- Bench Seat
- U/G Car Park Vent
- Waste Bin
- Hydrant
- Fire Hydrant
- ESB Box
- ESB Inspection Cover
- Traffic Control Box
- Gas Valve
- Sluice Valve
- Air Valve
- Stop Cock
- C P Post
- Marker Post
- Traffic light
- Dished Aerial Mark
- Stay for pole
- Pipe Protection
- Washout
- Phone Box
- Gas Cover
- C P Box

Natural Features

- Contours Lines
- Surface Change
- Land Drain
- Bottom of Slope
- Top of Slope
- Ditch
- Water Edge / Lake / Pond
- Hedge / Trees Drip Line / Vegetation
- Tree Coniferous
- Tree Deciduous
- WLVL Water Level
- CRWN Crown Level
- IL Invert level
- BL Bed Level

Golf

- FWAY Fair Way
- GREEN Green
- TBOX Tee Box

Other

- Survey Station
- Photo point
- TOT Top of Tree

Built Features

Roads & Road Markings

- Building
- Edge of Road
- Kerb Bottom
- Kerb Top
- Bridge Abutment
- Bridge Deck
- Bridge Parapet
- Building Facade
- Footpath / Platform Train & Tram
- Damp Proof Course / Verge
- Bridge Pier / Wall & Gate Pillar / LUAS Trackbed
- Cycleway / Private Landing Area
- Fence
- Gate
- Road Centreline
- Hoarding
- Property Line
- Road Scar
- Ramp
- Wall / Retaining Wall
- Railway / Tram Rail / Grating
- TOW Top of Wall
- TOF Top of Fence
- Spot Level
- Floor Level
- APX Apex Height
- EV Eaves Height
- PAR Parapet Height
- SOF Soffit Elevation
- STP Step Level
- Building Canopy / Roof / Overhang
- Track
- CONC Concrete Pad

OVERVIEW



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Client: Civic Engineers

Project: Hodson Bay

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Drawing No.: 1607D-25-002 | **8 of 8**

Scale: 1:500 (on A1)

Enclosed with:

Surveyed by: GM,VF
Drawn by: RL
Approved by: SD **Date: 17-09-2025**

REVISIONS

No.	Date	Description
0	17-09-2025	First version

10 8 6 4 2 0 10,0 20,0
Graphic Scale (meters)

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Appendix C – Existing Hodson Bay Hotel Drainage Layout

LEGEND : (PARKING)

EXISTING CAR PARKING SPACES – TOTAL 132

(ABOVE FIGURES INCLUDE 44 No CAR PARKING SPACES AT SHORE)

PROPOSED NEW CAR PARKING SPACES PROVIDED = 68

TOTAL CAR PARKING SPACES PROVIDED TO HOTEL = 200

ALL CAR PARKING SPACES PROVIDED – 2.5m X 5.0m
6m WIDE AISLES – 100mm WIDE THERMOPLASTIC MARKING MATERIAL

SURFACE SPECIFICATION (ROADS + PARKING)

35mm OF 10mm AGGREGATE SIZE DENSE BITUMEN MACADAM WEARING COURSE IN ACCORDANCE WITH TABLE 9/3 OF D.O.E. SPECIFICATION FOR ROAD WORKS

50mm OF 20mm AGGREGATE SIZE DENSE BITUMEN MACADAM BASE COURSE IN ACCORDANCE WITH TABLE 9/1 OF D.O.E. SPECIFICATION FOR ROAD WORKS

225mm CLAUSE 804 MATERIAL (CRUSHED STONE)

CLAUSE 616 GENERAL FILL MATERIAL IN ACCORDANCE WITH D.O.E. SPECIFICATION FOR ROAD WORKS COMPACTED IN MAXIMUM 225mm DEEP LAYERS (OR CLAUSE 803 APPROVED)

NOTES:

ALL TELEPHONE, PUBLIC LIGHTING, CABLE T.V., E.S.B. SERVICES ETC. TO BE LAID UNDERGROUND IN 100mm DIA./125mm DIA. P.V.C. DUCTS WITH PULL WIRES IN ACCORDANCE WITH SERVICE SUPPLIERS DETAILS AND SPECIFICATION (ALLOW FOR INSPECTION MANHOLES AS NECESSARY)

ALL SEWER PIPES WITH LESS THAN 1200MM COVER IN ROADS AND 600MM ELSEWHERE TO BE SURROUNDED IN MINIMUM 150MM THICK CONCRETE (GRADE 35N/20)

THIS DRAWING TO BE READ IN CONJUNCTION WITH ARCHITECTS DRAWINGS EXACT FINISHED LEVELS TO BE CONFIRMED WITH ARCHS DRAWINGS AND ON SITE

ALL SURFACE WATER PIPES FROM ROAD GULLIES TO MAIN SEWER TO BE 150MM DIA. P.V.C. UNLESS NOTED OTHERWISE

CONCRETE ANCHOR BLOCKS TO BE PROVIDED AT ENDS, AND ALL DIRECTIONAL CHANGES OF WATERMAIN

ALL MANHOLE COVERS TO BE LOADING CLASS D400 AND TO BE LOCKABLE
ALL GULLY GRATINGS TO BE LOADING CLASS C250 IN ACCORDANCE WITH EN124 AND TO BE LOCKABLE ± GULLIES PROVIDED AT 1 PER 200sq.m.

ALL SEWER PIPES UP TO AND INCLUDING 300MM DIA. TO BE u.P.V.C.
ALL SEWER PIPES ABOVE 300MM DIA. TO BE CONCRETE SPIGOT AND SOCKET

WATERMAIN TO BE 100MM DIA. P.V.C. CLASS 'C', AND OVERLAID WITH A TAPE CONTAINING A TRACER WIRE

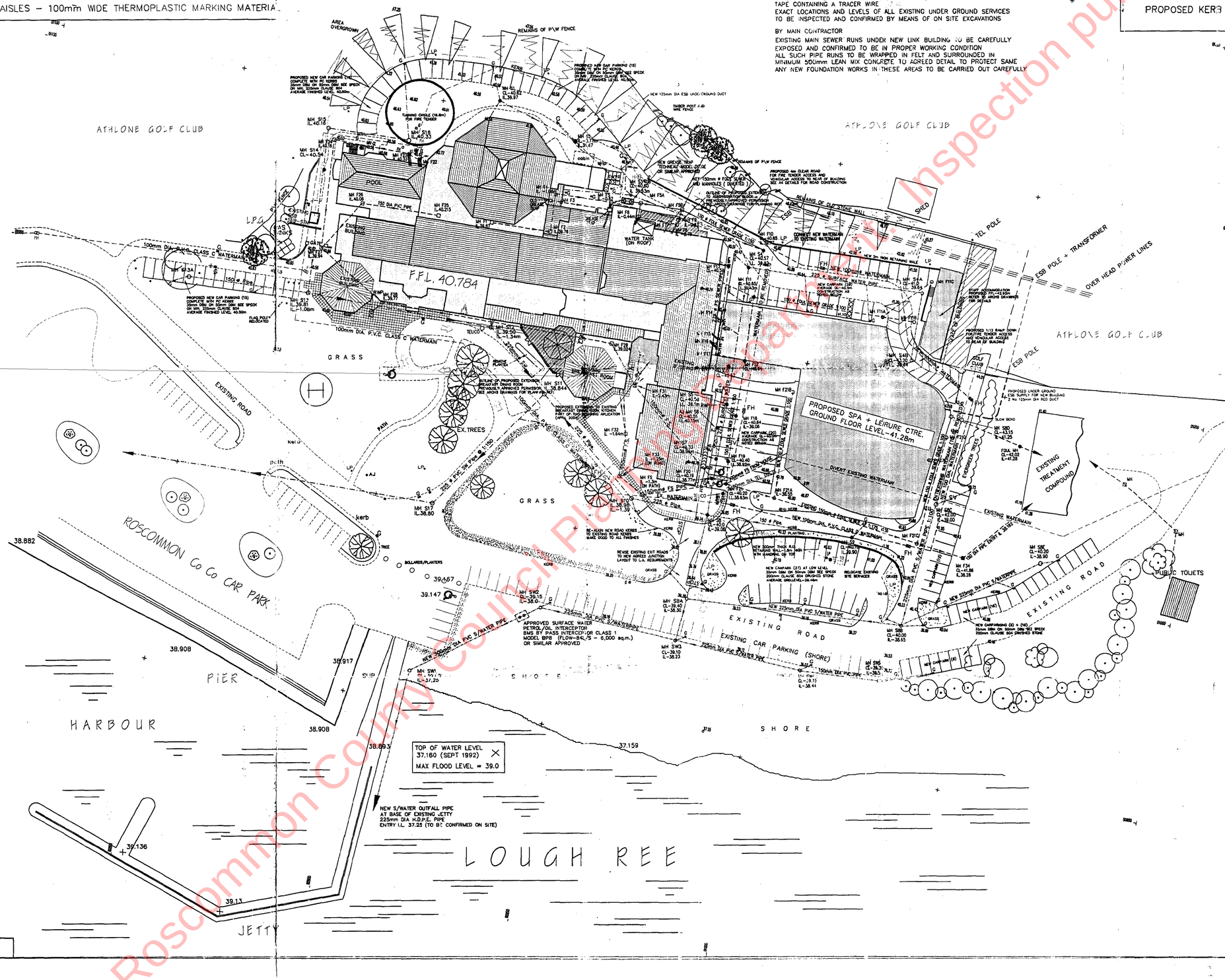
EXACT LOCATIONS AND LEVELS OF ALL EXISTING UNDER GROUND SERVICES TO BE INSPECTED AND CONFIRMED BY MEANS OF ON SITE EXCAVATIONS

BY MAIN CONTRACTOR

EXISTING MAIN SEWER RUNS UNDER NEW LINK BUILDING TO BE CAREFULLY EXPOSED AND CONFIRMED TO BE IN PROPER WORKING CONDITION
ALL SUCH PIPE RUNS TO BE WRAPPED IN FELT AND SURROUNDED IN MINIMUM 350mm LEAN MIX CONCRETE TO AGREED DETAIL TO PROTECT SAME
ANY NEW FOUNDATION WORKS IN THESE AREAS TO BE CARRIED OUT CAREFULLY

LEGEND : (SERVICES)

NEW EXTENSION SHOWN THUS =
100mm ø CLASS "C" WATERMAIN =
FIRE HYDRANT/SLUICE VALVE = SV FH
U-GROUND ESB (+P. LIGHTING) = LP (Lamp Post)
U-GROUND TELECO =
SURFACE WATER SEWER LINE =
FOUL SEWER LINE =
ROAD GULLY = G
EXISTING KERB LINE =
PROPOSED KERB LINE =



GENERAL NOTES :

ALL LEVELS RELATE TO POOL BEG ORDNANCE DATUM

ALL SETTING OUT DIMENSIONS FOR EXISTING OR PROPOSED NEW WORKS TO ARCHITECTS DRAWINGS

EXACT LOCATION OF ALL EXISTING UNDER GROUND SERVICES TO BE CONFIRMED ON SITE BY MAIN CONTRACTOR EXACT AS CONSTRUCTED LEVELS AND DIMENSIONS TO BE CONFIRMED ON SITE

PLANNING DRAWING

rev.	date	amendment	by.
b.			
a.			

job. HODSON BAY HOTEL ATHLONE SPA/LEISURE CENTRE

title. PROPOSED SITE LAYOUT

architect. Brian O'Halloran & Associates
23 Herbert Place
Dublin 2

Malachi Cullen & Partners
CONSULTING CIVIL, STRUCTURAL ENGINEERS & PROJECT MANAGERS
Old Bridge House, Strand Street, Athlone, Co.Westmeath.
Tel: (0902) 74264.
Fax: (0902) 78422.
E-mail : info@mcullen.ie

scale.	1:500	drawing number.	rev.
date.	DEC 2003	03–079–02	
drawn.	JJD		

CAD File Ref. No.

Roscommon County Council Planning Dept. Inspection purposes only.

04-0

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LEGEND : (SERVICES)

NEW EXTENSION SHOWN THUS	=	
100mm ø CLASS "C" WATERMAIN	=	
FIRE HYDRANT/SLUICE VALVE	=	SV FH
U-GROUND ESB (+P. LIGHTING)	=	LP (Lamp Pole)
U-GROUND TELECO	=	
SURFACE WATER SEWER LINE	=	
FOUL SEWER LINE	=	01100
ROAD GULLY	=	G
EXISTING KERB LINE	=	
PROPOSED KERB LINE	=	

LEGEND : (PARKING)

EXISTING CAR PARKING SPACES – TOTAL 132

(ABOVE FIGURES INCLUDE 44 No CAR PARKING SPACES AT SHORE)

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EXACT LOCATION OF ALL EXISTING UNDER GROUND SERVICES TO BE CONFIRMED ON SITE BY MAIN CONTRACTOR
EXACT AS CONSTRUCTED LEVELS AND DIMENSIONS TO BE CONFIRMED ON SITE

PLANNING DRAWING

rev.	date	amendment	by.
a.			
b.			

job.
HODSON BAY HOTEL ATHLONE
SPA/LEISURE CENTRE

title.
PROPOSED SITE LAYOUT

architect. Brian O'Halloran & Associates
23 Herbert Place
Dublin 2

Malachi Cullen & Partners
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scale.	1:250	drawing number.	rev.
date.	DEC 2003	03-079-02	
drawn.	JJD		

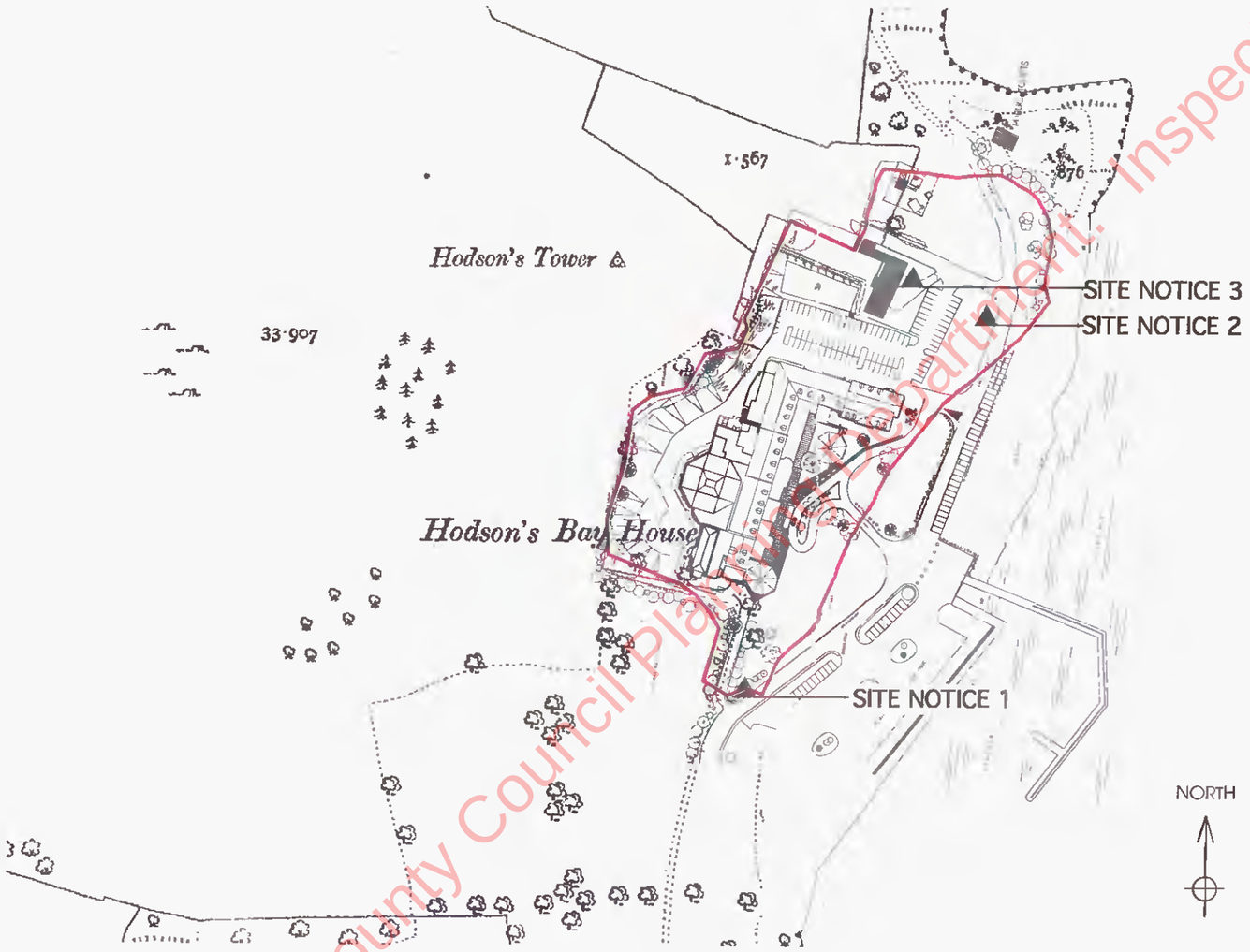
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04-313



PLANNING APPLICATION

Revision	Description	Date	By	Chkd

BRIAN O' HALLORAN & ASSOCIATES
ARCHITECTS & PROJECT MANAGERS

Project: SPA / LEISURE CENTRE

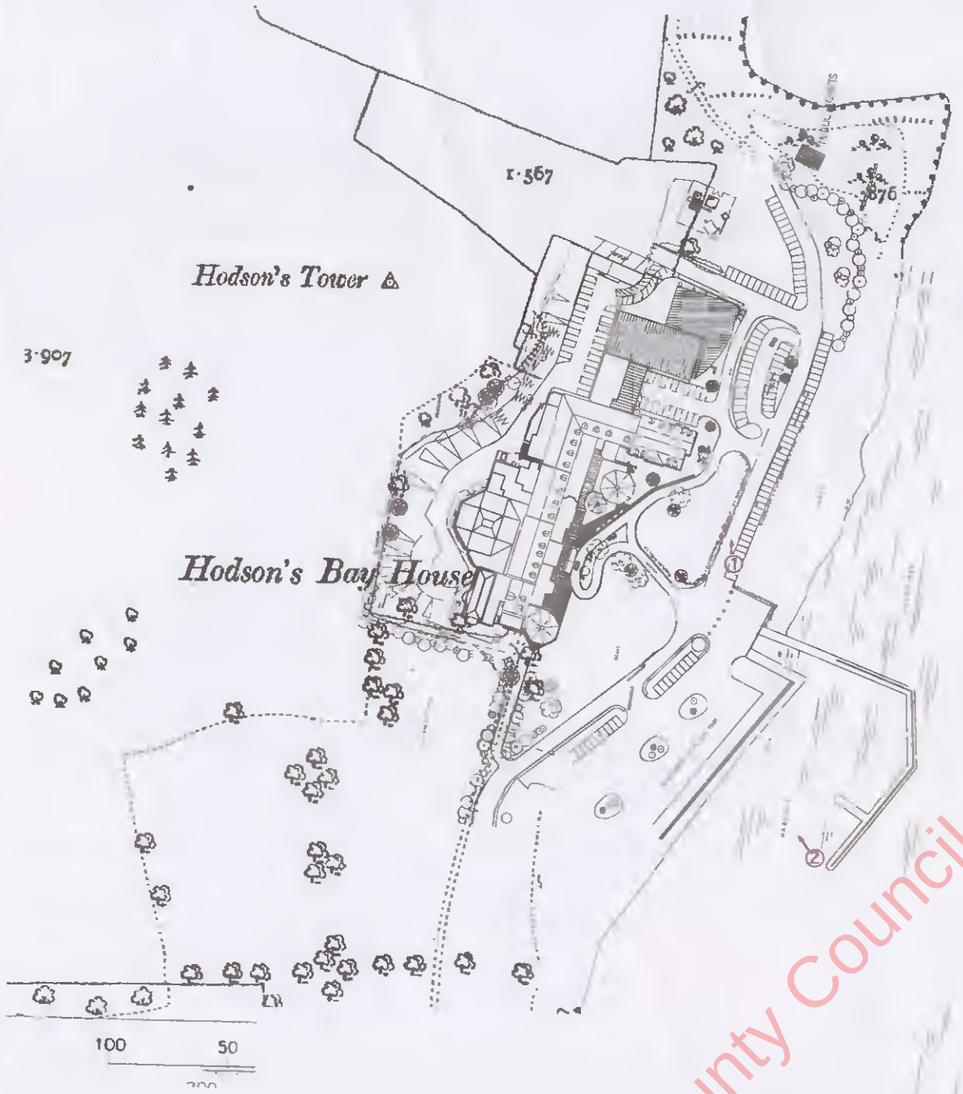
Client: HODSON BAY HOTEL

Drawing Title: SITE CONTEXT MAP WITH SITE NOTICE LOCATIONS

Job No	Dwg No	Rev
03.47	(PP)010	

Scale	Drawn By
1:2500	GERALD ROGERS
Date	Checked By
APRIL 2004	Cyril O'Neill

75 HERBERT PLACE
DUBLIN 2
IRELAND
TEL 353-1-676640
FAX 353-1-6763963
EMAIL firstname.lastname@boarc.ie



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0[illegible]-813

NORTH

KEY

location of viewpoints for photomontage

Revision	Description	Date	By	Chkd

BOHA & ASSOCIATES
ARCHITECTS & PROJECT MANAGERS

Project: SPA / LEISURE CENTRE

Client: HODSON BAY HOTEL

Drawing Title: PHOTOMONTAGE VIEWPOINT LOCATIONS MAP

Job No	Dwg No	Rev
03.47	(PP)011	

Scale	Drawn By	Checked By
1:2500	GERALD ROGERS	Cyril O Neill

Date: [illegible]

BOHA

23 HERBERT PLACE
DUBLIN 2
IRELAND

TEL: +353- [illegible]
FAX: +353-1-6767963
E-MAIL: firstname.lastname@boha.ie



Roscommon County Council Planning Department - Inspection purposes only!

04-813

PLANT SPECIES LIST

Screen Planting to Sewage Treatment Works
14 -16cm.g, 16 -18cm.g trees
Alnus glutinosa - Alder
Fraxinus excelsior - Ash
Betula pubescens - Birch
Fraxinus excelsior - Ash
Crateagus monogyna - Hawthorn - 5m Height

Hedge Planting
Fagus sylvatica - Beech
1.2m high feathered whip hedge
@ 6no. plants per linm in double staggered row

DECORATIVE SHRUB PLANTING
2.0Lt + 3.0Lt pot size @ 4no and 6no per m2

Clematis sp.
Cotinus 'Atropurpurea' "Smoke Bush"
Dicentra 'Alba'
Digitalis 'Albiflora'
Geranium 'Johnstons Blue' "Geranium"
Hedera helix ' Hibernica'
Lavandula angustifolia 'Hidcote' "Lavander"
Perovskia atriplicifolia 'Blue Spire' "Russian Sage"
Prunus 'Otto Lyken' - Laurel
Sarcococca var. humilis "Christmas Box"

Winter Garden
Aralia elata
Camellia species
Fatsia japonica
Jasminium nudiflorum
Myrtus communis
Knipofia galpinii
Phormium tenax
Sarcococca species

LEGEND

Existing Trees

Trees to be removed

Existing grassed areas/ ornamental planting

Proposed Specimen Trees 14 - 16cmg, 16 - 18cmg

Propsed Hedge Planting

Shrub & Groundcover Planting

Grass Seeding

Winter Garden Planting - refer to species list

High Quality Paving Units

Mitchell + Associates
architects
landscape architects
master planners
Tower 4,
Fumbally Court,
Fumbally Lane,
Dublin 8.
Tel: 01 454 5066
Fax: 01 454 5065
Email: info@mitchellassoc.net

Hodson Bay Hotel
client

Extension to the Hodson Bay Hotel
project

Landscape Masterplan
drawing

Planning
status

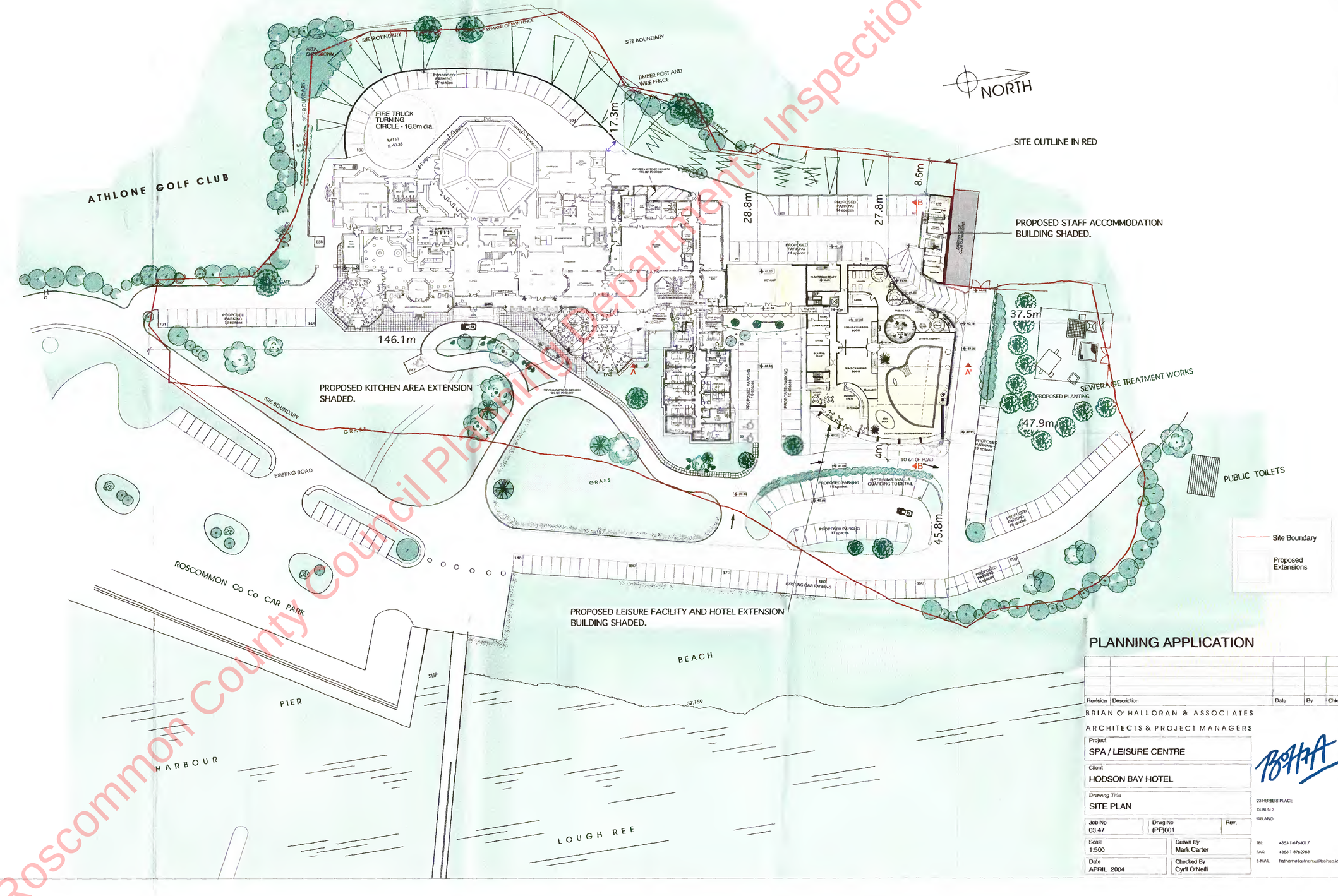
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scale	date	drawn by	job no	dwg no	revision

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04-313



PLANNING APPLICATION

Revision	Description	Date	By	Chkd

BRIAN O' HALLORAN & ASSOCIATES
ARCHITECTS & PROJECT MANAGERS

Project: SPA / LEISURE CENTRE

Client: HODSON BAY HOTEL

Drawing Title: SITE PLAN

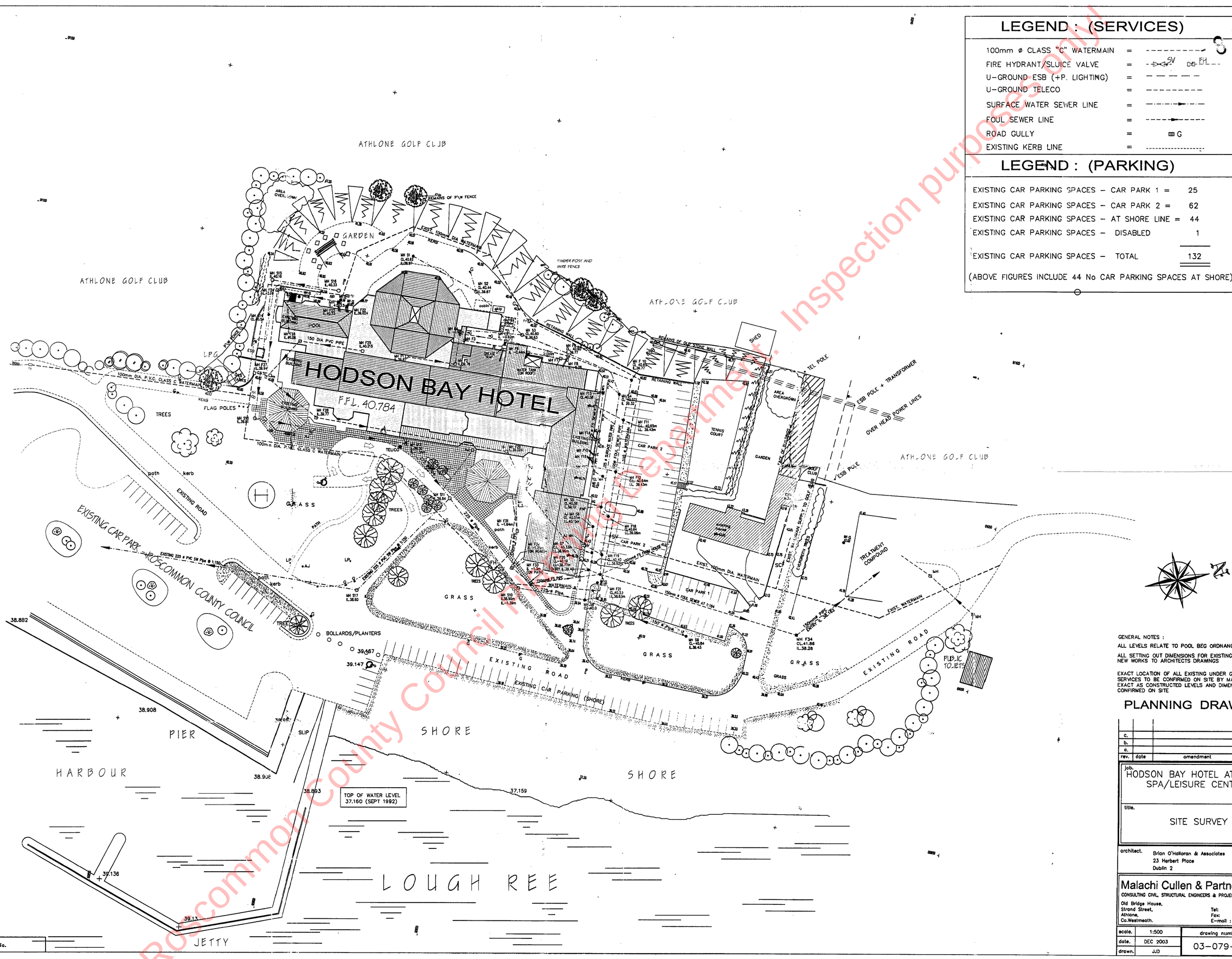
Job No: 03.47 | Dwg No: (PP)001 | Rev.

Scale: 1:500 | Drawn By: Mark Carter

Date: APRIL 2004 | Checked By: Cyril O'Neill

23 HERBERT PLACE
DUBLIN 2
IRELAND
TEL: +353-1-676-4017
FAX: +353-1-676-2963
E-MAIL: firstname.lastname@boha.ie

Roscommon County Council Planning Department - Inspection purposes only!



LEGEND : (SERVICES)

100mm ø CLASS "C" WATERMAIN	=	
FIRE HYDRANT/SLUICE VALVE	=	SV FH
U-GROUND ESB (+P. LIGHTING)	=	
U-GROUND TELECO	=	
SURFACE WATER SEWER LINE	=	
FOUL SEWER LINE	=	
ROAD GULLY	=	G
EXISTING KERB LINE	=	

LEGEND : (PARKING)

EXISTING CAR PARKING SPACES – CAR PARK 1 =	25
EXISTING CAR PARKING SPACES – CAR PARK 2 =	62
EXISTING CAR PARKING SPACES – AT SHORE LINE =	44
EXISTING CAR PARKING SPACES – DISABLED	1
EXISTING CAR PARKING SPACES – TOTAL	132

(ABOVE FIGURES INCLUDE 44 No CAR PARKING SPACES AT SHORE)

GENERAL NOTES :

ALL LEVELS RELATE TO POOL BEG ORDNANCE DATUM

ALL SETTING OUT DIMENSIONS FOR EXISTING OR PROPOSED NEW WORKS TO ARCHITECTS DRAWINGS

EXACT LOCATION OF ALL EXISTING UNDER GROUND SERVICES TO BE CONFIRMED ON SITE BY MAIN CONTRACTOR EXACT AS CONSTRUCTED LEVELS AND DIMENSIONS TO BE CONFIRMED ON SITE

PLANNING DRAWING

rev.	date	amendment	by.
c.			
b.			
a.			

job. HODSON BAY HOTEL ATHLONE SPA/LEISURE CENTRE

title. SITE SURVEY

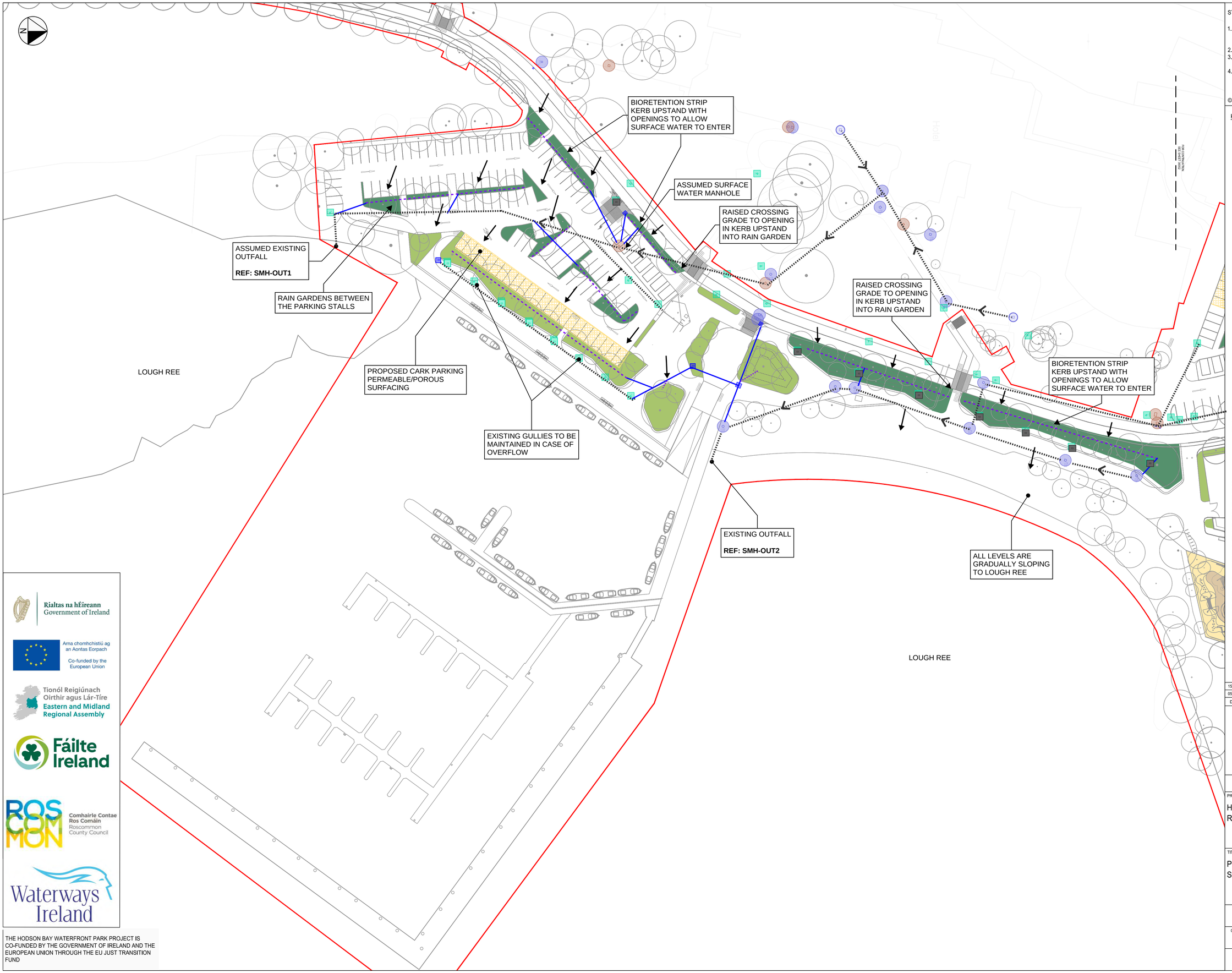
architect. Brian O'Halloran & Associates
23 Herbert Place
Dublin 2

Malachi Cullen & Partners
CONSULTING CIVIL, STRUCTURAL ENGINEERS & PROJECT MANAGERS
Old Bridge House,
Strand Street,
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E-mail : info@mcullen.ie

scale.	1:500	drawing number.	rev.
date.	DEC 2003	03-079-01	
drawn.	JJD		

Roscommon County Council Planning Department. Inspection purposes only.

Appendix D – Surface Water Drainage Layout



STANDARD NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND THE SPECIFICATIONS.
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3. ALL DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR ON SITE.
4. ALL DISCREPANCIES SHOULD BE REPORTED TO C.A./E.A. PRIOR TO THE COMMENCEMENT OF WORKS.

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KEY:

- SITE BOUNDARY
- EXISTING SURFACE WATER MANHOLE
- EXISTING UNKNOWN DRAINAGE MANHOLE
- EXISTING GULLY TO BE RETAINED
- EXISTING GULLY TO BE ABANDONED
- ASSUMED EXISTING SURFACE WATER PIPE ROUTES
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED INSPECTION CHAMBER
- PROPOSED GULLY
- PROPOSED SURFACE WATER PIPE
- PROPOSED PERFORATED PIPE
- PROPOSED PERMEABLE / POROUS SURFACING
- PROPOSED TREE PITS
- PROPOSED RAIN GARDEN
- PROPOSED BIORETENTION SYSTEM
- PROPOSED GRADING DIRECTION
- FLOW DIRECTION

NOTES:

1. THIS DRAWING WAS PRODUCED USING THE FOLLOWING INFORMATION:
   1.1 LANDSCAPE ARCHITECT OKRA PUBLIC REALM DESIGN DATED JULY 2026.
   1.2 ARCHITECT RKD DESIGN CONCEPT LAYOUTS DATED JUNE 2026.
   1.3 LEVEL PLANS PREPARED BY CIVIC DATED JUNE 2026.
   1.4 HODSON BAY HOTEL SITE LAYOUT PREPARED BY MALACHI CULLEN & PARTNERS DATED DECEMBER 2003.
2. THE POSITIONS OF EXISTING SERVICES SHOWN IN THESE DRAWINGS ARE INDICATIVE ONLY BASED ON AVAILABLE RECORDS. THE LOCATION, CONDITION AND CAPACITY IS TO BE VERIFIED WITH SURVEY.
3. SURFACE WATER IS TO DISCHARGE TO LOUGH REE VIA EXISTING OUTFALLS. EXISTING OUTFALL LOCATIONS AND CAPACITIES ARE TO BE VERIFIED BY SURVEY.
4. POSITIONS OF RAINWATER DOWNPIPES (RWPs) ARE INDICATIVE ONLY. RWPs ARE TO BE RODDABLE AND ACCESSIBLE ABOVE GROUND.
5. A HYDROCARBON INTERCEPTOR SHALL BE PROVIDED PRIOR TO ALL SURFACE WATER OUTFALLS SERVING CAR PARKING AREAS. INTERCEPTOR SIZE AND SPECIFICATION TO BE CONFIRMED AT DETAILED DESIGN STAGE.
6. SURFACE WATER DRAINAGE IS DESIGNED IN ACCORDANCE WITH SUSTAINABLE URBAN DRAINAGE SYSTEMS (SuDS) PRINCIPLES. SuDS FEATURES INCLUDING PERMEABLE PAVING, RAIN GARDENS, TREE PITS AND BIORETENTION STRIPS SHALL BE MAINTAINED IN PERPETUITY BY THE RESPONSIBLE PARTY IN ACCORDANCE WITH AN AGREED MAINTENANCE MANAGEMENT PLAN.

DATE	REV	DESCRIPTION	DRAWN	CHKD
15.07.26	1	PLANNING	MF	EB
05.06.26	0	INFORMATION	EB	KW

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PROJECT

HODSON BAY
ROSCOMMON COUNTY COUNCIL

TITLE

PROPOSED SURFACE WATER
SHEET 1

DRAWING STATUS	STATUS CODE
PLANNING	P3

CE PROJECT No.	SCALE @ A1	DATE CREATED	DRAWN	CHECKED
31022	1:500	05.06.26	EB	KW

DRAWING No.	REV
31022-DR-CIV-CE-30001	1

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Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

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FOR CONTINUATION SEE DRG 30001

STEEPER GRADIENT AREA TO BE COLLECTED AT LOW POINTS IN GULLIES

PROPOSED CARK PARKING PERMEABLE/POROUS SURFACING

RAIN GARDENS BETWEEN THE PARKING STALLS

RWP

ASSUMED EXISTING OUTFALL AREA

REF: ASSOUT_N_2

FINISHED FLOOR LEVEL +38.00

ASSUMED SURFACE WATER MANHOLE

LOUGH REE

PROPOSED CARK PARKING PERMEABLE/POROUS SURFACING

ASSUMED SURFACE WATER MANHOLE

PLAY AREA PERMEABLE SURFACING RESIN BOUND TO SERVE OWN FOOTPRINT AND ADJACENT SLOPING CATCHMENTS

RAINWATER DOWN PIPES (RWP) TO DROP INTO BIORETENTION DEPRESSION SYSTEMS AT REAR OF PROPERTY. FLOWS TO BE DISTRIBUTED VIA DIFFUSER UNITS WHERE REQUIRED

ASSUMED EXISTING OUTFALL AREA

REF: ASSOUT_N_1

PENDING ARCHITECT DESIGN FOR THIS CLOUDED AREA AND RWP POSITIONING

ASSUMED EXISTING OUTFALL AREA

REF: ASSOUT_N_3

ALL LEVELS ARE GRADUALLY SLOPING TO LOUGE REE

BIORETENTION STRIP KERB UPSTAND WITH OPENINGS TO ALLOW SURFACE WATER TO ENTER

NATURE PATHWAY PERMEABLE SURFACING RESIN BOUND

LOUGH REE

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DATE	REV	DESCRIPTION	DRAWN	CHKD
15.07.26	1	PLANNING	MF	EB
05.06.26	0	INFORMATION	EB	KW

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PROJECT

HODSON BAY
ROSCOMMON COUNTY COUNCIL

TITLE

PROPOSED SURFACE WATER
SHEET 2

DRAWING STATUS	STATUS CODE
PLANNING	P3

CE PROJECT No.	SCALE @ A1	DATE CREATED	DRAWN	CHECKED
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DRAWING No.	REV
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FILE LOCATION PATH: P:\CIVIC IRELAND\PROJECTS HOT\31022 HODSON BAY\004 BIM\CIVIL\SIDRAWINGS\31022-CIV-XX-XX-DR-C-31000 - SW.DWG

Appendix E – Landscape Architect Public Realm Plan



KEYPLAN



Legend

GENERAL

- Project area
- Height points
- Dimensions in meters
- Existing property fence
- Existing pontoon
- Water

PAVING

- **Concrete paving with exposed aggregate** Water Promenade
- **Resin bound paving** Playground, Nature Pathway
- **Permeable soft paving** Playground
- **Self bound gravel** Small plaza
- **Concrete tiles paving** Footpaths
- **Timber decking** Quay promenade
- **Permeable paving** Parking stalls
- **Asphalt** Parking lots and carriageway
- **Pedestrian crossings**
- **Tactile paving** Crossings and steps

SITE FIXTURES

- **Built-in high-quality concrete bench** Water Promenade
- **Double-sided bench** Quay Promenade
- **Bench** Nature area
- **Picnic tables** Nature Area
- **Nature play equipment** Playground
- **Bike stands**
- **Lighting** refer to lighting specialist drawings
- **Custom planter with bench** Baysport courtyard
- **High quality concrete steps** with integrated planters Baysport terrace
- **Fence and gates** Baysport

PLANTING BEDS

- **Shrubs and Perennials** Raingardens
- **Shrubs and Perennials** Public Realm
- **Shrubs and Perennials** Baysport terrace and Courtyard
- **Cut Grass** Open Lawn
- **Ornamental grass** Woodland Understorey Grass
- **Exsiting reedbeds**
- **Exsiting grass**

TREES&SHRUBS

- **Proposed large trees** Height: >10 m Refer to Trees planting plan
- **Proposed medium trees** Height: 6-10 m Refer to Trees planting plan
- **Proposed small trees & multi-stem** Height: 3-6 m Refer to Trees planting plan
- **Proposed Hedge** Height: 1-1.5 m Refer to Trees planting plan
- **Existing trees**

DRAFT

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-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

CLIENT
ROSCOMMON CITY COUNCIL

Client address:
IRELAND

LOCATION:
HODSON BAY
WATERSPORT AND PUBLIC REALM

HODSON BAY CO. ROSCOMMON IRELAND

DOCUMENT NAME
LANDSCAPE LAYOUT (GA)

DATE
03-07-26

DOCUMENT CODE	STATUS	VERSION	DRAWN BY
001100	-	DRAFT	AF

PHASE	PROJECT NUMBER	SCALE	FORMAT
PLANNING	25-006	1-1000	A0

OKRA

OKRA Landschapsarchitecten
Oudegracht 23
3511 AH Utrecht
The Netherlands

TEAM / CONSULTANTS
OKRA
INOO
GVIC

FILE NAME
OKRA_HBWP_Public Realm Basemap.dwg

Appendix F – SuDS Maintenance Schedule

Hodson Bay - SuDS Maintenance Schedule

Rev 01 - 12/06/2026

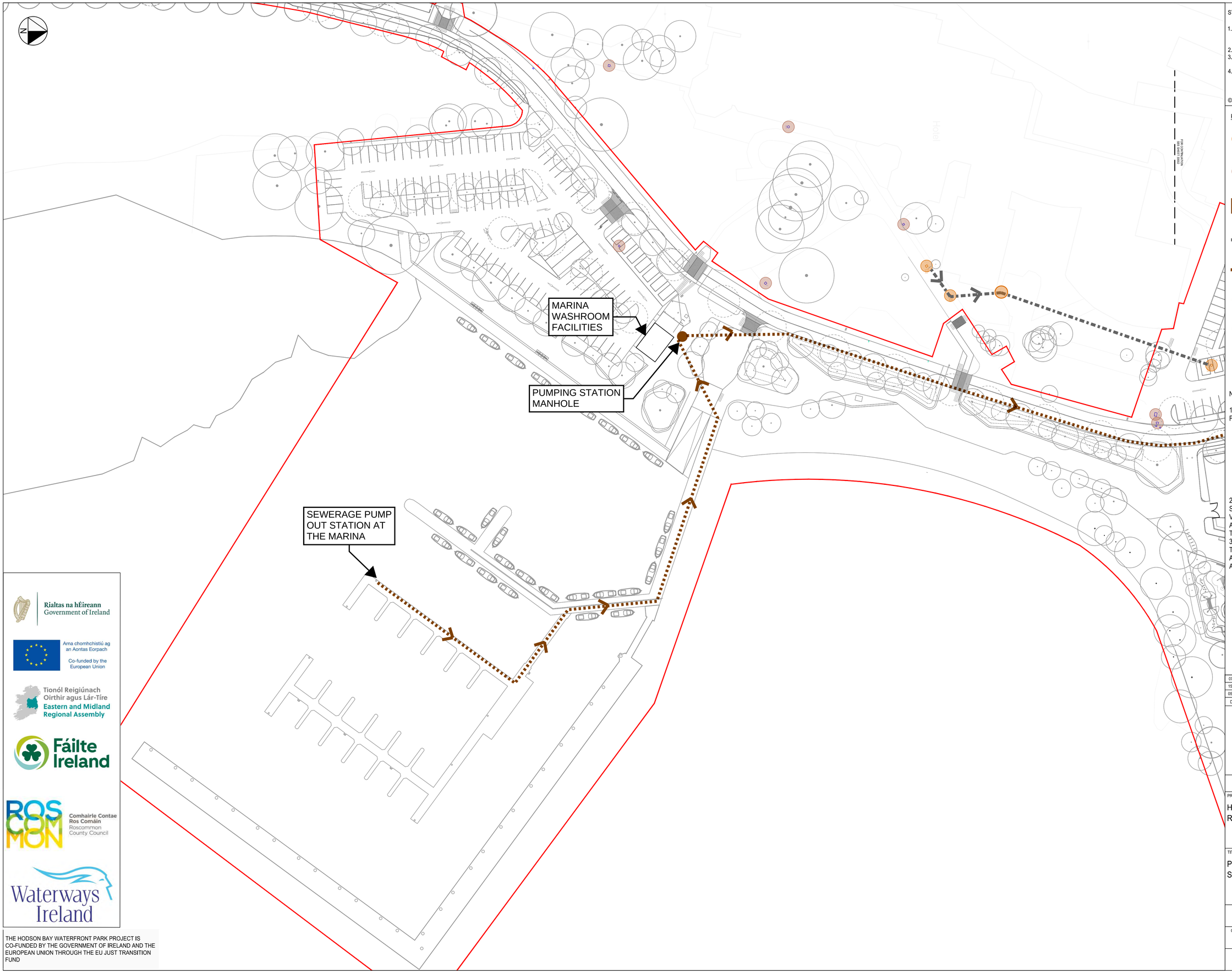
For Planning

The below table is extracted from The SuDS Manual 2015 (CIRIA C753)

Reference No.	Activity / Maintenance Schedule	Required Action	Frequency	Maintenance Responsibility
1	**Rain Gardens (Infiltration Basins)**			
	Regular maintenance	Remove litter, debris and trash	Monthly	Roscommon County Council
		Cut grass - for landscaped areas and access routes	Monthly (during growing season) or as required	
		Cut grass - meadow grass in and around basin	Half yearly: spring (before nesting season) and autumn	
		Manage other vegetation and remove nuisance plants	Monthly at start, then as required	
	Occasional maintenace	Reseed areas of poor vegetation growth	Annually, or as required	
		Prune and trim any trees and remove cuttings	As required	
		Remove sediment from pre-treatment system when 50% full	As required	
	Remedial actions	Repair erosion or other damage by reseeding or re-turfing	As required	
		Realign the rip-rap / erosion control measures	As required	
		Repair or rehabilitate inlets, outlets and overflows	As required	
		Rehabilitate infiltration surface using scarifying and spiking techniques if perforamce deteriorates	As required	
		Relevel uneven surfaces and reinstate design levels	As required	
	Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly	
		Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly	
		Inspect inlets and pre-treatment systems for silt accumulation; establish appropraite silt removal frequencies	Half yearly	
		Inspect infiltration surfaces for compaction and ponding	Monthly	
2	**Filter Drains**			
	Regular maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)	Roscommon County Council
		Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damange	Monthly	
		Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropraite silt removal frequencie	Six monthly	
		Remove sediment from pre-treatment devices	Six monthly, or as required	
	Occasional maintenance	Remove or control tree roots where they are encroaching the sites of the fitler drain, using recommended methods	As required	
		At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required	
		Clear perforated pipework of blockages	As required	
3	**Tree Pits**			
	Regular maintenance	Remove litter and debris	Monthly (or as required)	Roscommon County Council
		Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)	
		Inspect inlets and outlets	Inspect monthly	
	Occasional maintenance	Check tree health and amange tree appropriately	Annually	
		Remove silt build-up from inlets and surface and replace mulch as necessary	Annually, or as required	
		Water	As required (in periods of drought)	
	Monitoring	Inspect silt accumulation rates and establish appropriate removal frequencies	Half yearly	
4	**Detention Basins**			
	Regular maintenance	Remove litter and debris	Monthly	Roscommon County Council
		Cut grass – for spillways and access routes	Monthly (during growing season), or as required	
		Cut grass – meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)	
		Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)	
		Inspect inlets, outlets, and overflows for blockages, and clear if required	Monthly	
		Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly	
		Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required	
		Check any penstocks and other mechanical devices	Annually	
		Tidy all dead growth before start of growing season	Annually	
		Remove sediment from inlets, outlet and forebay	Annually (or as required)	
		Manage wetland plans in outlet pool – where provided	Annually	
	Occasional maintenance	Reseed areas of poor vegetation growth	As required	
		Prune and trim any trees and remove cuttings	Every 2 years, or as required	
		Remove sediments from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)	
	Remedial actions	Repair erosion or other damage by reseeding or re-turfing	As required	
		Realignment of rip-rap	As required	
		Repair/rehabilitation of inlets, outlets, and overflows	As required	
		Relevel uneven surfaces and reinstate design levels	As required	

Reference No.	Activity / Maintenance Schedule	Required Action	Frequency	Maintenance Responsibility
5	**Pervious Pavement**			
	Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto previous surface from adjacent impermeable areas as this area is most likely to collect the most sediment	Roscommon County Council
	Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required	
		Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements	
	Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required	
		Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required	
		Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)	
	Monitoring	Initial inspection	Monthly for three months after installation	
		Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in the first six months	
		Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually	
		Monitor inspection chambers	Annually	
6	**Proprietary Treatment Systems**			
	Regular maintenance	Remove litter and debris, follow product manufacturers operation and maintainance manual where provided.	Monthly or as required	Roscommon County Council
	Occasional maintenance	Inspection and monitoring	Regularly during first year of installation Every 6 months after the first year of installation (and after large storms)	
		Oil and Floatables removal	Annually, with sediment removal (and following a spill in the drainage area)	
		Sediment management. Removal of accumulated silt from system.	Annually or as required (and following a spill in the drainage area)	
	Remedial actions	Structure rehabilitation/repair	As required	

Appendix G – Foul Water Drainage Layout



STANDARD NOTES

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KEY:

- EXISTING FOUL WATER MANHOLE
- EXISTING UNKNOWN DRAINAGE MANHOLE
- EXISTING PUMPING STATION
- EXISTING FOUL WATER SEWER
- PROPOSED FOUL WATER SEWER
- FLOW DIRECTION
- PROPOSED FOUL WATER MANHOLE
- PROPOSED FOUL WATER RISING MAIN

NOTES:

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   1.4 HODSON BAY HOTEL SITE LAYOUT PREPARED BY MALACHI CULLEN & PARTNERS DATED DECEMBER 2003
2. UISCE ÉIREANN ASSET MAPS SHOW A PUMPING STATION AND NO FOUL WATER NETWORK IN SITE VICINITY. EXISTING FOUL WATER NETWORK IS ASSUMED TO BE PRIVATE WHICH THEN CONNECTS TO PUMPING STATION.
3. THE POSITIONS OF EXISTING SERVICES SHOWN IN THESE DRAWINGS ARE INDICATIVE ONLY BASED ON AVAILABLE RECORDS. THE LOCATION, CONDITION AND CAPACITY IS TO BE VERIFIED WITH SURVEY.

DATE	REV	DESCRIPTION	DRAWN	CHKD
07.08.26	2	PLANNING	MF	EB
15.07.26	1	PLANNING	MF	EB
05.06.26	0	INFORMATION	EB	KW

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PROJECT

HODSON BAY
ROSCOMMON COUNTY COUNCIL

TITLE

PROPOSED FOUL WATER
SHEET 1

DRAWING STATUS	STATUS CODE
PLANNING	P3

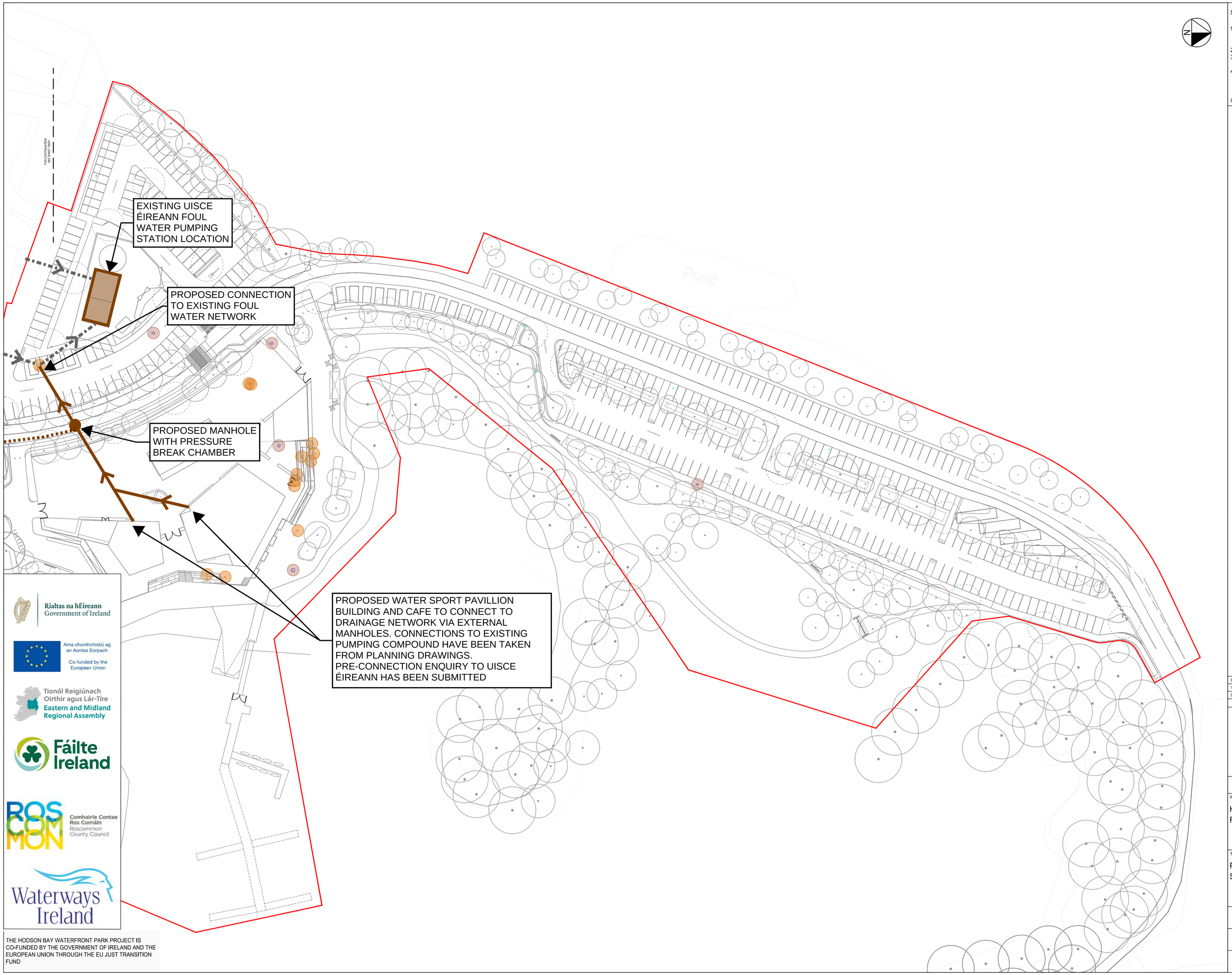
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31022-DR-CIV-CE-30011	2

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15.07.26	1	PLANNING	MF	EB
05.06.26	0	INFORMATION	EB	KW

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PROJECT

HODSON BAY
ROSCOMMON COUNTY COUNCIL

TITLE

PROPOSED FOUL WATER
SHEET 2

DRAWING STATUS	STATUS CODE
PLANNING	P3

CE PROJECT No.	SCALE @ A1	DATE CREATED	DRAWN	CHECKED
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DRAWING No.	REV
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Appendix H – Foul Water Flow Calculations

Reference	Calculation	Output

From Uisce Eirann Code of Practice for Wastewater Infrastructure (July 2020) Appendix C, the following flows have been rationalised for the development

Per person / activity / day	Persons	Flow (litres)	Total Flow (l)
Restaurants - Snack bars & bar meals	300	15	4500
Toilet (WC) per use	300	10	3000
Toilet (Urinal) per use	300	5	1500
Shower	300	40	12000
Health Club/ Sport Centre	300	50	15000

TOTAL AVERAGE FLOW **36000 l**

To convert to l/s

$36000 \div 8 \div 60 \div 60 = 1.25\ l/s$

Qavg. = 1.25l/s

Per person / activity / day	Persons	Flow (litres)	Total Flow (l)
Restaurants - Snack bars & bar meals	600	15	9000
Toilet (WC) per use	600	10	6000
Toilet (Urinal) per use	600	5	3000
Shower	600	40	24000
Health Club/ Sport Centre	600	50	30000

TOTAL PEAK FLOW **72000 l**

To convert to l/s

$72000 \div 8 \div 60 \div 60 = 2.3\ l/s$

Qww = 2.3 l/s

Reference	Calculation	Output

Using BS EN 12056-2:2000 Gravity drainage systems inside buildings, Table 2 Discharge Unit method:

Taking a frequency factor (K) = 0.70 (frequent use)

Appliance	Number	System I DU (l/s)	Total Flow (l/s)
Wash basin, bidet	16	0.50	8
Shower, with plug	4	0.80	3.2
Single urinal with cistern	2	0.80	1.6
Kitchen Sink	1	0.80	0.8
WC with 9,0l cistern	15	2.50	37.5

TOTAL (∑DU) = 51

$$Q_{ww} = K\sqrt{\sum DU}$$

where:

Q_{ww} = Waste water flowrate (l/s)
K = Frequency factor
ΣDU = Sum of discharge units

Qww = $0.7\sqrt{51}$
= 4.90 l/s

Taking the average flow as (Qww/3)

Qavg. = 1.63 l/s

Therefore, taking the more conservative value from both methods
Qavg. = 1.63 l/s
Qww = 4.9 l/s

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APPENDIX 2:
LANDSCAPE AND REPLANTING PLAN

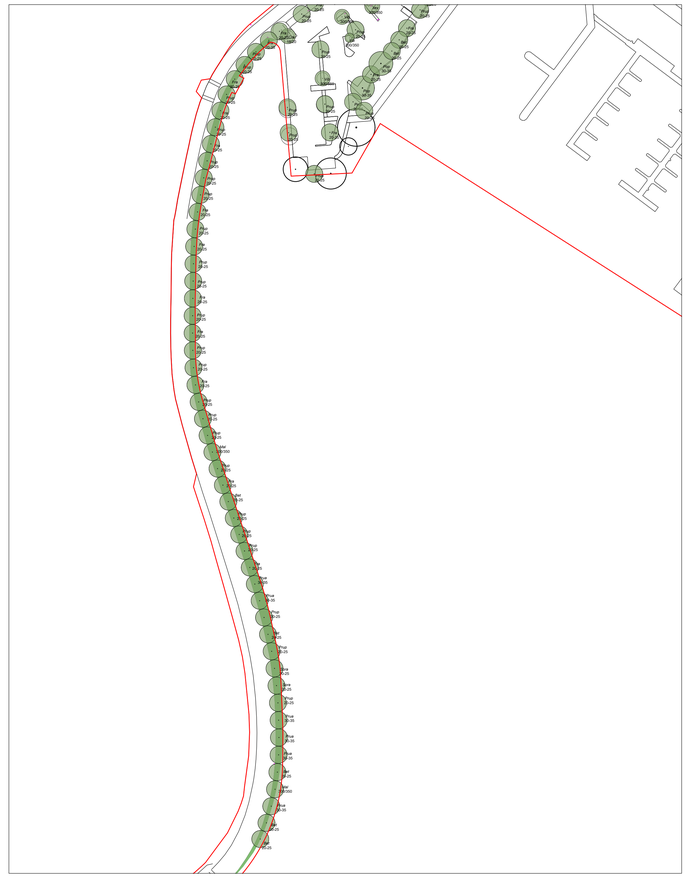
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Fáilte Ireland
Comhairle Contae Ros Comáin Roscommon County Council
Waterways Ireland

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund



ITEM / ELEMENT		NAME	% of sqm	Planting principle	Size	Amount (units)
TREES						
Large trees	Ag	Alnus glutinosa - Common alder			4-5 x tr WR30-35	4
	Ulg	Umus glabra - Elm			4-5 x tr WR30-35	2
	Que	Quercus robur - English oak			4-5 x tr WR30-35	6
	Pop	Populus tremula - Aspen			4-5 x tr WR30-35	6
Medium and small trees	Prup	Prunus padus - Bird cherry			4-5 x tr WR30-35	47
	Cra	Crataegus monoygna			3-4 x tr WR 18-20	23
	Prua	Prunus avium - Sweet cherry			4-5 x tr WR30-35	15
	Fra	Fraxinus excelsior			4-5 x tr WR30-35	30
	Sora	Sorbus aria			3-4 x tr WR20-25	10
	Bet	Betula pendula - SIlver birch			4-5 x tr WR30-35	27
	Sor	Sorbus aucuparia - Rowan			4-5 x tr WR30-35	9
Multi-Stem trees / shrubs	Euo	Euonymus europaeus - Spindle			Multi-stem 300/350	10
	Mal	Malus sylvestris			Multi-stem 300/350	9
	Vib	Viburnum opulus			Multi-stem 300/350	10
	Ilex	Ilex aquifolium - Common holly			Multi-stem 300/350	9
Wet Area Trees	Bep	Betula pubescens - Downy Birch			3-4 x tr WR30-35	15
	Sal	Salix alba - Willow			4-5x tr WR30-35	1
	Sac	Salix cinerea			Multi-stem 300/350	7
TREES PLANTED						
Total per size			68%		3-4 x tr WR30-35	162
Total per size			4%		3-4 x tr WR20-25	10
Total per size			10%		3-4 x tr WR 18-20	23
Total per size			19%		Multi-stem 300/350	45
Total						**240**

TREES SCHEDULE



Legend

GENERAL

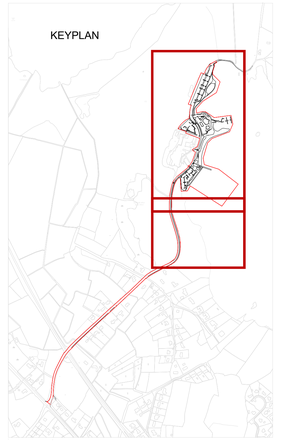
Project area

TREE LEGEND

Existing Trees

Proposed Trees

KEYPLAN



This drawing is based upon the following base drawings:
Deze tekening is gebaseerd op de volgende onderleggers:

TEKENING	OMSCHRIJVING	AANGELEVERD DOOR:	DATUM:
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
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N

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Eastern and Midland Regional Assembly

Fáilte Ireland

Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

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LOCATION:
HODSON BAY WATERFRONT PARK
PUBLIC REALM

HODSON BAY CO. ROSCOMMON, IRELAND

DOCUMENT NAME:
PROPOSED TREES PLAN

DATE: 10-08-26

DOCUMENT CODE	STATUS	VERSION	DRAWN BY
001201	-	R00	AF

PHASE	PROJECT NUMBER	SCALE	FORMAT
PLANNING	25-006	1-1000	A0

OKRA

OKRA Landschapsarchitecten
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The Netherlands

TEAM / CONSULTANTS

FILE NAME
25-006-HBWP_Planting Plan.dwg

APPENDIX 3:
LIGHTING PLAN

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Waterways Ireland

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

Hodson Bay

Lighting Report

August 2026

PREPARED FOR

Roscommon County Council

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund



EXTERNAL LIGHTING REPORT

Draft for Planning / Design Development
Prepared for: Civic
Project: Hodson Bay
Date: August 2026

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1 Introduction

This report has been prepared to describe the proposed external lighting strategy for the development and to demonstrate how the lighting installation has been designed to satisfy the operational, safety, environmental and planning objectives of the project.

The external lighting has been developed to provide safe and accessible movement throughout the site while ensuring that the quantity, distribution and duration of artificial light are appropriate for the intended use of each external area. The design seeks to achieve an appropriate balance between user safety, visual comfort, energy efficiency and the protection of the surrounding environment.

The proposed lighting installation has been designed using LED luminaires supported by verified manufacturer photometric data and has been modelled using recognised lighting calculation software to demonstrate compliance with the relevant lighting standards and project-specific design criteria. Consideration has been given to lighting uniformity, glare control, obtrusive light, energy consumption and the ecological sensitivity of the surrounding environment.

The lighting strategy forms part of the overall public realm design and has been coordinated with the proposed landscape, architectural and civil engineering layouts to provide a consistent and integrated external lighting solution. Luminaire locations, mounting heights and optical distributions have been selected to achieve the required maintained illuminance whilst minimising unnecessary light spill beyond the areas requiring illumination.

In developing the lighting strategy, consideration has also been given to the proximity of ecological habitats located adjacent to the development. Artificial lighting has the potential to influence the behaviour of nocturnal species through changes in light intensity, spectral composition and operating duration. The proposed lighting design therefore incorporates a range of measures intended to reduce potential disturbance to sensitive ecological receptors whilst maintaining an appropriate level of illumination for the safe use of the development.

These measures include the use of warm white 2700 K LED luminaires, precision optical control, shielding where required, careful luminaire orientation and an intelligent lighting control strategy that progressively reduces light output during periods of reduced site activity. Collectively, these measures seek to minimise obtrusive light, reduce sky glow and limit unnecessary illumination of surrounding habitats.

The external lighting has been designed around the principle of providing **the right level of light, in the right location, for the right duration**. Lighting has therefore been limited to those areas where illumination is required to support safe movement, accessibility and operational requirements, avoiding excessive illumination or ornamental lighting that would increase extinction through the lighting management system. This operating philosophy contributes to a reduction in operational energy consumption while also

reducing the duration and intensity of artificial lighting during periods when ecological activity is generally greatest.

Lighting calculations undertaken as part of the design process demonstrate that the proposed installation achieves the project lighting criteria whilst maintaining a minimum overall uniformity (U_0) of 0.40 throughout the principal circulation routes and external spaces. The design has been developed to provide consistent illumination, reduce excessive contrast between illuminated and non-illuminated areas and improve visual comfort for pedestrians, cyclists and other site users.

This report outlines the design standards adopted, the lighting philosophy, ecological considerations, lighting control strategy, performance criteria and environmental mitigation measures incorporated within the proposed external lighting installation. It should be read in conjunction with the external lighting drawings, luminaire schedule, lighting calculations and manufacturer's technical information that collectively form the external lighting design package.

2 Proposed Development

The proposed development comprises a coordinated external lighting installation serving the principal vehicle, pedestrian and public realm areas throughout the site. The lighting design has been developed to provide a safe, accessible and visually comfortable environment for all users whilst supporting the architectural, landscape and environmental objectives of the development.

The lighting installation forms an integral part of the public realm infrastructure and has been coordinated with the proposed civil, architectural and landscape layouts to ensure that luminaires are appropriately located to provide effective illumination without adversely affecting the visual character of the development or surrounding environment.

The external lighting has been designed using high-efficiency LED luminaires incorporating precision optical distributions to direct light only where it is required. Luminaire locations, mounting heights and optical characteristics have been selected to achieve the required lighting performance whilst minimising upward light, glare and unnecessary spill light beyond the development boundary.

The proposed installation has been developed using recognised lighting design software and manufacturer-verified photometric data to demonstrate compliance with the relevant lighting standards and project-specific performance criteria.

2.1 External Lighting Areas

The proposed lighting installation provides illumination to the following external areas:

- Primary pedestrian routes;
- Secondary pedestrian links;
- Shared pedestrian and vehicular surfaces;
- Cycle routes;
- Public open spaces and landscaped areas;
- Car parking and vehicle circulation areas;
- Building entrances and access routes;
- Service and maintenance access areas.

Each area has been individually assessed to determine the appropriate lighting class, maintained illuminance, uniformity and control strategy based upon the anticipated level of activity, operational requirements and surrounding environmental conditions.

The lighting design has been developed to provide clear route definition, good facial recognition and safe movement throughout the development whilst avoiding excessive illumination of areas where lighting is not operationally required.

2.2 Lighting Design Principles

The proposed lighting strategy has been developed around the following design principles:

- Provide safe movement for pedestrians, cyclists and vehicles.
- Maintain appropriate horizontal illuminance for each lighting zone.
- Achieve a minimum maintained overall uniformity (U_0) of 0.40 throughout the principal circulation routes.
- Minimise glare and excessive contrast between illuminated and non-illuminated areas.
- Reduce upward light output and light spill beyond the site boundary.
- Minimise operational energy consumption through intelligent lighting controls.
- Protect adjacent ecological habitats by reducing unnecessary artificial lighting.
- Provide a durable, maintainable and energy-efficient lighting installation.

These principles have been used in the selection of luminaires, mounting heights, optical distributions, lighting controls and operating philosophy adopted throughout the development.

2.3 Ecological Context

The development is located adjacent to areas that may provide habitat, commuting corridors and foraging opportunities for bats, birds and other nocturnal wildlife. The external lighting strategy has therefore been developed with due consideration to the potential effects of artificial lighting on these ecological receptors.

Rather than increasing the overall quantity of lighting, the design seeks to provide the minimum level of illumination necessary to satisfy operational and safety requirements. This has been achieved through careful luminaire selection, precision optical control and the implementation of a site-wide lighting control strategy that progressively reduces light output during periods of lower activity.

All external luminaires have been specified with a correlated Colour temperature of 2700 K, reducing the short wavelength component of the emitted light when compared with higher Colour temperature sources. This approach forms part of the overall strategy to reduce potential disturbance to surrounding habitats whilst maintaining appropriate lighting levels for the safe operation of the development.

2.4 Lighting Control Philosophy

The external lighting installation shall operate using the U23 dimming profile. The lighting management system maintains full lighting output during periods of highest period of activity before progressively reducing illumination as occupancy decreases.

The proposed control strategy is summarised below:

Operating Period	Luminaire Output
Sunset – 20:00	100%
20:00 – 22:00	63%
22:00 – 07:00	36%
After 07:00	Automatic OFF when daylight reaches approximately 18 lux

This operating profile reduces energy consumption, extends luminaire life and limits the duration and intensity of artificial lighting during periods when ecological sensitivity is greatest.

For the road class, the lit the car parks and walkways in line with Table 7 (7.2) of BS EN 12464-2:2024, which is a 10lux average, with 40% uniformity. As the roadway runs alongside the footpath, it has received the same level of lighting which is equivalent to BS EN 13201-2:2015, P2 Class.

2.5 Design Coordination

The external lighting design has been coordinated with the proposed architectural, landscape and civil engineering layouts to ensure that the installation integrates with the overall development.

Where practical, luminaires have been positioned to avoid conflict with trees, planting, street furniture, signage and other site infrastructure while maintaining the required lighting performance. Optical distributions and luminaire orientation have been selected to minimise glare and obtrusive light and to avoid unnecessary illumination of adjacent properties and ecological features.

The proposed installation has also been developed to facilitate future maintenance activities, with consideration given to luminaire accessibility, replacement intervals and operational resilience.

3 External Lighting

The proposed external lighting installation has been developed to provide a safe, functional and sustainable lighting solution that supports the operational requirements of the development while minimising the environmental effects of artificial lighting.

The lighting design has been prepared using recognised lighting design software and manufacturer-verified photometric data. Throughout the design process, consideration has been given to user safety, accessibility, visual comfort, energy efficiency, maintenance requirements and the protection of surrounding ecological habitats.

The lighting strategy has been based upon the principle of providing the **appropriate quantity of light, at the appropriate location, for the appropriate duration**. Rather than maximising illumination levels across the site, the design seeks to provide lighting only where operationally required while limiting unnecessary light spill into adjacent areas.

The proposed installation has been coordinated with the architectural, civil and landscape design to ensure that lighting columns, bollards and building-mounted luminaires integrate with the wider development whilst maintaining the required lighting performance.

The design philosophy incorporates the following principal objectives:

- Provide safe movement for pedestrians, cyclists and vehicles.
- Deliver appropriate maintained illuminance for each external space.
- Maintain a minimum overall uniformity (U_0) of 0.40 throughout principal circulation routes.
- Reduce glare and excessive luminance contrast.
- Minimise upward light output and sky glow.
- Limit spill light beyond the development boundary.
- Protect adjacent ecological habitats through careful lighting design.
- Reduce operational energy consumption using intelligent lighting controls.
- Provide a lighting installation that is durable, maintainable and suitable for long-term operation.

The following sections describe the engineering methodology adopted throughout the external lighting design.

3.1 Design Standards

The proposed lighting installation has been designed in accordance with current industry guidance and recognised lighting standards applicable to external public realm developments.

The principal standards and guidance documents considered during the design include:

- **IS EN 13201** – Road Lighting.
- **BS 5489** – Code of Practice for the Design of Road Lighting.
- **BS EN 12464-2** – Lighting of Outdoor Workplaces.
- **CIBSE Lighting Guide LG6** – The Outdoor Environment.
- **CIE 150** – Guide on the Limitation of the Effects of Obtrusive Light.
- **Institution of Lighting Professionals (ILP)** – Guidance Notes for the Reduction of Obtrusive Light.
- **Bat Conservation Trust / ILP Guidance Note 08/23** – Bats and Artificial Lighting at Night.
- **Technical Guidance Document Part M** – Access and Use.
- Any project-specific Employer's Requirements and local authority lighting specifications, where applicable.

These documents establish the framework for determining the appropriate maintained illuminance, lighting uniformity, glare limitation, accessibility requirements and environmental performance of the proposed installation.

Where different guidance documents provide alternative recommendations, the design has adopted the most appropriate criteria having regard to the intended use of each area, user safety and the surrounding environmental context.

3.2 Design Philosophy

The external lighting strategy has been developed around a performance-based design philosophy that balances operational requirements with environmental responsibility.

The primary purpose of the lighting installation is to facilitate safe movement throughout the development during the hours of darkness. Lighting has therefore been concentrated on pedestrian routes, shared surfaces, vehicle circulation areas, public spaces and access points where illumination is necessary to support safe use.

The design avoids unnecessary illumination of landscaped areas and ecological features that do not require artificial lighting for operational purposes. This approach assists in reducing energy consumption while limiting the extent of artificial lighting within the wider environment.

Lighting calculations have been undertaken using maintained values to ensure that the installation continues to satisfy the required performance throughout the maintenance cycle rather than only upon initial installation.

Where practical, luminaires have been positioned outside primary sight lines to reduce glare whilst maintaining effective illumination of pedestrian and vehicle routes.

Uniform lighting distribution has been prioritised over excessive average illuminance, as consistent lighting conditions provide improved visual comfort and reduce areas of excessive contrast.

The proposed installation has also been designed to facilitate efficient maintenance through the selection of durable luminaires, long-life LED light sources and programmable lighting controls.

3.3 Biodiversity Strategy

The proposed development is located adjacent to areas that may provide habitat, commuting corridors and foraging opportunities for bats, birds and other nocturnal wildlife. The lighting strategy has therefore been developed to minimise the potential effects of artificial lighting on these ecological receptors while maintaining an appropriate level of illumination for the safe operation of the development.

Artificial lighting can influence wildlife through changes in light intensity, spectral distribution and operating duration. The lighting design has therefore sought to minimise these effects by limiting both the quantity of light emitted and the period for which lighting operates at full output.

All external luminaires have been specified with a correlated Colour temperature of 2700 K. Warm white light sources emit a lower proportion of short wavelength (blue) light than higher Colour temperature sources and are generally recognised as a more appropriate choice where lighting is in proximity to ecologically sensitive environments.

The lighting installation has been designed using precision optical distributions that direct light towards the intended task areas while reducing illumination of adjacent vegetation, habitat corridors and boundary features. Rear light shields have been incorporated where required to further reduce spill light beyond the operational areas of the development.

The ecological lighting strategy is further enhanced through the implementation of the U23 lighting control profile, which progressively reduces light output during periods of reduced activity. This approach reduces the duration and intensity of artificial lighting during the hours when many nocturnal species are most active.

Collectively, the use of 2700 K LED luminaires, controlled optical distributions, scheduled dimming and careful luminaire orientation forms an integrated lighting strategy that seeks to minimise potential disturbance to surrounding habitats while providing a safe and accessible environment for development users.

3.4 Lighting Controls

The proposed external lighting installation incorporates an intelligent lighting management system designed to provide illumination only when required whilst reducing operational energy consumption and limiting the environmental effects of artificial lighting.

The lighting control philosophy has been developed to reflect the anticipated pattern of site occupancy throughout the evening and overnight periods. During periods of higher pedestrian and vehicle activity, the lighting installation operates at full design output to provide the required lighting performance. As site activity decreases, luminaire output is progressively reduced through the implementation of the **U23 lighting profile**.

Unlike conventional switching arrangements, the proposed control strategy maintains an appropriate level of illumination throughout the hours of darkness whilst avoiding unnecessary operation at full output when lighting demand is significantly reduced.

U23 Dimming Profile

The external lighting installation shall operate in accordance with the following control profile.

Operating Period	Luminaire Output
Sunset – 20:00	100%
20:00 – 22:00	63%
22:00 – 07:00	36%
After 07:00	Automatic OFF when daylight reaches approximately 18 lux

Where ambient daylight reaches the required illuminance prior to 07:00 hours, the lighting management system shall automatically extinguish the installation through the daylight sensor input. This ensures that artificial lighting is not operated unnecessarily during sunrise conditions.

The staged reduction in lighting output has been selected to provide an appropriate balance between operational safety and environmental protection. Full lighting output is maintained during periods of greatest public activity before progressively reducing the intensity of artificial lighting during the hours when pedestrian movement is significantly lower.

The implementation of the U23 profile provides several operational benefits including:

- Reduced electrical energy consumption.
- Lower annual carbon emissions.
- Increased luminaire and driver life expectancy.

- Reduced maintenance frequency.
- Reduced upward light output during the hours of greatest ecological sensitivity.
- Improved compliance with the environmental objectives of the development.

The lighting calculations presented within this report demonstrate that the installation continues to satisfy the project lighting criteria throughout each stage of the U23 dimming profile.

Time	Output
Sunset–20:00	100%
20:00–22:00	63%
22:00–07:00	36%
After 07:00	Automatic OFF when daylight reaches approximately 18 lux

The U23 profile reduces the duration and intensity of artificial lighting during periods of reduced activity, reducing energy consumption and limiting potential ecological effects while maintaining safe illumination.

3.5 Lighting Classes and Performance Criteria

The external lighting design has been developed to provide lighting levels appropriate to the intended use of each external area. Individual lighting zones have been assessed in accordance with the relevant lighting standards and allocated the appropriate lighting class based upon pedestrian activity, vehicular movement, accessibility requirements and operational risk.

Rather than adopting a single lighting level throughout the development, each area has been individually assessed to ensure that illumination is proportionate to its intended function. This approach assists in reducing unnecessary energy consumption and minimises the extent of artificial lighting across the development.

The principal lighting zones comprise:

- Primary pedestrian routes.
- Secondary pedestrian connections.
- Shared pedestrian and vehicle areas.
- Cycle routes.
- Public realm spaces.
- External parking areas.
- Building entrances.

- Service and maintenance areas.

Maintained horizontal illuminance has been selected to satisfy the requirements of the relevant lighting class while maintaining good visual comfort and clear route definition.

To improve the quality of the illuminated environment, the lighting installation has been designed to achieve a minimum maintained overall uniformity (U_0) of 0.40 across all principal pedestrian circulation routes and public spaces. Maintaining this level of uniformity reduces excessive contrast between illuminated and non-illuminated areas, assists hazard recognition and improves facial recognition between users.

Where accessibility requirements apply, the lighting design has also considered the recommendations contained within Technical Guidance Document Part M and BS 8300 to ensure that routes remain safe and easily navigable during the hours of darkness.

3.6 Lighting Calculations and Performance

Lighting calculations have been undertaken using recognised lighting design software based upon manufacturer-verified photometric data.

The calculation model incorporates the proposed luminaire locations, mounting heights, optical distributions, surface reflectance values and maintenance factors appropriate to the development.

The purpose of the lighting calculations is to demonstrate that the proposed installation satisfies the required maintained illuminance and lighting uniformity throughout the operational life of the installation.

The lighting design has been assessed using maintained lighting values rather than initial lighting values. This approach allows for the gradual reduction in luminaire performance resulting from LED lumen depreciation, environmental conditions and normal maintenance intervals.

Calculation grids have been established in accordance with the relevant lighting standards for each lighting zone, ensuring that average illuminance, minimum illuminance and overall uniformity have been assessed using recognised engineering practice.

The lighting calculations confirm that:

- The required maintained illuminance has been achieved within each lighting zone.
- A minimum maintained overall uniformity (U_0) of **0.40** has been achieved across the principal circulation routes.
- Light distribution remains consistent throughout the development.
- Excessive localised brightness has been avoided.

- Safe pedestrian movement can be maintained throughout the operational periods defined by the U23 lighting profile.

The proposed lighting layout has also been reviewed to ensure that the reduction in luminaire output associated with the U23 profile continues to provide appropriate illumination during periods of reduced site activity. Please see Appendix C for external lighting drawings where the value charts of lux levels expected are indicated.

3.7 Obtrusive Light and Environmental Mitigation

The external lighting strategy has been developed to minimise the effects of obtrusive light on neighbouring properties, public spaces and surrounding ecological habitats.

The lighting design has considered the four principal components of obtrusive light:

- Light spills beyond the site boundary.
- Sky glow.
- Disability and discomfort glare.
- Light intrusion into adjacent properties.

To minimise these effects, the following measures have been incorporated within the design:

- Full cut-off LED luminaires.
- Precision optical distributions selected for each lighting application.
- Rear light shields where required.
- Appropriate mounting heights.
- Minimal luminaire tilt.
- Careful luminaire orientation.
- Controlled luminaire spacing.
- Intelligent dimming through the U23 lighting profile.

Collectively, these measures ensure that light is directed only towards areas requiring illumination, reducing unnecessary upward light and minimising illumination of adjacent vegetation and ecological corridors.

The proposed installation has been developed in accordance with the principles contained within the Institution of Lighting Professionals' *Guidance Notes for the Reduction of Obtrusive Light* and CIE 150.

The implementation of warm white 2700 K luminaires together with reduced overnight operating levels forms an integral part of the environmental mitigation strategy adopted throughout the development.

3.8 Luminaire Selection

The proposed luminaires have been selected to provide a robust, energy-efficient and maintainable lighting installation capable of delivering the required lighting performance throughout the design life of the development.

All luminaires incorporated within the design utilise LED light sources with a correlated Colour temperature of 2700 K. The consistent use of warm white lighting across the development contributes to visual continuity whilst supporting the ecological objectives of the project.

Luminaire selection has been based upon the following criteria:

- Verified photometric performance.
- High optical efficiency.
- Full cut-off light distribution.
- Compatibility with the U23 dimming profile.
- Low maintenance requirements.
- Long service life.
- Appropriate ingress protection (IP) and impact resistance (IK) ratings for the installation environment.
- Availability of rear light shields and specialist optical accessories where required.

Where luminaires are located adjacent to environmentally sensitive areas, optical control has been enhanced using asymmetric distributions and shielding to reduce light spill beyond the operational areas of the development.

The final luminaire schedule identifies the proposed fittings, optical distributions, mounting arrangements, electrical characteristics and control interfaces associated with each lighting zone.

4 Design Assumptions, Energy & Sustainability

4.1 Design Assumptions

The external lighting design has been prepared using recognised lighting design software and manufacturer verified photometric data. The lighting calculations have been developed using a series of engineering assumptions that reflect the anticipated operating conditions and long-term performance of the installation.

Unless otherwise noted, the following assumptions have been adopted throughout the design process.

Luminaire Performance

Lighting calculations have been undertaken using manufacturer-issued photometric files representing the proposed luminaires and optical distributions. All photometric data is based upon certified laboratory testing and is considered representative of the installed lighting performance.

The proposed lighting installation utilises LED luminaires with a Correlated Colour Temperature (CCT) of 2700 K throughout the development.

Maintenance Factor

Lighting calculations have been completed using a maintained lighting approach rather than initial lighting levels.

A maintenance factor has been applied within the lighting calculations to account for:

- LED lumen depreciation
- Driver performance
- Optical contamination
- Environmental conditions
- Planned maintenance intervals

The adopted maintenance factor ensures that the required lighting performance is maintained throughout the operational life of the installation rather than immediately following commissioning.

Surface Reflectance

Surface reflectance values have been selected to represent typical finishes proposed throughout the development.

Where project-specific finishes are unavailable, conservative engineering assumptions have been adopted to avoid overestimating reflected light within the lighting calculations.

Reflectance values will be reviewed during detailed design should material specifications change.

Mounting Heights

Luminaire mounting heights have been selected to achieve an appropriate balance between:

- Lighting uniformity
- Glare control
- Column spacing
- Maintenance access
- Visual appearance
- Environmental impact

Mounting heights have also been coordinated with the architectural and landscape proposals to minimise visual intrusion whilst maintaining the required lighting performance.

Optical Distributions

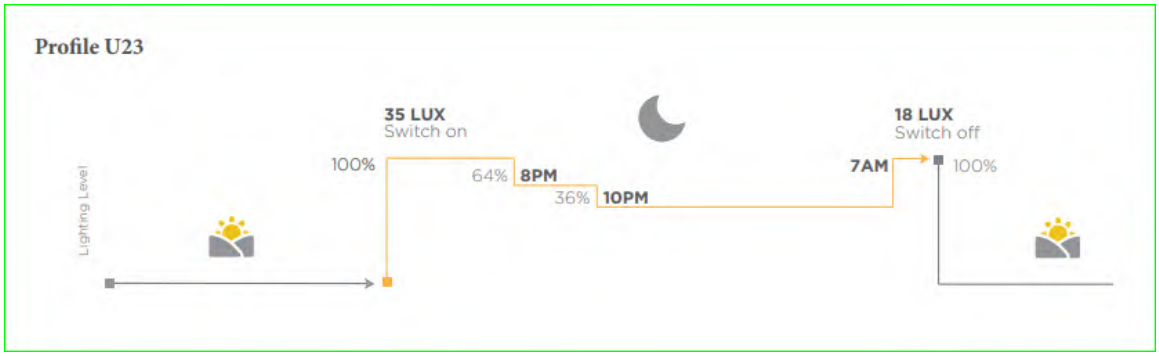
Each luminaire has been selected using the most appropriate optical distribution for its intended application.

The use of application-specific optics enables the lighting to be directed only towards operational areas, reducing unnecessary light spills and improving overall lighting efficiency.

Where luminaires are positioned adjacent to environmentally sensitive areas, rear light shields and asymmetric optical distributions have been incorporated where necessary.

Lighting Controls

The lighting calculations are based upon operation of the **U23 Lighting Profile**.



Time	Output
Sunset – 20:00	100%
20:00 – 22:00	63%
22:00 – 07:00	36%
After 07:00	Automatic OFF when daylight reaches approximately 18 lux

The daylight control strategy assumes that the lighting management system continuously monitors ambient daylight levels and extinguishes the installation when approximately 18 lux has been achieved.

Uniformity

The lighting installation has been designed to achieve a minimum maintained overall uniformity (U_0) of 0.40 across all principal pedestrian routes and public spaces.

Uniformity has been prioritised throughout the design in preference to excessive average illuminance to improve:

- Pedestrian comfort
- hazard recognition
- facial recognition
- accessibility
- visual adaptation

Ecological Design Assumptions

The lighting strategy has been developed on the assumption that surrounding ecological habitats remain sensitive to artificial lighting during the hours of darkness.

Accordingly, the following principles have been adopted throughout the design:

- All luminaires are 2700 K.
- Lighting is limited to operational areas only.
- Upward light output is minimised.
- Precision optics reduce unnecessary spill light.
- U23 scheduled dimming reduces lighting intensity during periods of reduced activity.
- Lighting is extinguished automatically when sufficient natural daylight is available.

Collectively, these measures seek to minimise potential disturbance to bat commuting routes, bird roosting and nesting locations, and other nocturnal wildlife while maintaining a safe environment for users.

4.2 Energy Efficiency

The external lighting installation has been designed to minimise operational energy consumption without compromising the lighting performance required for safe operation of the development.

The combination of high-efficiency LED luminaires and intelligent lighting controls significantly reduces annual energy demand when compared with conventional external lighting installations.

The implementation of the U23 Lighting Profile provides progressive reductions in connected electrical load during periods of reduced occupancy whilst maintaining lighting levels appropriate for the anticipated use of the site.

4.3 Sustainability

The proposed lighting strategy contributes towards the overall sustainability objectives of the development through:

- Reduced operational energy consumption.
- Reduced maintenance requirements.
- Extended luminaire service life.
- Lower carbon emissions.
- Reduced light pollution.
- Reduced ecological impact.
- High-efficiency LED technology.
- Intelligent lighting controls.
- Warm white **2700 K** lighting throughout the development.

The lighting strategy has been developed to balance user safety, operational efficiency and environmental protection whilst supporting the long-term sustainability objectives of the project.

4.4 Design Limitations

The external lighting design presented within this report has been prepared using the architectural, civil engineering and landscape information available at the time of design together with manufacturer-verified photometric data for the proposed luminaires.

The lighting calculations and performance assessments are based upon the design assumptions outlined within this report and should be considered in conjunction with the associated lighting drawings, luminaire schedule and calculation outputs.

The proposed lighting installation has been developed to satisfy the project-specific design criteria, relevant lighting standards and environmental objectives based upon the current site layout. Should the development layout, finished ground levels, landscaping proposals, mounting heights, luminaire locations or luminaire specifications be revised during the detailed design or construction stages, the lighting calculations should be reviewed to confirm continued compliance with the required performance criteria.

Similarly, any significant changes to surrounding land use, adjacent developments or identified ecological constraints may influence the lighting strategy and may require the lighting design to be reassessed.

This report should therefore be read as part of the overall design package and not in isolation. The conclusions presented are dependent upon the implementation of the lighting installation generally in accordance with the accompanying drawings, luminaire schedule, control philosophy and project specifications.

The proposed lighting calculations are based upon manufacturer photometric data current at the time of issue. Where alternative luminaires are proposed during procurement, replacement luminaires shall demonstrate equivalent photometric performance, optical control, Colour temperature, energy efficiency and control compatibility before being incorporated into the design. Any proposed substitutions should be supported by updated lighting calculations demonstrating compliance with the project design criteria.

The implementation of the U23 lighting profile, the specified 2700 K correlated Colour temperature, the adopted minimum maintained overall uniformity ($U_0 = 0.40$) and the environmental mitigation measures described within this report form integral components of the overall lighting strategy. Any modification to these parameters should be reviewed by the lighting designer to ensure that the operational, environmental and planning objectives of the development continue to be satisfied.

The external lighting design should be reviewed following installation and commissioning to confirm that the completed installation has been constructed in accordance with the approved design documentation and that the intended lighting performance has been achieved. Where required by the Client or Planning Authority, post-installation verification may include on-site measurements of illuminance, lighting uniformity and obtrusive light to demonstrate compliance with the approved lighting strategy.

5 Summary and Conclusions

5.1 General

This report has presented the proposed external lighting strategy for development and the engineering principles adopted throughout the design process. The lighting installation has been developed to provide a safe, accessible and energy-efficient environment while minimising the effects of artificial lighting on neighbouring properties and the surrounding environment.

The proposed lighting design has been prepared using recognised lighting design software together with manufacturer-verified photometric data and has been developed in accordance with the relevant industry standards and guidance applicable to external lighting installations.

Throughout the design process, consideration has been given to operational safety, visual comfort, accessibility, energy efficiency, maintenance requirements and environmental protection. The proposed installation has been coordinated with the architectural, civil and landscape layouts to ensure that the lighting integrates with the wider development while delivering the required lighting performance.

5.2 Lighting Performance

The proposed external lighting installation has been designed to provide appropriate maintained illuminance for the intended use of each external area while maintaining a consistent quality of illumination throughout the development.

Lighting calculations demonstrate that the proposed installation satisfies the project lighting criteria and achieves a minimum maintained overall uniformity (U_0) of 0.40 throughout the principal circulation routes and external public spaces. The adoption of this performance criterion assists in reducing excessive contrast, improving visual comfort and supporting the safe movement of pedestrians, cyclists and authorised vehicles.

The lighting strategy has prioritised uniformity and optical control rather than excessive average illuminance, ensuring that illumination is provided only where operationally required.

5.3 Environmental Considerations

Environmental performance has been a key consideration throughout the development of the lighting strategy.

All external luminaires have been specified with a correlated Colour temperature of 2700 K, reducing the proportion of short wavelength light emitted when compared with higher Colour temperature sources. This forms part of the overall environmental lighting strategy intended to reduce potential disturbance to surrounding ecological habitats while maintaining an appropriate level of illumination for users of the development.

The proposed installation incorporates precision optical distributions, full cut-off luminaires and rear light shielding where required to minimise upward light output, glare and unnecessary spill light beyond the operational areas of the site.

The lighting strategy has also been developed to minimise the duration and intensity of artificial lighting during periods of reduced activity through the implementation of the U23 lighting control profile.

5.4 Lighting Controls

The lighting management system incorporates the U23 dimming profile, providing automatic reductions in lighting output throughout the evening and overnight periods.

The proposed operating profile consists of:

Operating Period	Luminaire Output
Sunset – 20:00	100%
20:00 – 22:00	63%
22:00 – 07:00	36%
After 07:00	Automatic OFF when daylight reaches approximately 18 lux

This operating philosophy reduces operational energy demand while maintaining lighting levels appropriate for the anticipated use of the development. The reduction in light output during periods of lower occupancy also contributes to the environmental objectives of the project by limiting unnecessary artificial lighting during the hours when ecological sensitivity is generally greatest.

5.5 Sustainability

The proposed external lighting installation has been designed to provide long-term operational efficiency using high-performance LED luminaires, intelligent lighting controls and carefully selected optical distributions.

The combined use of 2700 K LED luminaires, precision optical control and the U23 lighting profile reduces annual energy consumption, extends luminaire service life and minimises future maintenance requirements while supporting the environmental objectives of the development.

The lighting strategy has therefore been developed to balance operational safety, visual comfort, energy efficiency and environmental protection in accordance with current best practice for external lighting design.

5.6 Compliance Statement

Based upon the lighting calculations, design assumptions and information available at the time of preparation, the proposed external lighting installation has been designed to satisfy the project performance criteria and the applicable guidance documents referenced within this report.

The design demonstrates compliance with the required maintained lighting performance whilst incorporating measures to:

- Provide safe and accessible external illumination.
- Achieve a minimum maintained overall uniformity (U_0) of 0.40.
- Minimise glare and obtrusive light.
- Reduce sky glow and light spill.
- Limit potential impacts on surrounding ecological habitats.
- Reduce operational energy consumption through intelligent lighting controls.
- Support the long-term sustainability objectives of the development.

Any significant revisions to the development layout, lighting equipment, mounting arrangements or project requirements should be reviewed by the lighting designer to ensure continued compliance with the approved lighting strategy.

5.7 Conclusion

The proposed external lighting design provides a coordinated, efficient and environmentally responsible lighting solution that has been specifically developed to meet the operational requirements of the development while minimising unnecessary artificial lighting.

The design incorporates a consistent 2700 K lighting specification throughout the development, a site-wide U23 intelligent dimming profile, precision optical control and a minimum maintained overall uniformity (U_0) of 0.40, providing a balanced lighting solution that supports safe movement, reduces operational energy consumption and minimises potential disturbance to surrounding ecological receptors.

The lighting strategy has been prepared in accordance with recognised engineering principles and current industry guidance and is considered suitable to support the planning, detailed design and construction stages of the project. Subject to the implementation of the lighting installation in accordance with the accompanying drawings, luminaire schedule, control philosophy and design assumptions contained within this report, the proposed scheme will provide a robust, maintainable and sustainable external lighting installation capable of satisfying both the operational and environmental objectives of the development.

Appendix A

Luminaire Drawing Symbols & Legend

All luminaires in this box are mounted on 6m Columns/Poles.

Any of the symbols with a GREEN box sourround shows the 6m mounting heights.

This is being used to clean up the main lighting area for ease of review.

All luminaires in this box are mounted on 4m Columns/Poles.

Any of the symbols with a BLUE box sourround shows the 4m mounting heights.

This is being used to clean up the main lighting area for ease of review.

Schedule

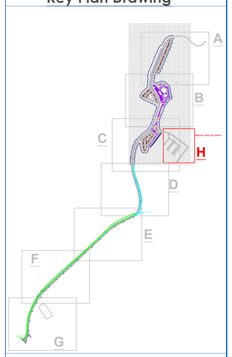
Symbol	Label	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	A1	1	PEB.1.LM102.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	7225	66
	B1	2	PEB.1.LM092.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	8336	57
	C1	6	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5531	50
	D1	7	PEB.1.LM072.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4838	44
	F1	3	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4154	38
	G1	5	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	4645	32
	G2	4	PEB.1.LM052.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	3470	32
	H1	3	PEB.1.LM102.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	9728	66
	I1	10	PEB.1.LM082.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5743	50
	J1	5	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5587	38
	K1	2	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5576	38
	L1	12	SLI.1.LA042.NR	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4540	34
	M1-6	2	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4311	38
	M1-4	9	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4311	38
	N1	8	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5531	50
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	P1	2	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5587	38
	Q1	6	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	4645	32
	QW	1	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	4645	32
	R1	7	PEB.1.LM072.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5022	44
	S1	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5562	38
	SW	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5562	38
	TW	12	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5576	38
	U1	58	SLI.1.LA042.AY	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4412	34
	ZW	1	PEB.1.LM072.AY	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	6514	44
	BL	74	Unknown	Generic Square Pedestal/Light Bollard Louvre Lebs/0.7 - 1000mm	400	5

Statistics

Description	Symbol	Avg	Min	Min/Avg
Car Park 1 - 10Lux/0.25Uo	+	15 lux	4 lux	0.27
Car Park 2 - 10Lux/0.25uo	+	15 lux	4 lux	0.27
Car Park 3 - 10Lux/0.25Uo	+	12 lux	6 lux	0.50
Car Park 4 - 10Lux/0.25Uo	+	20 lux	12 lux	0.60
Car Park 5 - 10Lux/0.25Uo	+	16 lux	4 lux	0.25
Car Park 6 - 10Lux/0.25Uo	+	12 lux	7 lux	0.58
Car Park 7 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Car Park 8 - 10Lux/0.25Uo	+	20 lux	5 lux	0.25
Car Park 9 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Pathway 1	+	16 lux	2 lux	0.13
Pathway 2	+	19 lux	12 lux	0.63
Pathway 3	+	13 lux	10 lux	0.77
Pathway 4	+	5 lux	4 lux	0.80
Pathway 5	+	13 lux	10 lux	0.77
Pathway 6	+	20 lux	15 lux	0.75
Pathway 7	+	10 lux	8 lux	0.80
Pathway 8	+	15 lux	5 lux	0.33
Pathway 9	+	15 lux	9 lux	0.60
Pathway 10	+	10 lux	3 lux	0.30
Pathway 11	+	17 lux	7 lux	0.41
Pathway 12	+	16 lux	5 lux	0.31
Pathway 13	+	10 lux	9 lux	0.90
Pathway 14	+	9 lux	8 lux	0.89
Pathway 15	+	9 lux	7 lux	0.78
Pathway 16	+	7 lux	6 lux	0.86
Pathway 17	+	6 lux	3 lux	0.50
Pathway LHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pathway RHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pedestrian Paths 1 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian Paths 2 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian/Cycling Path - 10Lux/0.4Uo	+	27 lux	11 lux	0.41
Roadway 1 - 10Lux/0.4Uo	+	15 lux	6 lux	0.40
Roadway 2 - 10Lux/0.4Uo	+	12 lux	5 lux	0.42
SPILL	+	0 lux	0 lux	N/A
Vertical (Trees) 1	+	1 lux	0 lux	0.00
Vertical (Trees) 2	+	3 lux	0 lux	0.00
Vertical (Trees) 3	+	2 lux	0 lux	0.00
Vertical (Trees) 4	+	1 lux	0 lux	0.00
Vertical (Trees) 5	+	1 lux	0 lux	0.00
Vertical (Trees) 6	+	1 lux	0 lux	0.00
Vertical (Trees) 7	+	1 lux	0 lux	0.00
Vertical (Trees) 8	+	2 lux	0 lux	0.00
Vertical (Trees) 9	+	2 lux	0 lux	0.00
Vertical (Trees) 10	+	6 lux	0 lux	0.00
Vertical (Trees) 11	+	2 lux	0 lux	0.00
Vertical (Trees) 12	+	2 lux	0 lux	0.00
Vertical (Trees) 13	+	2 lux	0 lux	0.00
Vertical (Trees) 14	+	2 lux	0 lux	0.00

Notes:

Key Plan Drawing



On Behalf of:

Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

Fáilte Ireland

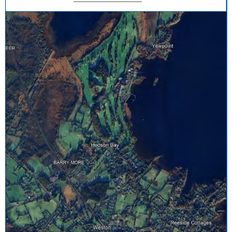
Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

CIVIC

Overview



REV:	DESCRIPTION:	BY:	DATE:
A	For Review	KD	14/08/2026

STATUS: status

Dlight
The old Waterworks,
Knockenduff, Tramore,
Co. Waterford, X91XD4V
051 - 393464
www.dlight.ie

SITE: Hodson Bay - Public Realm

TITLE: Hodson Bay - Legend

SCALE AT A0:	DATE:	DRAWN:	CHECKED:
NTS	20/08/2026	PW	SC

PROJECT NO:	DRAWING NO:	REVISION:
DL2277	SK_A	3

Appendix B

DIALux Lighting Calculations - Marina

Marina Area By Others via Dialux Evo Calculation

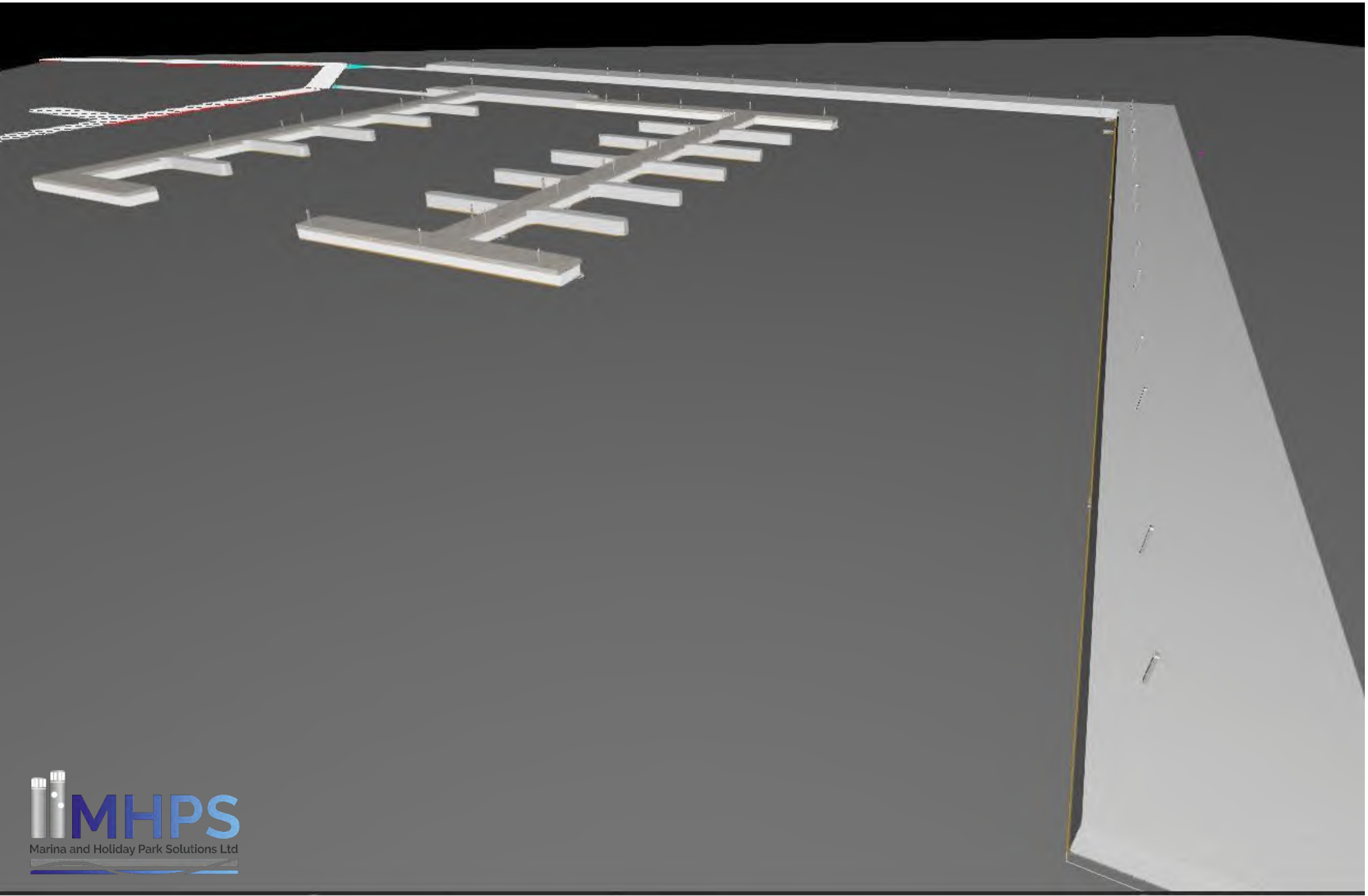
Hodson Bay Marina

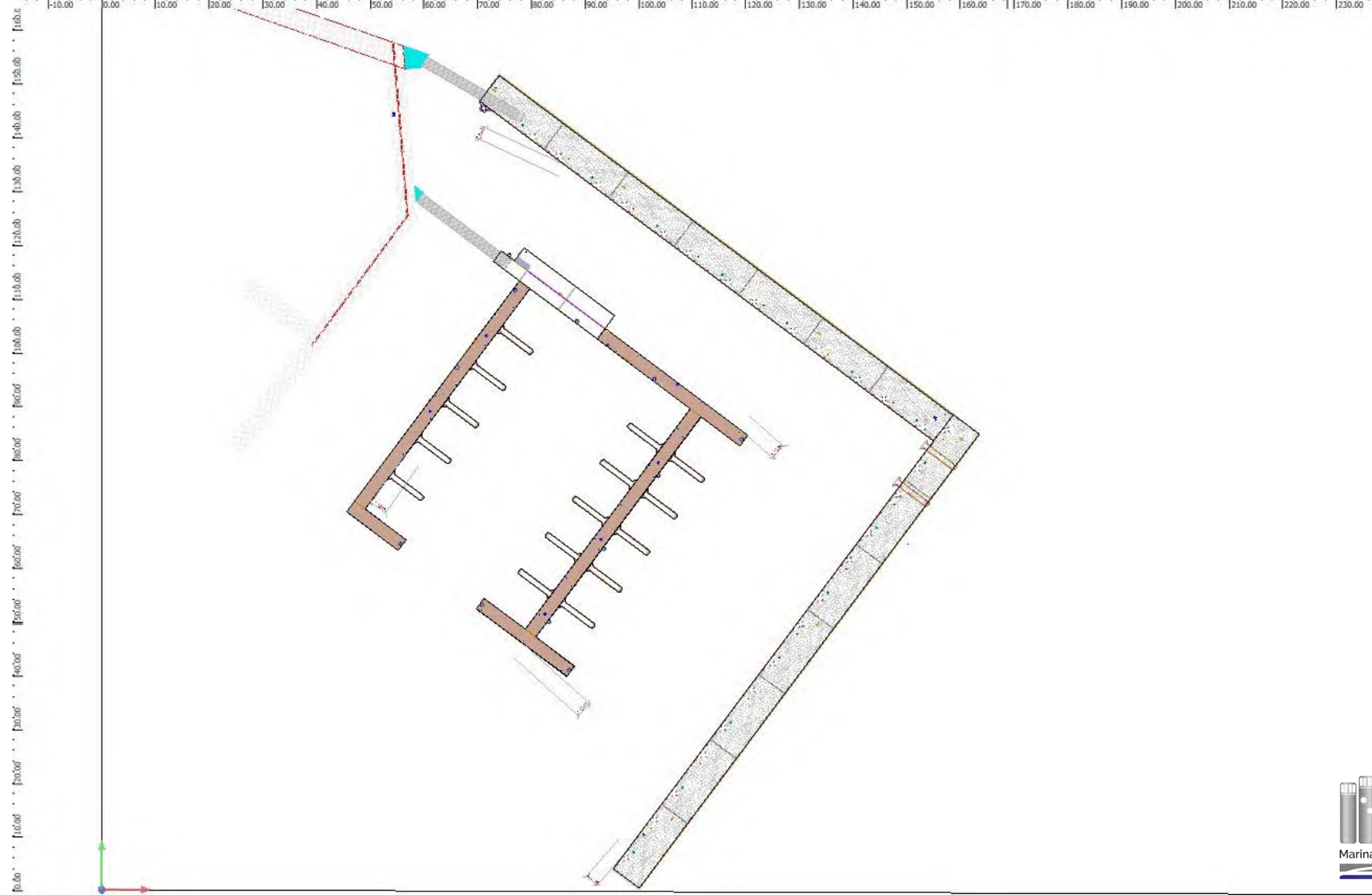
For reference only
Completed by Stuart Baines MHPS Ltd 15/07/26

Generic Square Pedestal / Light Bollard

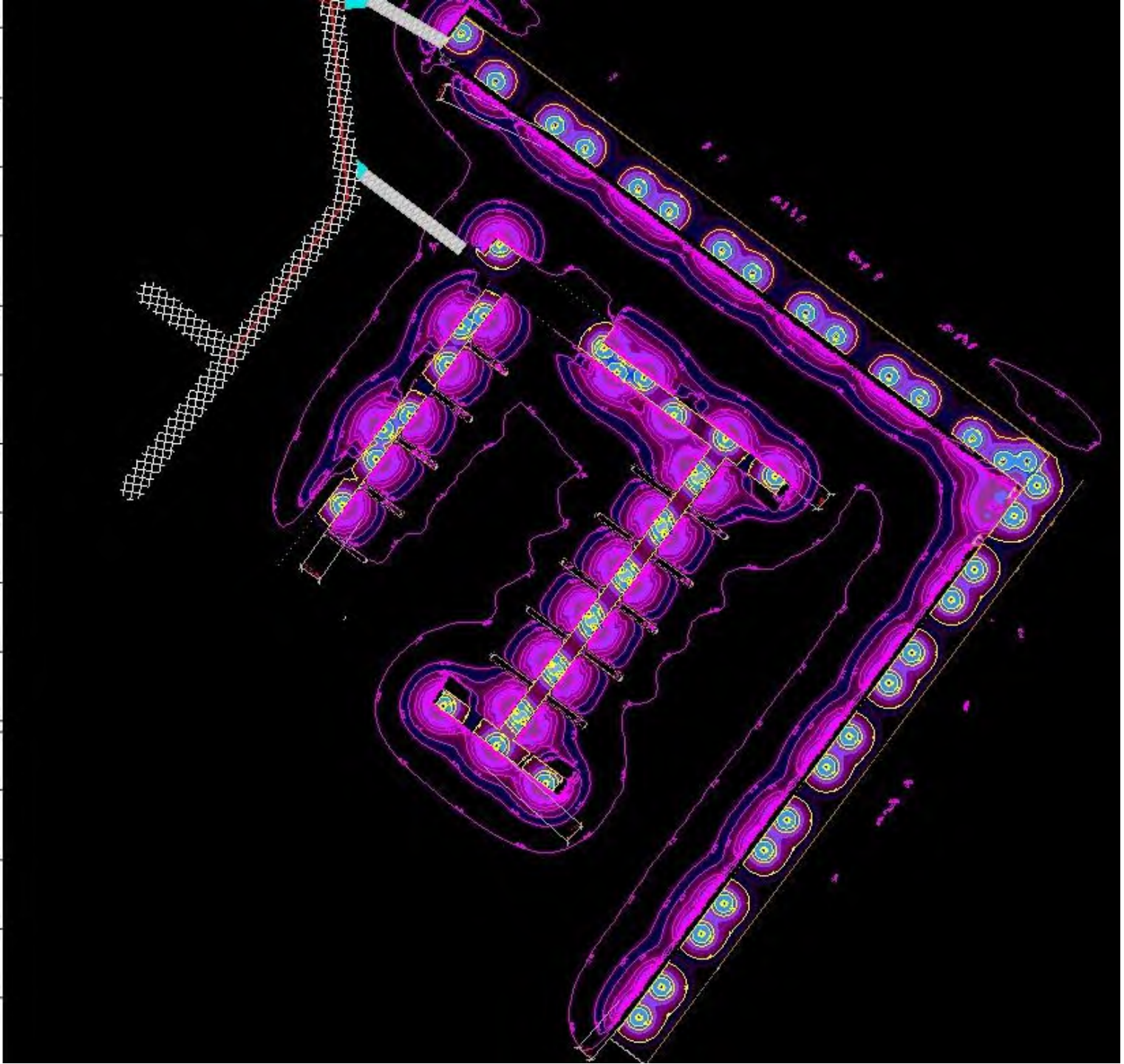
5W 400Lumen E27

Louvre /0.7

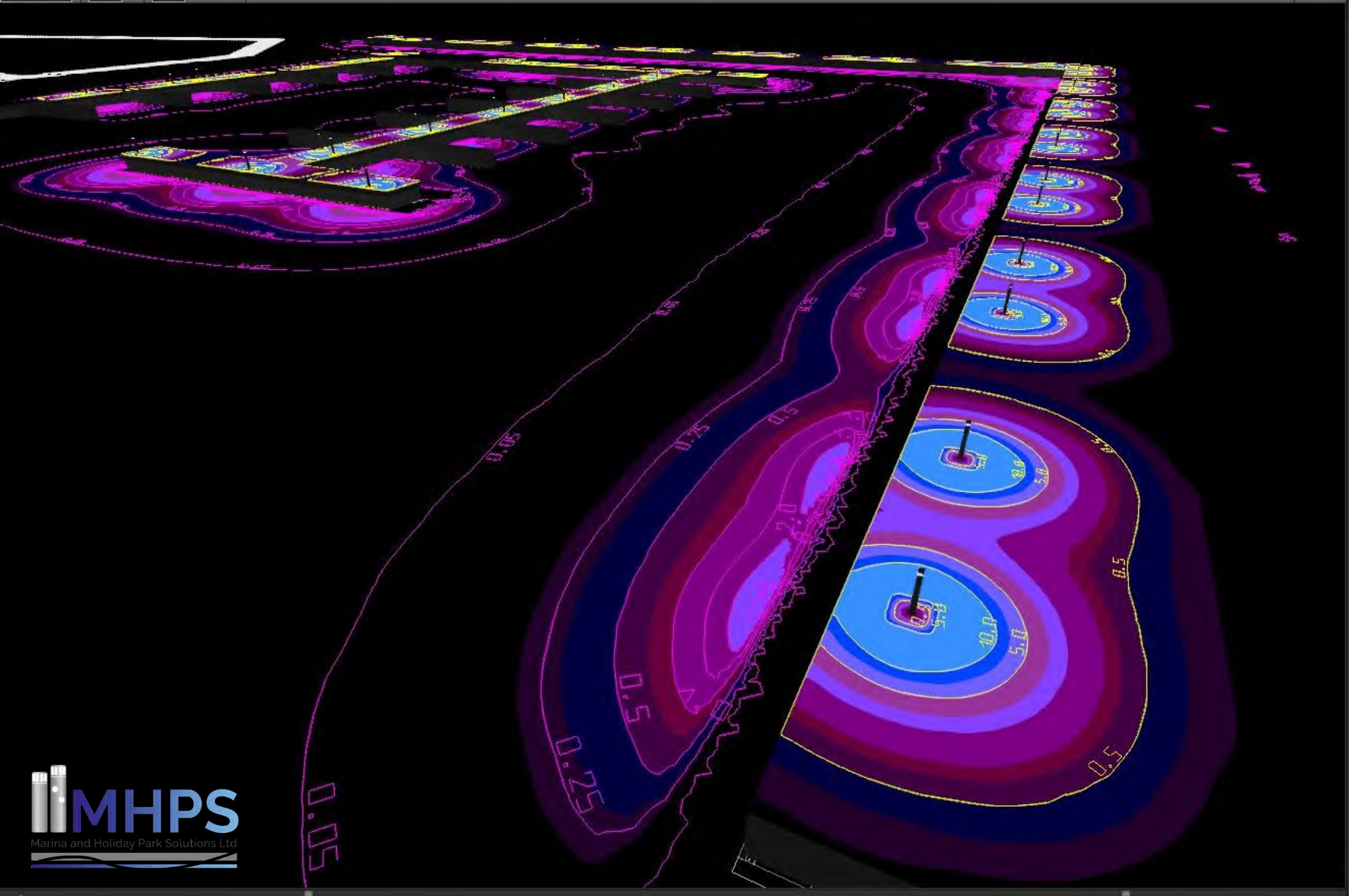

MHPS
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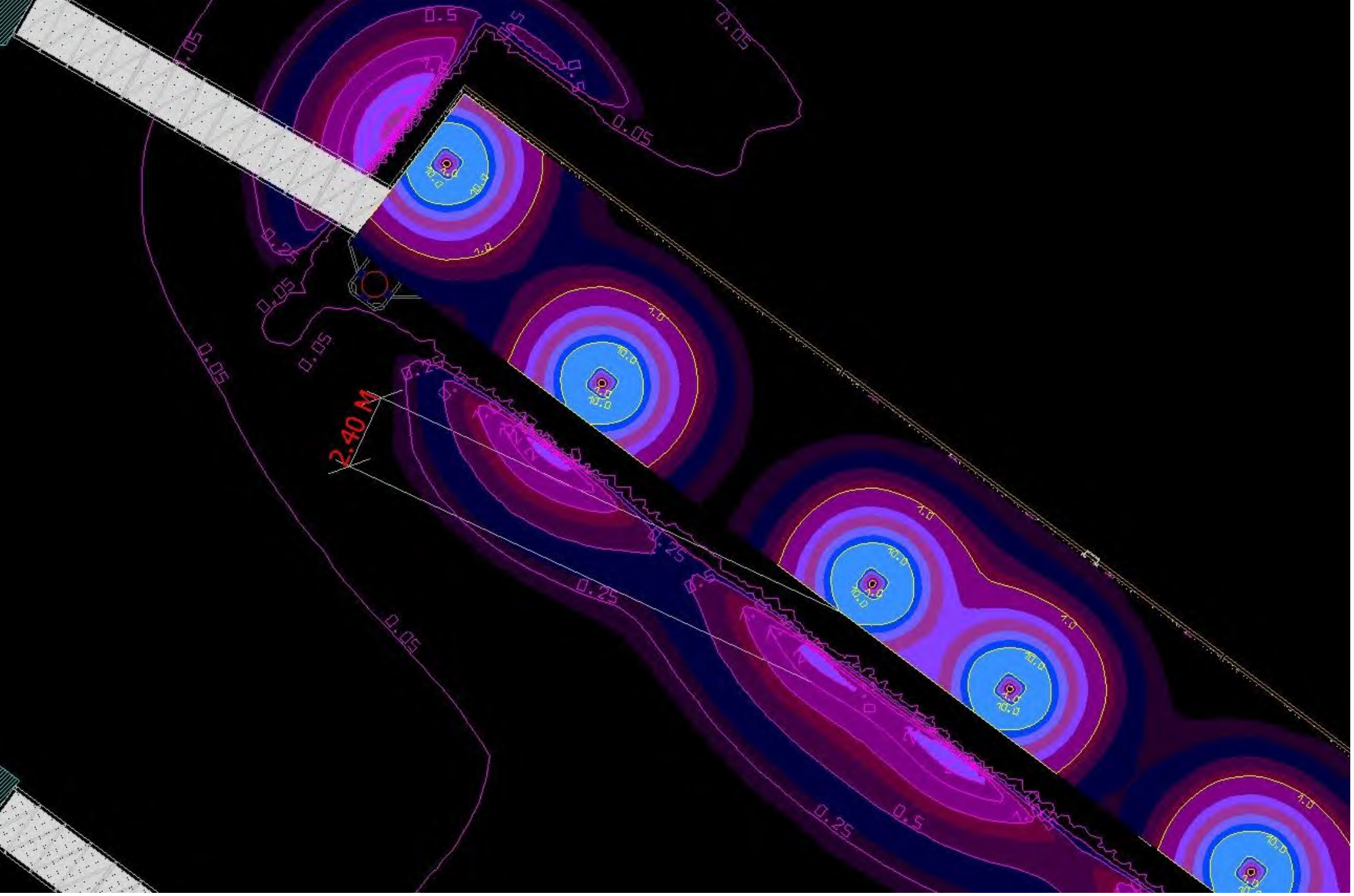
MHPS
Marina and Holiday Park Solutions Ltd



MHPS
Marina and Holiday Park Solutions Ltd

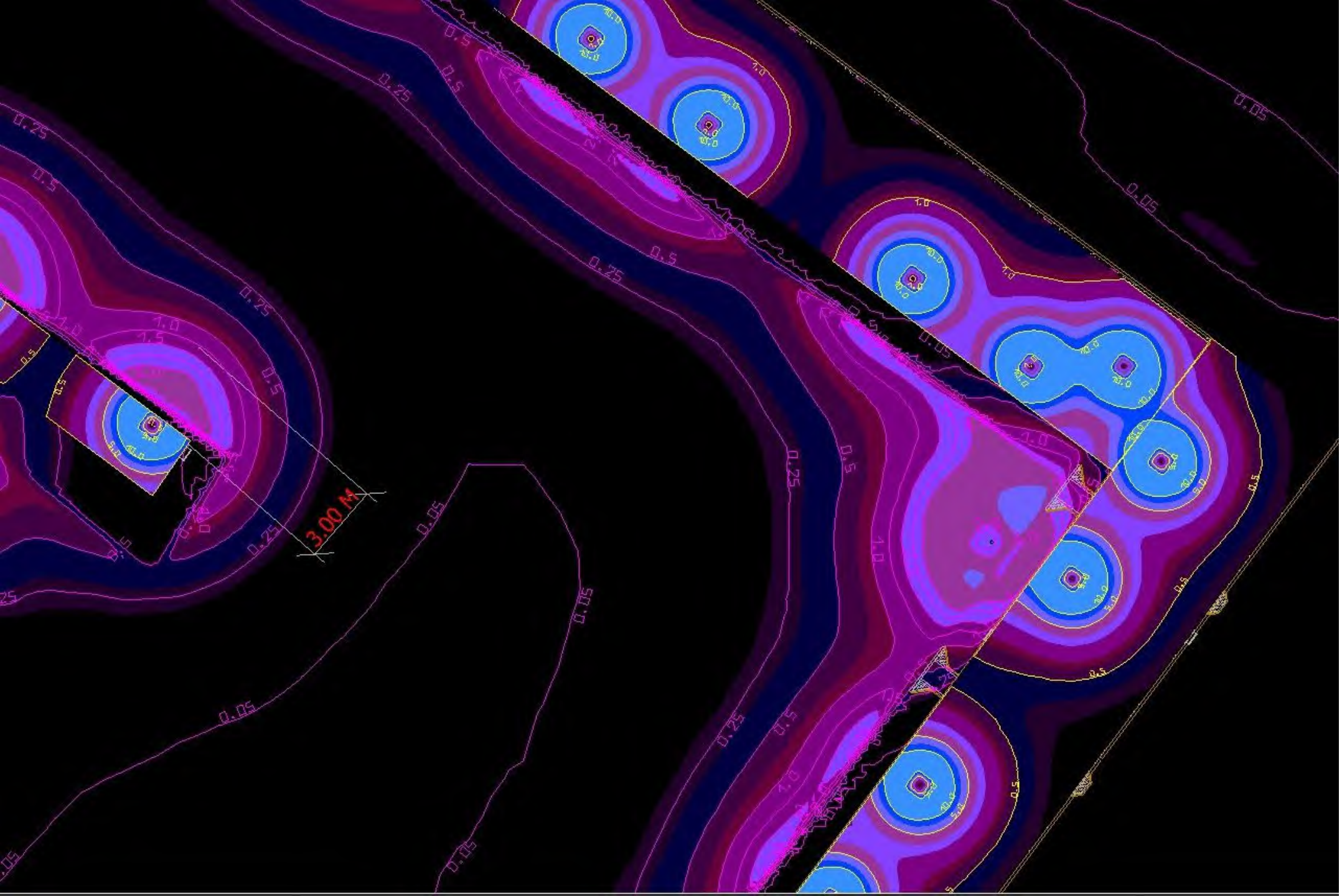


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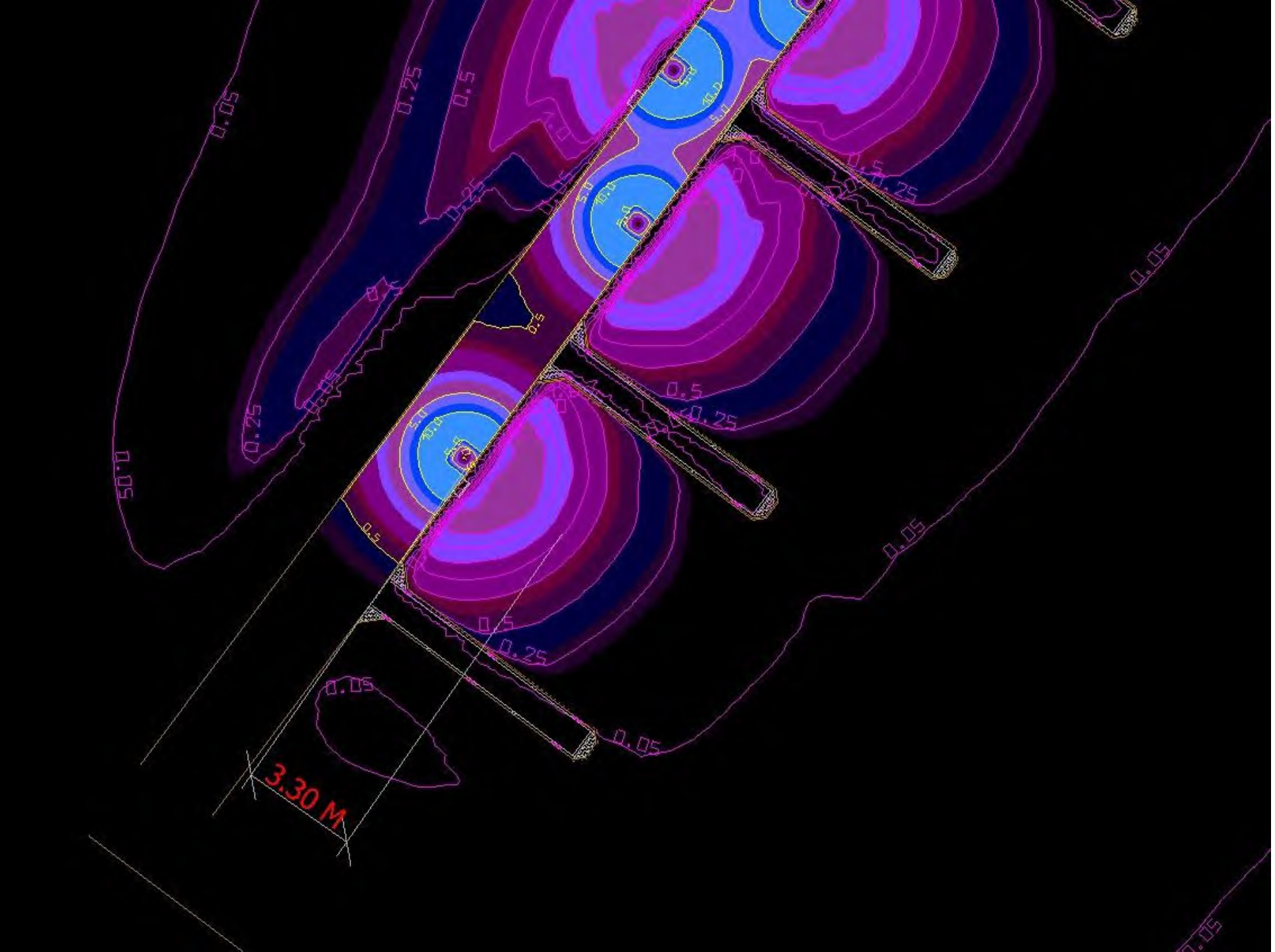
Point in M (Metres) at which 1.0 Lux may be detected)

MHPS
Marina and Holiday Park Solutions Ltd



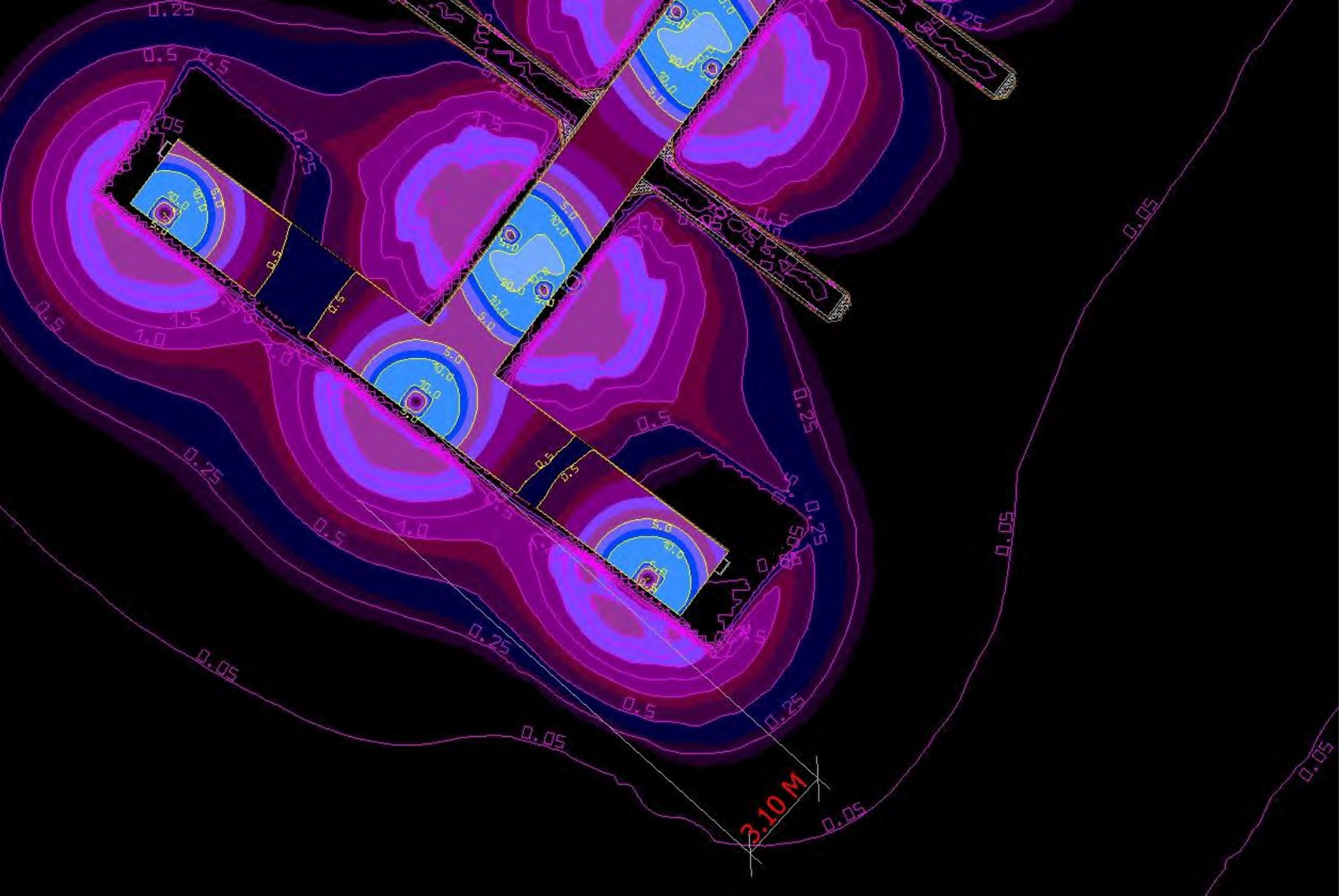
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MHPS
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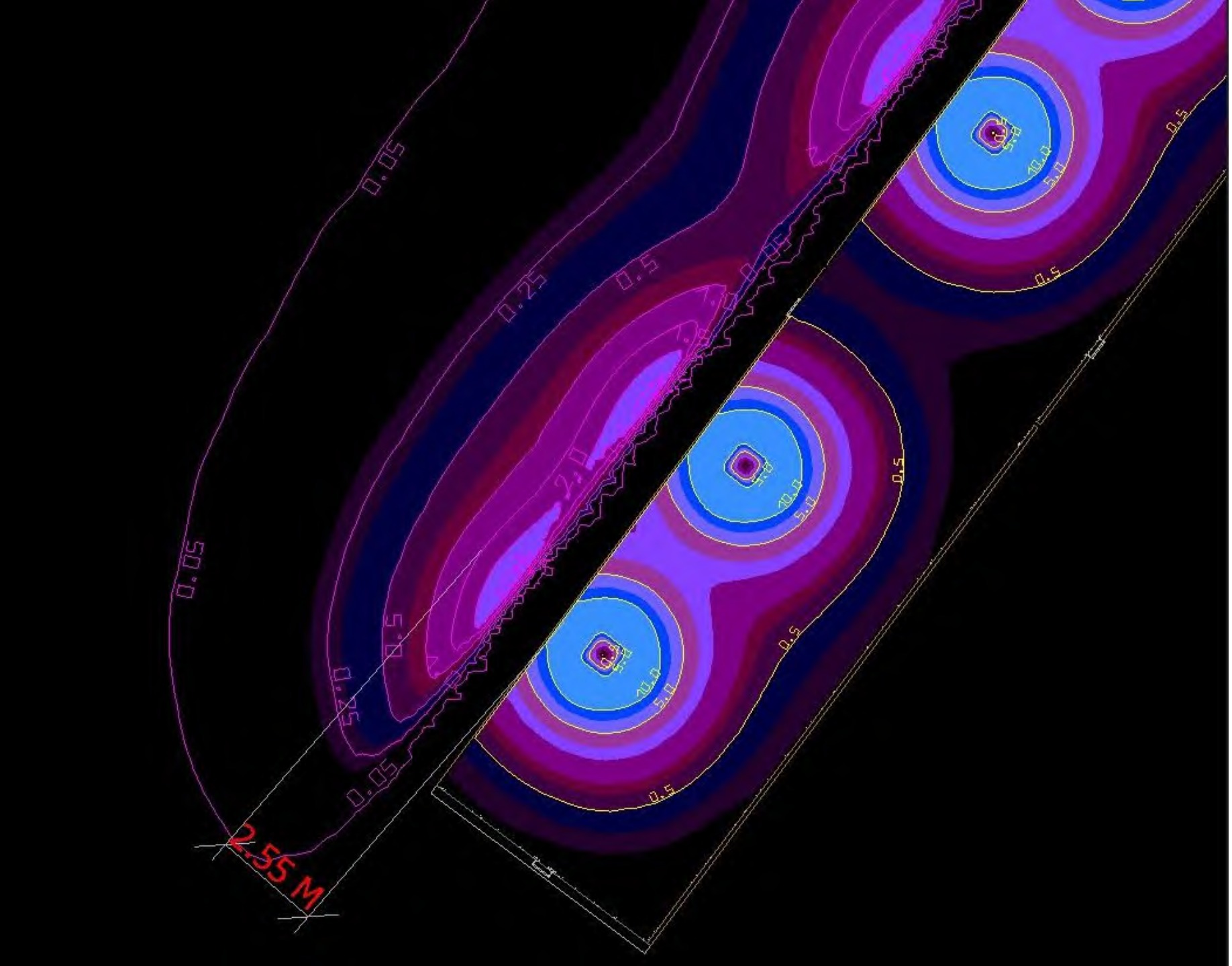
Point in M (Metres) at which 1.0 Lux may be detected)

MHPS
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Point in M (Metres) at which 1.0 Lux may be detected)

MHPS
Marina and Holiday Park Solutions Ltd


0.05
0.25
0.5
2.0
0.5
0.05
0.5
0.05
0.5
0.5
0.5

Appendix C

External Lighting Layout Drawings

See external drawing that have been submitted as separate files for ease of review.

All luminaires in this box are mounted on 6m Columns/Poles.

Any of the symbols with a GREEN box sourround shows the 6m mounting heights.

This is being used to clean up the main lighting area for ease of review.

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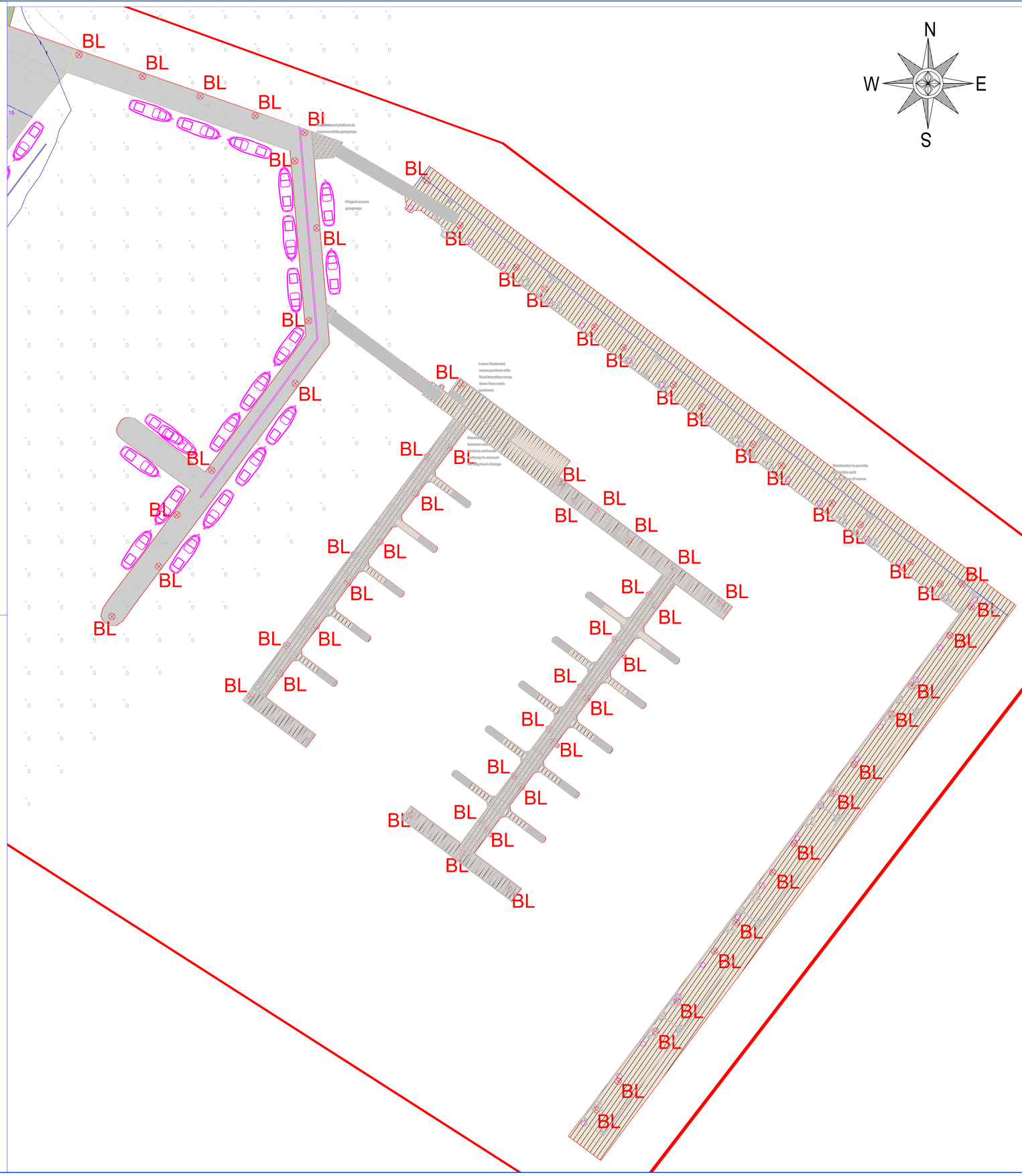
This is being used to clean up the main lighting area for ease of review.

Schedule

Symbol	Label	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	A1	1	PEB.1.LM102.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	7225	66
	B1	2	PEB.1.LM092.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	8336	57
	C1	6	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5531	50
	D1	7	PEB.1.LM072.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4838	44
	F1	3	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4154	38
	G1	5	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	4645	32
	G2	4	PEB.1.LM052.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	3470	32
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	I1	10	PEB.1.LM082.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5743	50
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	L1	12	SLI.1.LA042.NR	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4540	34
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	M1-4	9	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4311	38
	N1	8	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5531	50
	O1	24	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4154	38
	P1	2	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5587	38
	Q1	6	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	4645	32
	QW	1	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	4645	32
	R1	7	PEB.1.LM072.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5022	44
	S1	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5562	38
	SW	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5562	38
	TW	12	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5576	38
	U1	58	SLI.1.LA042.AY	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4412	34
	ZW	1	PEB.1.LM072.AY	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	6514	44
⊗	BL	74	Unknown	Generic Square Pedestal/Light Bollard Louvre Lebs/0.7 - 1000mm	400	5

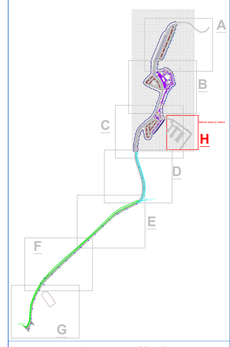
Statistics

Description	Symbol	Avg	Min	Min/Avg
Car Park 1 - 10Lux/0.25Uo	+	15 lux	4 lux	0.27
Car Park 2 - 10Lux/0.25uo	+	15 lux	4 lux	0.27
Car Park 3 - 10Lux/0.25Uo	+	12 lux	6 lux	0.50
Car Park 4 - 10Lux/0.25Uo	+	20 lux	12 lux	0.60
Car Park 5 - 10Lux/0.25Uo	+	16 lux	4 lux	0.25
Car Park 6 - 10Lux/0.25Uo	+	12 lux	7 lux	0.58
Car Park 7 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Car Park 8 - 10Lux/0.25Uo	+	20 lux	5 lux	0.25
Car Park 9 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Pathway 1	+	16 lux	2 lux	0.13
Pathway 2	+	19 lux	12 lux	0.63
Pathway 3	+	13 lux	10 lux	0.77
Pathway 4	+	5 lux	4 lux	0.80
Pathway 5	+	13 lux	10 lux	0.77
Pathway 6	+	20 lux	15 lux	0.75
Pathway 7	+	10 lux	8 lux	0.80
Pathway 8	+	15 lux	5 lux	0.33
Pathway 9	+	15 lux	9 lux	0.60
Pathway 10	+	10 lux	3 lux	0.30
Pathway 11	+	17 lux	7 lux	0.41
Pathway 12	+	16 lux	5 lux	0.31
Pathway 13	+	10 lux	9 lux	0.90
Pathway 14	+	9 lux	8 lux	0.89
Pathway 15	+	9 lux	7 lux	0.78
Pathway 16	+	7 lux	6 lux	0.86
Pathway 17	+	6 lux	3 lux	0.50
Pathway LHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pathway RHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pedestrian Paths 1 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian Paths 2 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian/Cycling Path - 10Lux/0.4Uo	+	27 lux	11 lux	0.41
Roadway 1 - 10Lux/0.4Uo	+	15 lux	6 lux	0.40
Roadway 2 - 10Lux/0.4Uo	+	12 lux	5 lux	0.42
SPILL	+	0 lux	0 lux	N/A
Vertical (Trees) 1	+	1 lux	0 lux	0.00
Vertical (Trees) 2	+	3 lux	0 lux	0.00
Vertical (Trees) 3	+	2 lux	0 lux	0.00
Vertical (Trees) 4	+	1 lux	0 lux	0.00
Vertical (Trees) 5	+	1 lux	0 lux	0.00
Vertical (Trees) 6	+	1 lux	0 lux	0.00
Vertical (Trees) 7	+	1 lux	0 lux	0.00
Vertical (Trees) 8	+	2 lux	0 lux	0.00
Vertical (Trees) 9	+	2 lux	0 lux	0.00
Vertical (Trees) 10	+	6 lux	0 lux	0.00
Vertical (Trees) 11	+	2 lux	0 lux	0.00
Vertical (Trees) 12	+	2 lux	0 lux	0.00
Vertical (Trees) 13	+	2 lux	0 lux	0.00
Vertical (Trees) 14	+	2 lux	0 lux	0.00



Notes:

Key Plan Drawing



On Behalf of:

Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

Fáilte Ireland

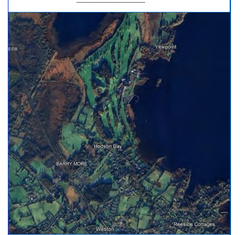
ROSCOMMON
Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

CIVIC

Overview



REV:	DESCRIPTION:	BY:	DATE:
A	For Review	KD	4/08/2026

STATUS: status

Dlight
The old Waterworks,
Knockenduff, Tramore,
Co. Waterford, X91XD4V
051 - 393464
www.dlight.ie

SITE: Hodson Bay - Public Realm

TITLE: Hodson Bay - Area H

SCALE AT A0:	DATE:	DRAWN:	CHECKED:
NTS	25/08/2026	PW	SC

PROJECT NO:	DRAWING NO:	REVISION:
DL2277	SK_A	3

All luminaires in this box are mounted on 6m Columns/Poles.

Any of the symbols with a GREEN box sourround shows the 6m mounting heights.

This is being used to clean up the main lighting area for ease of review.

All luminaires in this box are mounted on 4m Columns/Poles.

Any of the symbols with a BLUE box sourround shows the 4m mounting heights.

This is being used to clean up the main lighting area for ease of review.

Schedule

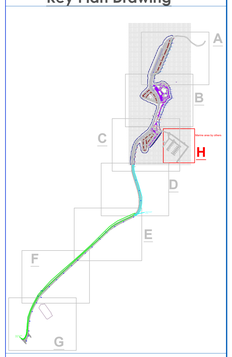
Symbol	Label	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	A1	1	PEB.1.LM102.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	7225	66
	B1	2	PEB.1.LM092.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	8336	57
	C1	6	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5531	50
	D1	7	PEB.1.LM072.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4838	44
	F1	3	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4154	38
	G1	5	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	4645	32
	G2	4	PEB.1.LM052.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	3470	32
	H1	3	PEB.1.LM102.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	9728	66
	I1	10	PEB.1.LM082.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5743	50
	J1	5	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5587	38
	K1	2	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5576	38
	L1	12	SLI.1.LA042.NR	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4540	34
	M1-6	2	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4311	38
	M1-4	9	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4311	38
	N1	8	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5531	50
	O1	24	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4154	38
	P1	2	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5587	38
	Q1	6	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	4645	32
	QW	1	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	4645	32
	R1	7	PEB.1.LM072.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5022	44
	S1	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5562	38
	SW	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5562	38
	TW	12	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5576	38
	U1	58	SLI.1.LA042.AY	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4412	34
	ZW	1	PEB.1.LM072.AY	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	6514	44
	BL	74	Unknown	Generic Square Pedestal/Light Bollard Louvre Lebs/0.7 - 1000mm	400	5

Statistics

Description	Symbol	Avg	Min	Min/Avg
Car Park 1 - 10Lux/0.25Uo	+	15 lux	4 lux	0.27
Car Park 2 - 10Lux/0.25uo	+	15 lux	4 lux	0.27
Car Park 3 - 10Lux/0.25Uo	+	12 lux	6 lux	0.50
Car Park 4 - 10Lux/0.25Uo	+	20 lux	12 lux	0.60
Car Park 5 - 10Lux/0.25Uo	+	16 lux	4 lux	0.25
Car Park 6 - 10Lux/0.25Uo	+	12 lux	7 lux	0.58
Car Park 7 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Car Park 8 - 10Lux/0.25Uo	+	20 lux	5 lux	0.25
Car Park 9 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Pathway 1	+	16 lux	2 lux	0.13
Pathway 2	+	19 lux	12 lux	0.63
Pathway 3	+	13 lux	10 lux	0.77
Pathway 4	+	5 lux	4 lux	0.80
Pathway 5	+	13 lux	10 lux	0.77
Pathway 6	+	20 lux	15 lux	0.75
Pathway 7	+	10 lux	8 lux	0.80
Pathway 8	+	15 lux	5 lux	0.33
Pathway 9	+	15 lux	9 lux	0.60
Pathway 10	+	10 lux	3 lux	0.30
Pathway 11	+	17 lux	7 lux	0.41
Pathway 12	+	16 lux	5 lux	0.31
Pathway 13	+	10 lux	9 lux	0.90
Pathway 14	+	9 lux	8 lux	0.89
Pathway 15	+	9 lux	7 lux	0.78
Pathway 16	+	7 lux	6 lux	0.86
Pathway 17	+	6 lux	3 lux	0.50
Pathway LHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pathway RHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pedestrian Paths 1 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian Paths 2 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian/Cycling Path - 10Lux/0.4Uo	+	27 lux	11 lux	0.41
Roadway 1 - 10Lux/0.4Uo	+	15 lux	6 lux	0.40
Roadway 2 - 10Lux/0.4Uo	+	12 lux	5 lux	0.42
SPILL	+	0 lux	0 lux	N/A
Vertical (Trees) 1	+	1 lux	0 lux	0.00
Vertical (Trees) 2	+	3 lux	0 lux	0.00
Vertical (Trees) 3	+	2 lux	0 lux	0.00
Vertical (Trees) 4	+	1 lux	0 lux	0.00
Vertical (Trees) 5	+	1 lux	0 lux	0.00
Vertical (Trees) 6	+	1 lux	0 lux	0.00
Vertical (Trees) 7	+	1 lux	0 lux	0.00
Vertical (Trees) 8	+	2 lux	0 lux	0.00
Vertical (Trees) 9	+	2 lux	0 lux	0.00
Vertical (Trees) 10	+	6 lux	0 lux	0.00
Vertical (Trees) 11	+	2 lux	0 lux	0.00
Vertical (Trees) 12	+	2 lux	0 lux	0.00
Vertical (Trees) 13	+	2 lux	0 lux	0.00
Vertical (Trees) 14	+	2 lux	0 lux	0.00

Notes:

Key Plan Drawing



On Behalf of:

Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

Fáilte Ireland

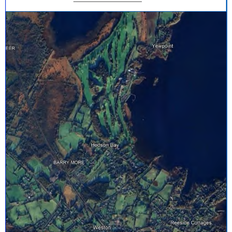
Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

CIVIC

Overview



REV:	DESCRIPTION:	BY:	DATE:
A	For Review	KD	14/08/2026

STATUS: status

Dlight
The old Waterworks,
Knockenduff, Tramore,
Co. Waterford, X91XD4V
051 - 393464
www.dlight.ie

SITE: Hodson Bay - Public Realm

TITLE: Hodson Bay - Legend

SCALE AT A0:	DATE:	DRAWN:	CHECKED:
NTS	20/08/2026	PW	SC

PROJECT NO:	DRAWING NO:	REVISION:
DL2277	SK_A	3

All luminaires in this box are mounted on 6m Columns/Poles.

Any of the symbols with a GREEN box sourround shows the 6m mounting heights.

This is being used to clean up the main lighting area for ease of review.

All luminaires in this box are mounted on 4m Columns/Poles.

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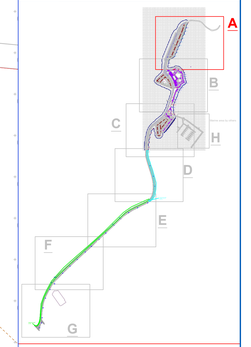
Schedule						
Symbol	Label	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	A1	1	PEB.1.LM102.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	7225	66
	B1	2	PEB.1.LM092.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	8336	57
	C1	6	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5531	50
	D1	7	PEB.1.LM072.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4838	44
	F1	3	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4154	38
	G1	5	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	4645	32
	G2	4	PEB.1.LM052.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	3470	32
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	I1	10	PEB.1.LM082.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5743	50
	J1	5	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5587	38
	K1	2	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5576	38
	L1	12	SLI.1.LA042.NR	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4540	34
	M1-6	2	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4311	38
	M1-4	9	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4311	38
	N1	8	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5531	50
	O1	24	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4154	38
	P1	2	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5587	38
	Q1	6	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	4645	32
	QW	1	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	4645	32
	R1	7	PEB.1.LM072.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5022	44
	S1	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5562	38
	SW	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5562	38
	TW	12	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5576	38
	U1	58	SLI.1.LA042.AY	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4412	34
	ZW	1	PEB.1.LM072.AY	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	6514	44
	BL	74	Unknown	Generic Square Pedestal/Light Bollard Louvre Lebs/0.7 - 1000mm	400	5

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Car Park 4 - 10Lux/0.25Uo	+	20 lux	12 lux	0.60
Car Park 5 - 10Lux/0.25Uo	+	16 lux	4 lux	0.25
Car Park 6 - 10Lux/0.25Uo	+	12 lux	7 lux	0.58
Car Park 7 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Car Park 8 - 10Lux/0.25Uo	+	20 lux	5 lux	0.25
Car Park 9 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Pathway 1	+	16 lux	2 lux	0.13
Pathway 2	+	19 lux	12 lux	0.63
Pathway 3	+	13 lux	10 lux	0.77
Pathway 4	+	5 lux	4 lux	0.80
Pathway 5	+	13 lux	10 lux	0.77
Pathway 6	+	20 lux	15 lux	0.75
Pathway 7	+	10 lux	8 lux	0.80
Pathway 8	+	15 lux	5 lux	0.33
Pathway 9	+	15 lux	9 lux	0.60
Pathway 10	+	10 lux	3 lux	0.30
Pathway 11	+	17 lux	7 lux	0.41
Pathway 12	+	16 lux	5 lux	0.31
Pathway 13	+	10 lux	9 lux	0.90
Pathway 14	+	9 lux	8 lux	0.89
Pathway 15	+	9 lux	7 lux	0.78
Pathway 16	+	7 lux	6 lux	0.86
Pathway 17	+	6 lux	3 lux	0.50
Pathway LHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pathway RHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pedestrian Paths 1 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian Paths 2 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian/Cycling Path - 10Lux/0.4Uo	+	27 lux	11 lux	0.41
Roadway 1 - 10Lux/0.4Uo	+	15 lux	6 lux	0.40
Roadway 2 - 10Lux/0.4Uo	+	12 lux	5 lux	0.42
SPILL	+	0 lux	0 lux	N/A
Vertical (Trees) 1	+	1 lux	0 lux	0.00
Vertical (Trees) 2	+	3 lux	0 lux	0.00
Vertical (Trees) 3	+	2 lux	0 lux	0.00
Vertical (Trees) 4	+	1 lux	0 lux	0.00
Vertical (Trees) 5	+	1 lux	0 lux	0.00
Vertical (Trees) 6	+	1 lux	0 lux	0.00
Vertical (Trees) 7	+	1 lux	0 lux	0.00
Vertical (Trees) 8	+	2 lux	0 lux	0.00
Vertical (Trees) 9	+	2 lux	0 lux	0.00
Vertical (Trees) 10	+	6 lux	0 lux	0.00
Vertical (Trees) 11	+	2 lux	0 lux	0.00
Vertical (Trees) 12	+	2 lux	0 lux	0.00
Vertical (Trees) 13	+	2 lux	0 lux	0.00
Vertical (Trees) 14	+	2 lux	0 lux	0.00



Notes:

Key Plan Drawing



On Behalf of:

Rialtas na hÉireann
Government of Ireland

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Tionól Reigiúnach Oirthir agus Lár-Tíre
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Roscommon County Council

Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

CIVIC

Overview



REV:	DESCRIPTION:	BY:	DATE:
A	For Review	KD	4/08/2026

STATUS: status

Dlight
The old Waterworks, Knockenduff, Tramore, Co. Waterford, X91XD4V
051 - 393464
www.dlight.ie

SITE: Hodson Bay - Public Realm

TITLE: Hodson Bay - Area A

SCALE AT A0:	DATE:	DRAWN:	CHECKED:
NTS	25/08/2026	PW	SC

PROJECT NO:	DRAWING NO:	REVISION:
DL2277	SK_A	3

All luminaires in this box are mounted on 6m Columns/Poles.

Any of the symbols with a GREEN box sourround shows the 6m mounting heights.

This is being used to clean up the main lighting area for ease of review.

All luminaires in this box are mounted on 4m Columns/Poles.

Any of the symbols with a BLUE box sourround shows the 4m mounting heights.

This is being used to clean up the main lighting area for ease of review.

Schedule

Symbol	Label	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	A1	1	PEB.1.LM102.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	7225	66
	B1	2	PEB.1.LM092.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	8336	57
	C1	6	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5531	50
	D1	7	PEB.1.LM072.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4838	44
	F1	3	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4154	38
	G1	5	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	4645	32
	G2	4	PEB.1.LM052.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	3470	32
	H1	3	PEB.1.LM102.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	9728	66
	I1	10	PEB.1.LM082.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5743	50
	J1	5	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5587	38
	K1	2	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5576	38
	L1	12	SLI.1.LA042.NR	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4540	34
	M1-6	2	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4311	38
	M1-4	9	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4311	38
	N1	8	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5531	50
	O1	24	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4154	38
	P1	2	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5587	38
	Q1	6	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	4645	32
	QW	1	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	4645	32
	R1	7	PEB.1.LM072.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5022	44
	S1	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5562	38
	SW	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5562	38
	TW	12	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5576	38
	U1	58	SLI.1.LA042.AY	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4412	34
	ZW	1	PEB.1.LM072.AY	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	6514	44
	BL	74	Unknown	Generic Square Pedestal/Light Bollard Louvre Lebs/0.7 - 1000mm	400	5

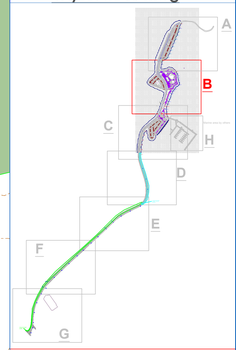
Statistics

Description	Symbol	Avg	Min	Min/Avg
Car Park 1 - 10Lux/0.25Uo	+	15 lux	4 lux	0.27
Car Park 2 - 10Lux/0.25uo	+	15 lux	4 lux	0.27
Car Park 3 - 10Lux/0.25Uo	+	12 lux	6 lux	0.50
Car Park 4 - 10Lux/0.25Uo	+	20 lux	12 lux	0.60
Car Park 5 - 10Lux/0.25Uo	+	16 lux	4 lux	0.25
Car Park 6 - 10Lux/0.25Uo	+	12 lux	7 lux	0.58
Car Park 7 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Car Park 8 - 10Lux/0.25Uo	+	20 lux	5 lux	0.25
Car Park 9 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Pathway 1	+	16 lux	2 lux	0.13
Pathway 2	+	19 lux	12 lux	0.63
Pathway 3	+	13 lux	10 lux	0.77
Pathway 4	+	5 lux	4 lux	0.80
Pathway 5	+	13 lux	10 lux	0.77
Pathway 6	+	20 lux	15 lux	0.75
Pathway 7	+	10 lux	8 lux	0.80
Pathway 8	+	15 lux	5 lux	0.33
Pathway 9	+	15 lux	9 lux	0.60
Pathway 10	+	10 lux	3 lux	0.30
Pathway 11	+	17 lux	7 lux	0.41
Pathway 12	+	16 lux	5 lux	0.31
Pathway 13	+	10 lux	9 lux	0.90
Pathway 14	+	9 lux	8 lux	0.89
Pathway 15	+	9 lux	7 lux	0.78
Pathway 16	+	7 lux	6 lux	0.86
Pathway 17	+	6 lux	3 lux	0.50
Pathway LHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pathway RHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pedestrian Paths 1 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian Paths 2 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian/Cycling Path - 10Lux/0.4Uo	+	27 lux	11 lux	0.41
Roadway 1 - 10Lux/0.4Uo	+	15 lux	6 lux	0.40
Roadway 2 - 10Lux/0.4Uo	+	12 lux	5 lux	0.42
SPILL		0 lux	0 lux	N/A
Vertical (Trees) 1	+	1 lux	0 lux	0.00
Vertical (Trees) 2	+	3 lux	0 lux	0.00
Vertical (Trees) 3	+	2 lux	0 lux	0.00
Vertical (Trees) 4	+	1 lux	0 lux	0.00
Vertical (Trees) 5	+	1 lux	0 lux	0.00
Vertical (Trees) 6	+	1 lux	0 lux	0.00
Vertical (Trees) 7	+	1 lux	0 lux	0.00
Vertical (Trees) 8	+	2 lux	0 lux	0.00
Vertical (Trees) 9	+	2 lux	0 lux	0.00
Vertical (Trees) 10	+	6 lux	0 lux	0.00
Vertical (Trees) 11	+	2 lux	0 lux	0.00
Vertical (Trees) 12	+	2 lux	0 lux	0.00
Vertical (Trees) 13	+	2 lux	0 lux	0.00
Vertical (Trees) 14	+	2 lux	0 lux	0.00



Notes:

Key Plan Drawing



On Behalf of:

Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

Fáilte Ireland

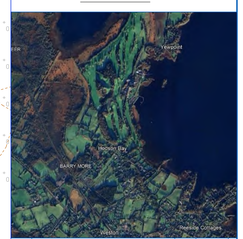
ROS COMÁIN
Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

CIVIC

Overview



REV:	DESCRIPTION:	BY:	DATE:
A	For Review	KD	14/08/2026

STATUS: status

Dlight
The old Waterworks,
Knockenduff, Tramore,
Co. Waterford, X91XD4V
051 - 393464
www.dlight.ie

SITE: Hodson Bay - Public Realm

TITLE: Hodson Bay - Area B

SCALE AT A0:	DATE:	DRAWN:	CHECKED:
NTS	26/08/2026	PW	SC

PROJECT NO:	DRAWING NO:	REVISION:
DL2277	SK_A	3

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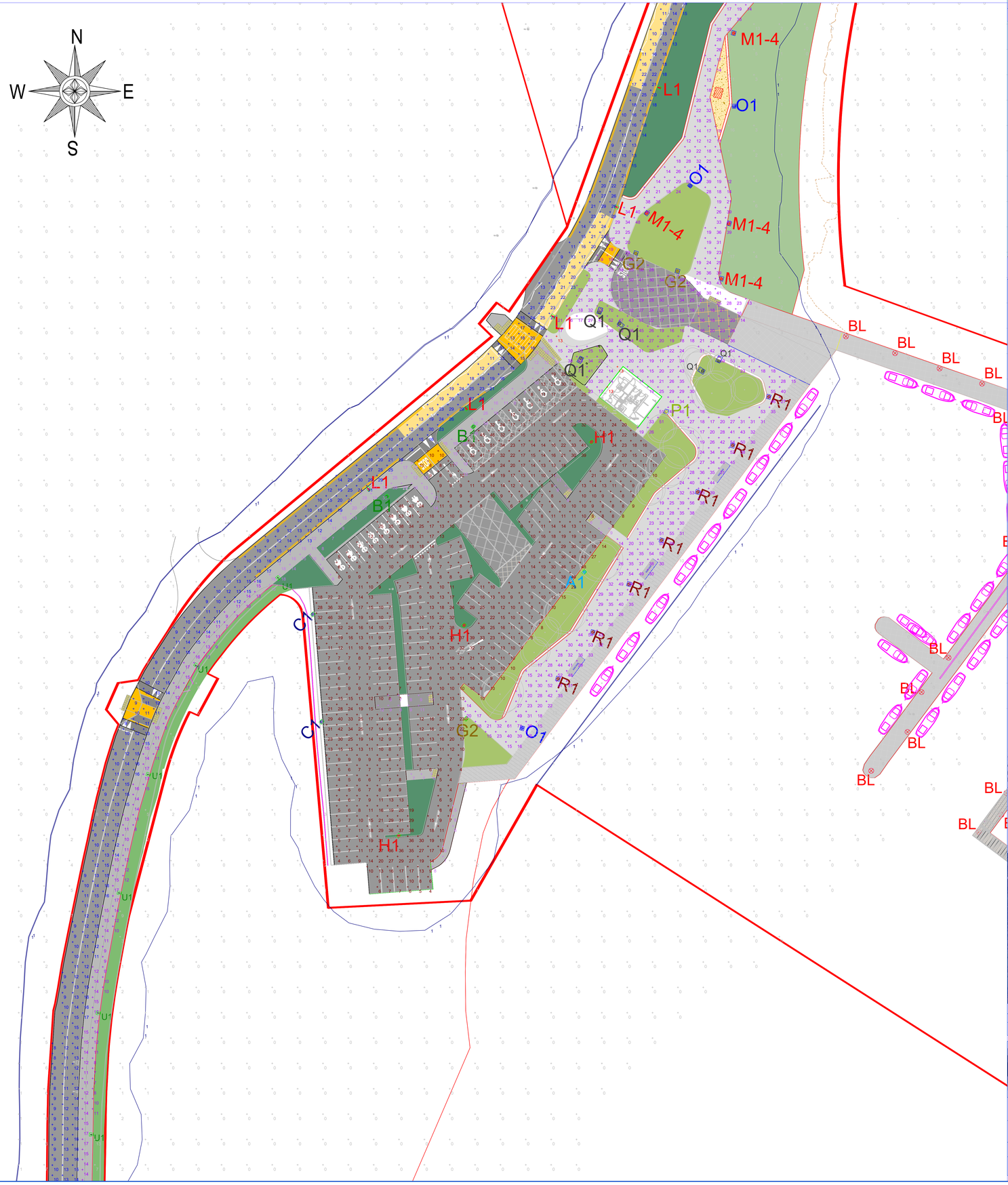
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Schedule

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	A1	1	PEB.1.LM102.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	7225	66
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	D1	7	PEB.1.LM072.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4838	44
	F1	3	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4154	38
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	M1-4	9	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4311	38
	N1	8	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5531	50
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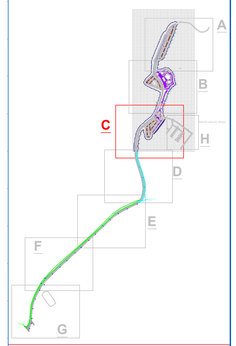
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Car Park 3 - 10Lux/0.25Uo	+	12 lux	6 lux	0.50
Car Park 4 - 10Lux/0.25Uo	+	20 lux	12 lux	0.60
Car Park 5 - 10Lux/0.25Uo	+	16 lux	4 lux	0.25
Car Park 6 - 10Lux/0.25Uo	+	12 lux	7 lux	0.58
Car Park 7 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Car Park 8 - 10Lux/0.25Uo	+	20 lux	5 lux	0.25
Car Park 9 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Pathway 1	+	16 lux	2 lux	0.13
Pathway 2	+	19 lux	12 lux	0.63
Pathway 3	+	13 lux	10 lux	0.77
Pathway 4	+	5 lux	4 lux	0.80
Pathway 5	+	13 lux	10 lux	0.77
Pathway 6	+	20 lux	15 lux	0.75
Pathway 7	+	10 lux	8 lux	0.80
Pathway 8	+	15 lux	5 lux	0.33
Pathway 9	+	15 lux	9 lux	0.60
Pathway 10	+	10 lux	3 lux	0.30
Pathway 11	+	17 lux	7 lux	0.41
Pathway 12	+	16 lux	5 lux	0.31
Pathway 13	+	10 lux	9 lux	0.90
Pathway 14	+	9 lux	8 lux	0.89
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Pathway 16	+	7 lux	6 lux	0.86
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Pedestrian/Cycling Path - 10Lux/0.4Uo	+	27 lux	11 lux	0.41
Roadway 1 - 10Lux/0.4Uo	+	15 lux	6 lux	0.40
Roadway 2 - 10Lux/0.4Uo	+	12 lux	5 lux	0.42
SPILL	+	0 lux	0 lux	N/A
Vertical (Trees) 1	+	1 lux	0 lux	0.00
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Vertical (Trees) 12	+	2 lux	0 lux	0.00
Vertical (Trees) 13	+	2 lux	0 lux	0.00
Vertical (Trees) 14	+	2 lux	0 lux	0.00



Notes:

Key Plan Drawing



On Behalf of:

Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

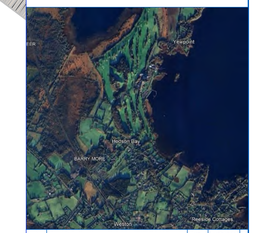
Fáilte Ireland

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Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

CIVIC
Overview



REV:	DESCRIPTION:	BY:	DATE:
A	For Review	KD	4/08/2026

STATUS: status

Dlight
The old Waterworks,
Knockenduff, Tramore,
Co. Waterford, X91XD4V
051 - 393464
www.dlight.ie

SITE: Hodson Bay - Public Realm

TITLE: Hodson Bay - Area C

SCALE AT A0:	DATE:	DRAWN:	CHECKED:
NTS	25/08/2026	PW	SC

PROJECT NO:	DRAWING NO:	REVISION:
DL2277	SK_A	3

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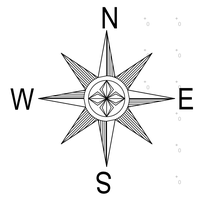
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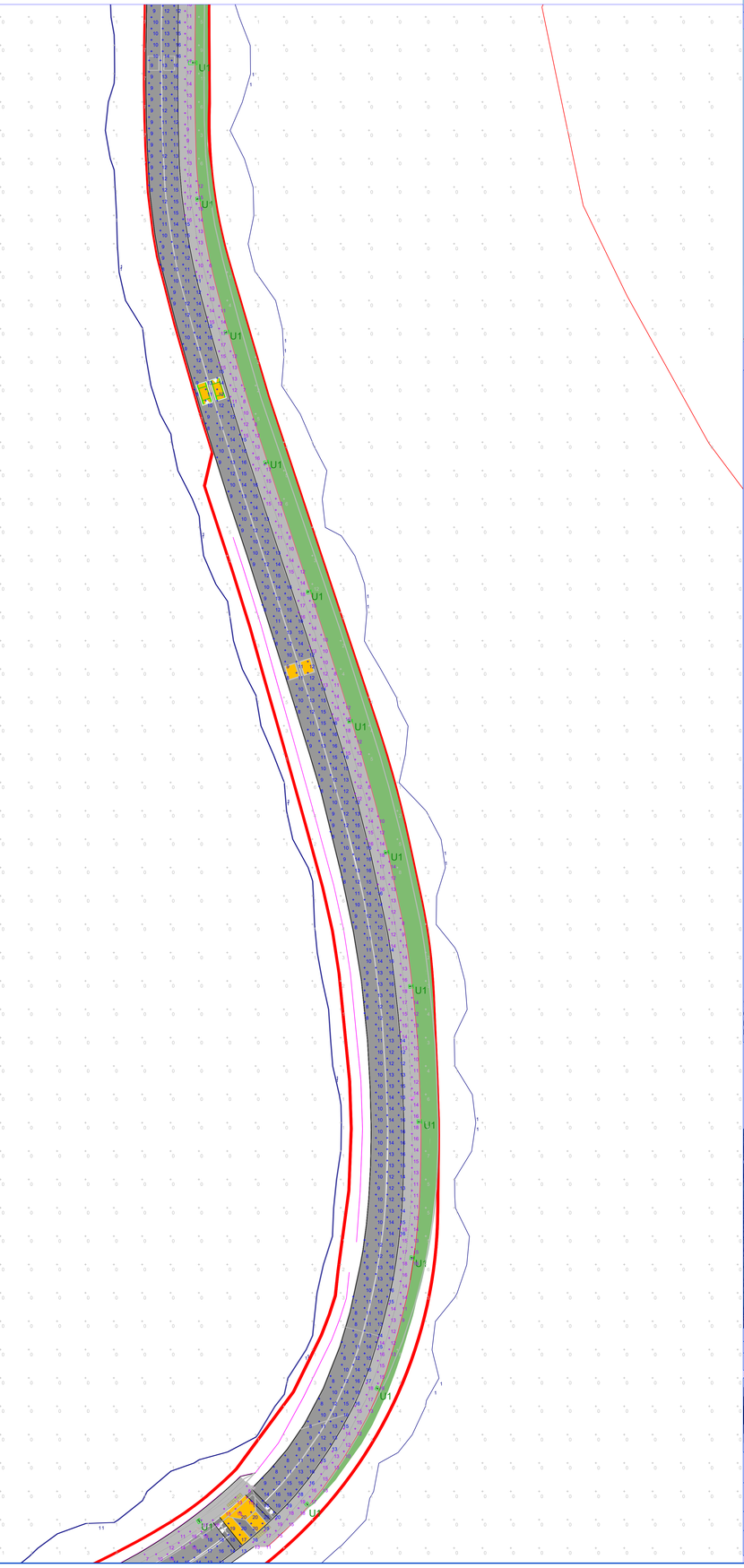
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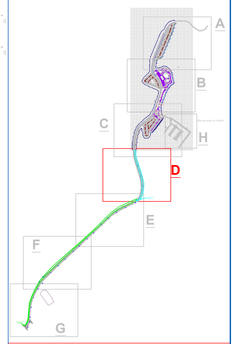
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Car Park 4 - 10Lux/0.25Uo	+	20 lux	12 lux	0.60
Car Park 5 - 10Lux/0.25Uo	+	16 lux	4 lux	0.25
Car Park 6 - 10Lux/0.25Uo	+	12 lux	7 lux	0.58
Car Park 7 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Car Park 8 - 10Lux/0.25Uo	+	20 lux	5 lux	0.25
Car Park 9 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Pathway 1	+	16 lux	2 lux	0.13
Pathway 2	+	19 lux	12 lux	0.63
Pathway 3	+	13 lux	10 lux	0.77
Pathway 4	+	5 lux	4 lux	0.80
Pathway 5	+	13 lux	10 lux	0.77
Pathway 6	+	20 lux	15 lux	0.75
Pathway 7	+	10 lux	8 lux	0.80
Pathway 8	+	15 lux	5 lux	0.33
Pathway 9	+	15 lux	9 lux	0.60
Pathway 10	+	10 lux	3 lux	0.30
Pathway 11	+	17 lux	7 lux	0.41
Pathway 12	+	16 lux	5 lux	0.31
Pathway 13	+	10 lux	9 lux	0.90
Pathway 14	+	9 lux	8 lux	0.89
Pathway 15	+	9 lux	7 lux	0.78
Pathway 16	+	7 lux	6 lux	0.86
Pathway 17	+	6 lux	3 lux	0.50
Pathway LHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pathway RHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pedestrian Paths 1 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian Paths 2 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian/Cycling Path - 10Lux/0.4Uo	+	27 lux	11 lux	0.41
Roadway 1 - 10Lux/0.4Uo	+	15 lux	6 lux	0.40
Roadway 2 - 10Lux/0.4Uo	+	12 lux	5 lux	0.42
SPILL	+	0 lux	0 lux	N/A
Vertical (Trees) 1	+	1 lux	0 lux	0.00
Vertical (Trees) 2	+	3 lux	0 lux	0.00
Vertical (Trees) 3	+	2 lux	0 lux	0.00
Vertical (Trees) 4	+	1 lux	0 lux	0.00
Vertical (Trees) 5	+	1 lux	0 lux	0.00
Vertical (Trees) 6	+	1 lux	0 lux	0.00
Vertical (Trees) 7	+	1 lux	0 lux	0.00
Vertical (Trees) 8	+	2 lux	0 lux	0.00
Vertical (Trees) 9	+	2 lux	0 lux	0.00
Vertical (Trees) 10	+	6 lux	0 lux	0.00
Vertical (Trees) 11	+	2 lux	0 lux	0.00
Vertical (Trees) 12	+	2 lux	0 lux	0.00
Vertical (Trees) 13	+	2 lux	0 lux	0.00
Vertical (Trees) 14	+	2 lux	0 lux	0.00





Notes:

Key Plan Drawing



On Behalf of:

Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
Co-funded by the European Union

Tionól Reigiúnach Oirthir agus Lár-Tíre
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ROSCOMMON
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Roscommon County Council

Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

CIVIC

Overview



REV:	DESCRIPTION:	BY:	DATE:
A	For Review	KD	4/08/2026

STATUS: status

Dlight
The old Waterworks,
Knockenduff, Tramore,
Co. Waterford, X91XD4V
051 - 393464
www.dlight.ie

SITE: Hodson Bay - Public Realm

TITLE: Hodson Bay - Area D

SCALE AT A0:	DATE:	DRAWN:	CHECKED:
NTS	25/08/2026	PW	SC

PROJECT NO:	DRAWING NO:	REVISION:
DL2277	SK_A	3

All luminaires in this box are mounted on 6m Columns/Poles.

Any of the symbols with a GREEN box sourround shows the 6m mounting heights.

This is being used to clean up the main lighting area for ease of review.

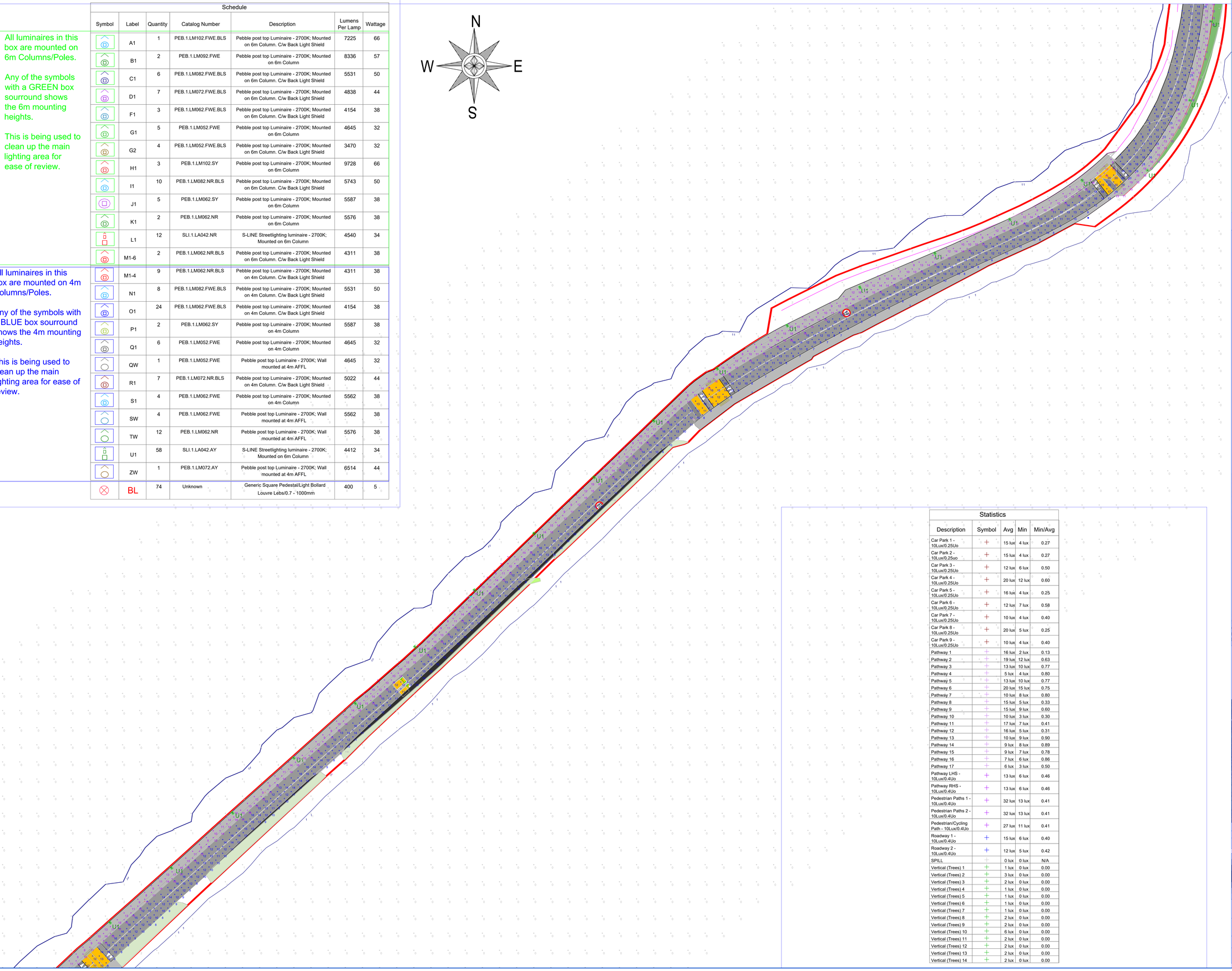
All luminaires in this box are mounted on 4m Columns/Poles.

Any of the symbols with a BLUE box sourround shows the 4m mounting heights.

This is being used to clean up the main lighting area for ease of review.

Schedule

Symbol	Label	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	A1	1	PEB.1.LM102.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	7225	66
	B1	2	PEB.1.LM092.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	8336	57
	C1	6	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5531	50
	D1	7	PEB.1.LM072.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4838	44
	F1	3	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4154	38
	G1	5	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	4645	32
	G2	4	PEB.1.LM052.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	3470	32
	H1	3	PEB.1.LM102.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	9728	66
	I1	10	PEB.1.LM082.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5743	50
	J1	5	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5587	38
	K1	2	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5576	38
	L1	12	SLI.1.LA042.NR	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4540	34
	M1-6	2	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4311	38
	M1-4	9	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4311	38
	N1	8	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5531	50
	O1	24	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4154	38
	P1	2	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5587	38
	Q1	6	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	4645	32
	QW	1	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	4645	32
	R1	7	PEB.1.LM072.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5022	44
	S1	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5562	38
	SW	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5562	38
	TW	12	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5576	38
	U1	58	SLI.1.LA042.AY	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4412	34
	ZW	1	PEB.1.LM072.AY	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	6514	44
	BL	74	Unknown	Generic Square Pedestal/Light Bollard Louvre Lebs/0.7 - 1000mm	400	5

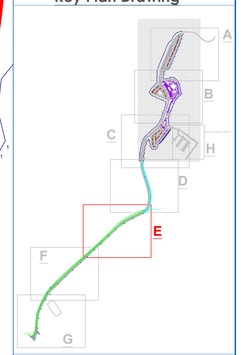


Statistics

Description	Symbol	Avg	Min	Min/Avg
Car Park 1 - 10Lux/0.25Uo	+	15 lux	4 lux	0.27
Car Park 2 - 10Lux/0.25uo	+	15 lux	4 lux	0.27
Car Park 3 - 10Lux/0.25Uo	+	12 lux	6 lux	0.50
Car Park 4 - 10Lux/0.25Uo	+	20 lux	12 lux	0.60
Car Park 5 - 10Lux/0.25Uo	+	16 lux	4 lux	0.25
Car Park 6 - 10Lux/0.25Uo	+	12 lux	7 lux	0.58
Car Park 7 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Car Park 8 - 10Lux/0.25Uo	+	20 lux	5 lux	0.25
Car Park 9 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Pathway 1	+	16 lux	2 lux	0.13
Pathway 2	+	19 lux	12 lux	0.63
Pathway 3	+	13 lux	10 lux	0.77
Pathway 4	+	5 lux	4 lux	0.80
Pathway 5	+	13 lux	10 lux	0.77
Pathway 6	+	20 lux	15 lux	0.75
Pathway 7	+	10 lux	8 lux	0.80
Pathway 8	+	15 lux	5 lux	0.33
Pathway 9	+	15 lux	9 lux	0.60
Pathway 10	+	10 lux	3 lux	0.30
Pathway 11	+	17 lux	7 lux	0.41
Pathway 12	+	16 lux	5 lux	0.31
Pathway 13	+	10 lux	9 lux	0.90
Pathway 14	+	9 lux	8 lux	0.89
Pathway 15	+	9 lux	7 lux	0.78
Pathway 16	+	7 lux	6 lux	0.86
Pathway 17	+	6 lux	3 lux	0.50
Pathway LHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pathway RHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pedestrian Paths 1 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian Paths 2 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian/Cycling Path - 10Lux/0.4Uo	+	27 lux	11 lux	0.41
Roadway 1 - 10Lux/0.4Uo	+	15 lux	6 lux	0.40
Roadway 2 - 10Lux/0.4Uo	+	12 lux	5 lux	0.42
SPILL	+	0 lux	0 lux	N/A
Vertical (Trees) 1	+	1 lux	0 lux	0.00
Vertical (Trees) 2	+	3 lux	0 lux	0.00
Vertical (Trees) 3	+	2 lux	0 lux	0.00
Vertical (Trees) 4	+	1 lux	0 lux	0.00
Vertical (Trees) 5	+	1 lux	0 lux	0.00
Vertical (Trees) 6	+	1 lux	0 lux	0.00
Vertical (Trees) 7	+	1 lux	0 lux	0.00
Vertical (Trees) 8	+	2 lux	0 lux	0.00
Vertical (Trees) 9	+	2 lux	0 lux	0.00
Vertical (Trees) 10	+	6 lux	0 lux	0.00
Vertical (Trees) 11	+	2 lux	0 lux	0.00
Vertical (Trees) 12	+	2 lux	0 lux	0.00
Vertical (Trees) 13	+	2 lux	0 lux	0.00
Vertical (Trees) 14	+	2 lux	0 lux	0.00

Notes:

Key Plan Drawing



On Behalf of:

Rialtas na hÉireann
Government of Ireland

Arna chomhchistiú ag an Aontas Eorpach
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Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

Fáilte Ireland

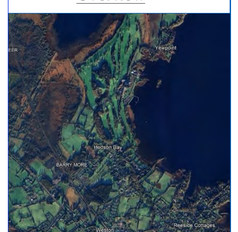
ROSCOMMON
Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

CIVIC

Overview



REV.	DESCRIPTION:	BY:	DATE:
A	For Review	KD	4/08/2026

STATUS: status

Dlight
The old Waterworks,
Knockenduff, Tramore,
Co. Waterford, X91XD4V
051 - 393464
www.dlight.ie

SITE: Hodson Bay - Public Realm

TITLE: Hodson Bay - Area E

SCALE AT A0:	DATE:	DRAWN:	CHECKED:
NTS	25/08/2026	PW	SC

PROJECT NO:	DRAWING NO:	REVISION:
DL2277	SK_A	3

All luminaires in this box are mounted on 6m Columns/Poles.

Any of the symbols with a GREEN box sourround shows the 6m mounting heights.

This is being used to clean up the main lighting area for ease of review.

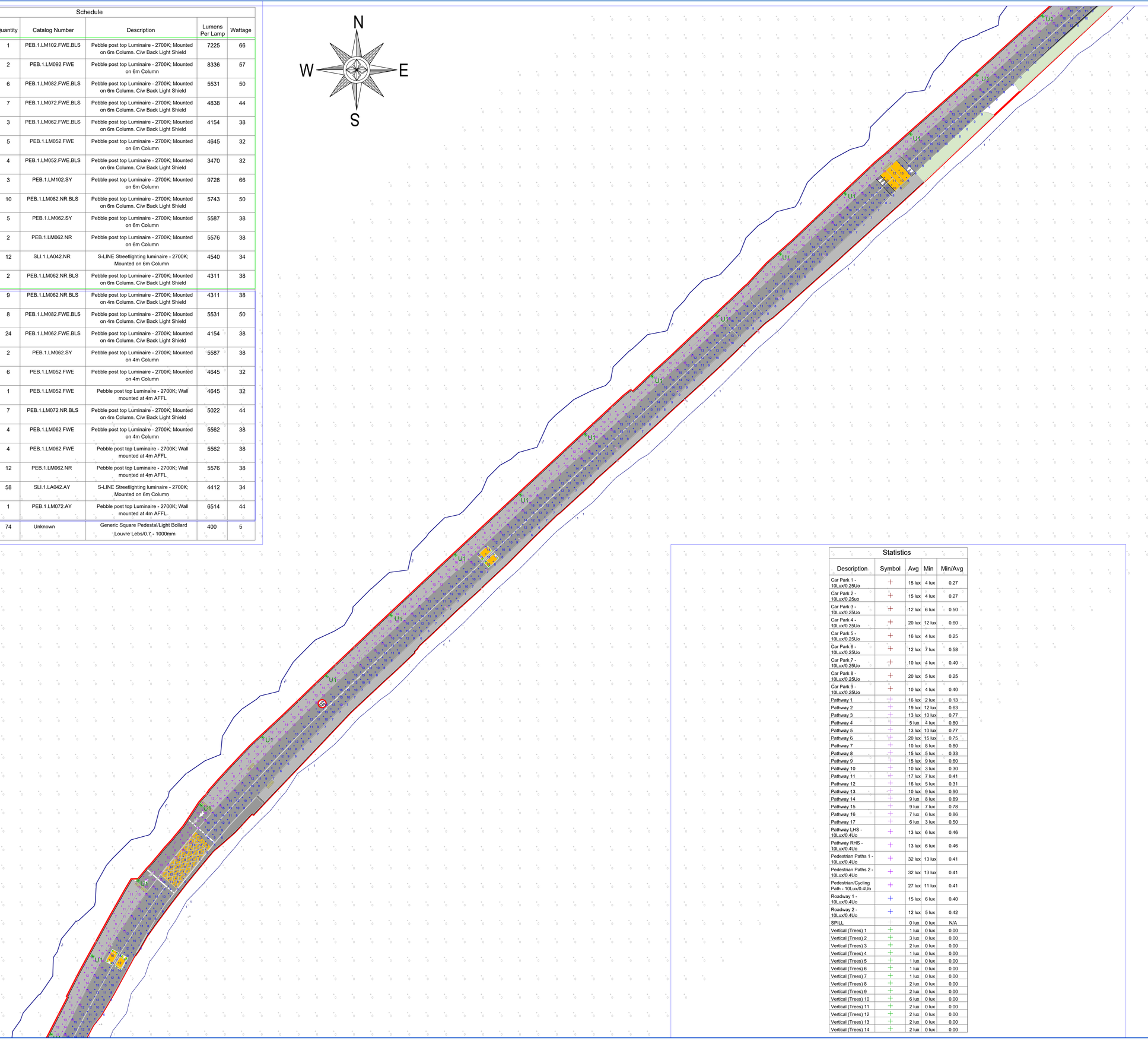
All luminaires in this box are mounted on 4m Columns/Poles.

Any of the symbols with a BLUE box sourround shows the 4m mounting heights.

This is being used to clean up the main lighting area for ease of review.

Schedule

Symbol	Label	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	A1	1	PEB.1.LM102.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	7225	66
	B1	2	PEB.1.LM092.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	8336	57
	C1	6	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5531	50
	D1	7	PEB.1.LM072.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4838	44
	F1	3	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4154	38
	G1	5	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	4645	32
	G2	4	PEB.1.LM052.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	3470	32
	H1	3	PEB.1.LM102.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	9728	66
	I1	10	PEB.1.LM082.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5743	50
	J1	5	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5587	38
	K1	2	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5576	38
	L1	12	SLI.1.LA042.NR	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4540	34
	M1-6	2	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4311	38
	M1-4	9	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4311	38
	N1	8	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5531	50
	O1	24	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4154	38
	P1	2	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5587	38
	Q1	6	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	4645	32
	QW	1	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	4645	32
	R1	7	PEB.1.LM072.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5022	44
	S1	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5562	38
	SW	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5562	38
	TW	12	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5576	38
	U1	58	SLI.1.LA042.AY	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4412	34
	ZW	1	PEB.1.LM072.AY	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	6514	44
	BL	74	Unknown	Generic Square Pedestal/Light Bollard Louvre Lebs/0.7 - 1000mm	400	5

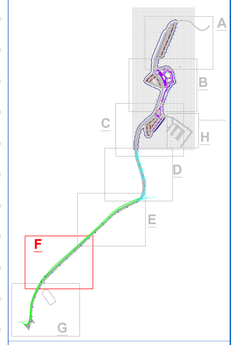


Statistics

Description	Symbol	Avg	Min	Min/Avg
Car Park 1 - 10Lux/0.25Uo	+	15 lux	4 lux	0.27
Car Park 2 - 10Lux/0.25uo	+	15 lux	4 lux	0.27
Car Park 3 - 10Lux/0.25Uo	+	12 lux	6 lux	0.50
Car Park 4 - 10Lux/0.25Uo	+	20 lux	12 lux	0.60
Car Park 5 - 10Lux/0.25Uo	+	16 lux	4 lux	0.25
Car Park 6 - 10Lux/0.25Uo	+	12 lux	7 lux	0.58
Car Park 7 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Car Park 8 - 10Lux/0.25Uo	+	20 lux	5 lux	0.25
Car Park 9 - 10Lux/0.25Uo	+	10 lux	4 lux	0.40
Pathway 1	+	16 lux	2 lux	0.13
Pathway 2	+	19 lux	12 lux	0.63
Pathway 3	+	13 lux	10 lux	0.77
Pathway 4	+	5 lux	4 lux	0.80
Pathway 5	+	13 lux	10 lux	0.77
Pathway 6	+	20 lux	15 lux	0.75
Pathway 7	+	10 lux	8 lux	0.80
Pathway 8	+	15 lux	5 lux	0.33
Pathway 9	+	15 lux	9 lux	0.60
Pathway 10	+	10 lux	3 lux	0.30
Pathway 11	+	17 lux	7 lux	0.41
Pathway 12	+	16 lux	5 lux	0.31
Pathway 13	+	10 lux	9 lux	0.90
Pathway 14	+	9 lux	8 lux	0.89
Pathway 15	+	9 lux	7 lux	0.78
Pathway 16	+	7 lux	6 lux	0.86
Pathway 17	+	6 lux	3 lux	0.50
Pathway LHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pathway RHS - 10Lux/0.4Uo	+	13 lux	6 lux	0.46
Pedestrian Paths 1 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian Paths 2 - 10Lux/0.4Uo	+	32 lux	13 lux	0.41
Pedestrian/Cycling Path - 10Lux/0.4Uo	+	27 lux	11 lux	0.41
Roadway 1 - 10Lux/0.4Uo	+	15 lux	6 lux	0.40
Roadway 2 - 10Lux/0.4Uo	+	12 lux	5 lux	0.42
SPILL	+	0 lux	0 lux	N/A
Vertical (Trees) 1	+	1 lux	0 lux	0.00
Vertical (Trees) 2	+	3 lux	0 lux	0.00
Vertical (Trees) 3	+	2 lux	0 lux	0.00
Vertical (Trees) 4	+	1 lux	0 lux	0.00
Vertical (Trees) 5	+	1 lux	0 lux	0.00
Vertical (Trees) 6	+	1 lux	0 lux	0.00
Vertical (Trees) 7	+	1 lux	0 lux	0.00
Vertical (Trees) 8	+	2 lux	0 lux	0.00
Vertical (Trees) 9	+	2 lux	0 lux	0.00
Vertical (Trees) 10	+	6 lux	0 lux	0.00
Vertical (Trees) 11	+	2 lux	0 lux	0.00
Vertical (Trees) 12	+	2 lux	0 lux	0.00
Vertical (Trees) 13	+	2 lux	0 lux	0.00
Vertical (Trees) 14	+	2 lux	0 lux	0.00

Notes:

Key Plan Drawing



On Behalf of:

Rialtas na hÉireann
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Tionól Reigiúnach Oirthir agus Lár-Tíre
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THE HODSON BAY WATERFRONT PARK PROJECT IS CO-FUNDED BY THE GOVERNMENT OF IRELAND AND THE EUROPEAN UNION THROUGH THE EU JUST TRANSITION FUND

CIVIC

Overview



REV	DESCRIPTION:	BY:	DATE:
A	For Review	KD	4/08/2026

STATUS: status

Dlight
The old Waterworks,
Knockenduff, Tramore,
Co. Waterford, X91XD4V
051 - 393464
www.dlight.ie

SITE: Hodson Bay - Public Realm

TITLE: Hodson Bay - Area F

SCALE AT A0:	DATE:	DRAWN:	CHECKED:
NTS	25/08/2026	PW	SC

PROJECT NO:	DRAWING NO:	REVISION:
DL2277	SK_A	3

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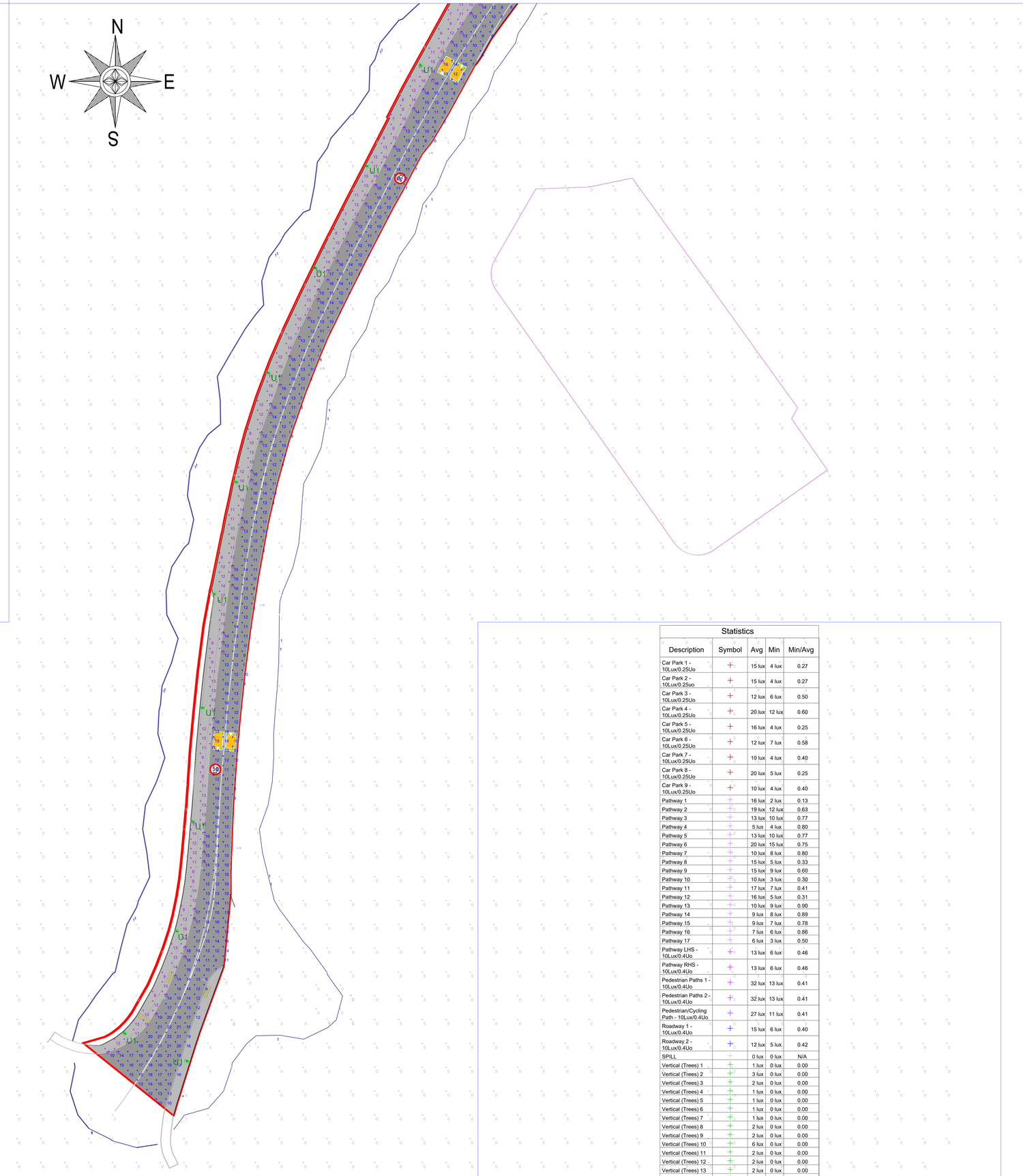
All luminaires in this box are mounted on 4m Columns/Poles.

Any of the symbols with a BLUE box sourround shows the 4m mounting heights.

This is being used to clean up the main lighting area for ease of review.

Schedule

Symbol	Label	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	A1	1	PEB.1.LM102.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	7225	66
	B1	2	PEB.1.LM092.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	8336	57
	C1	6	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5531	50
	D1	7	PEB.1.LM072.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4838	44
	F1	3	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4154	38
	G1	5	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 6m Column	4645	32
	G2	4	PEB.1.LM052.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	3470	32
	H1	3	PEB.1.LM102.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	9728	66
	I1	10	PEB.1.LM082.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	5743	50
	J1	5	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5587	38
	K1	2	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Mounted on 6m Column	5576	38
	L1	12	SLI.1.LA042.NR	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4540	34
	M1-6	2	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 6m Column. C/w Back Light Shield	4311	38
	M1-4	9	PEB.1.LM062.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4311	38
	N1	8	PEB.1.LM082.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5531	50
	O1	24	PEB.1.LM062.FWE.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	4154	38
	P1	2	PEB.1.LM062.SY	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5587	38
	Q1	6	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	4645	32
	QW	1	PEB.1.LM052.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	4645	32
	R1	7	PEB.1.LM072.NR.BLS	Pebble post top Luminaire - 2700K; Mounted on 4m Column. C/w Back Light Shield	5022	44
	S1	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Mounted on 4m Column	5562	38
	SW	4	PEB.1.LM062.FWE	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5562	38
	TW	12	PEB.1.LM062.NR	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	5576	38
	U1	58	SLI.1.LA042.AY	S-LINE Streetlighting luminaire - 2700K; Mounted on 6m Column	4412	34
	ZW	1	PEB.1.LM072.AY	Pebble post top Luminaire - 2700K; Wall mounted at 4m AFFL	6514	44
	BL	74	Unknown	Generic Square Pedestal/Light Bollard Louvre Lebs/0.7 - 1000mm	400	5


N
W
E
S
U1
U1
U1

Appendix D

Manufacturer Data Sheets

› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM102.FWE.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM102.FWE.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.10,000 lm with a nominal 2700°K colour temperature
• Forward throw extra light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

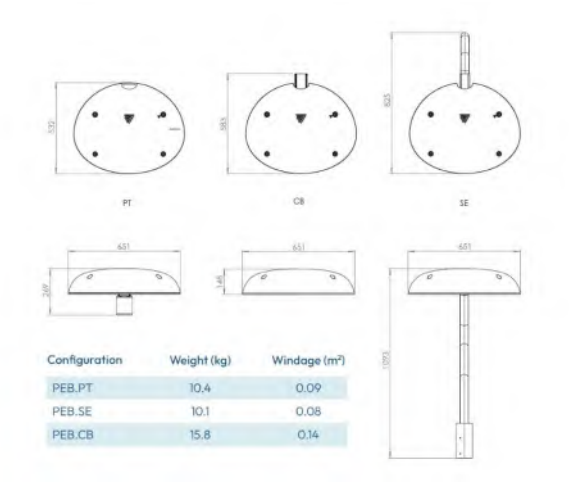
PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

Performance

Drive Current from Driver:	640mA
Power:	66W
Fitting Current:	0.3A
Fitting Inrush:	46A - 0.25ms
Number of Drivers:	1
1x Driver 1 Inrush:	46A - 0.25ms
Max Drivers per 16A Type B MCB:	11
Max Fittings per 16A Type B MCB:	11
Total Number of LEDs:	288
Minimum Dim Level:	11%
SDCM/MacAdam Ellipse:	3

Dimensions

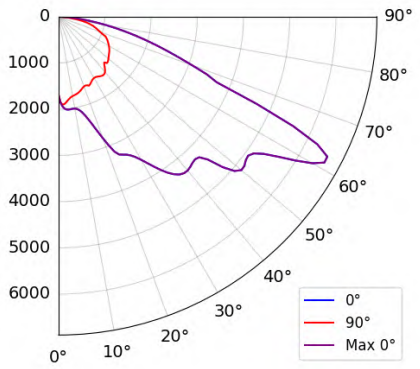


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

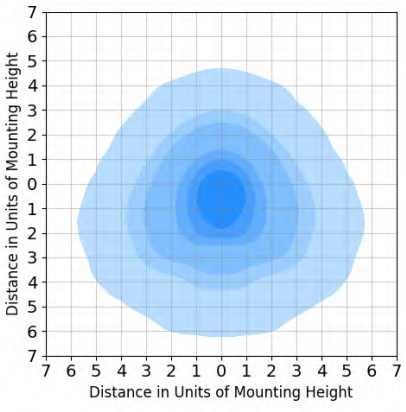
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	9,690
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM102.FWE
G-Class:	G*2 Imax @ ⊠ 70°: 391 Imax @ ⊠ 80°: 119 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

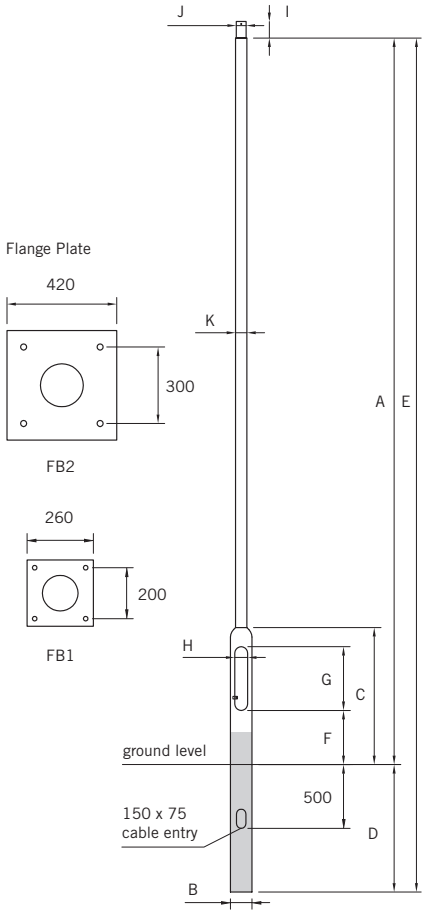
› **Datasheet**

PEBB.6.PT1.HVZ



Holophane products that are suitable

CityMax
Denver Elite pole
D-Series
Factor
Factor small
V-Max



	Nominal Height	Base Diameter*	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length*	Spigot Diameter*	Shaft Diameter*	Weight kg*	Bending Moment (ULS) Nm
description	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**		
2.5m standard duty	2500	140	1075	800	3300	400	500	100	-	-	76	27	2100
3m standard duty	3000	140	1075	800	3800	400	500	100	-	-	76	30	4666
3.5m standard duty	3500	140	1075	800	4300	400	500	100	-	-	76	32	2100
4m standard duty	4000	140	1075	800	4800	400	500	100	-	-	76	34	6484
4.5m standard duty	4500	140	1075	800	5300	400	500	100	-	-	76	37	5108
5m standard duty	5000	140	1075	800	5800	400	500	100	-	-	76	39	6149
5.5m standard duty	5500	140	1075	1000	6500	400	500	100	-	-	76	44	6003
6m standard duty	6000	140	1075	1000	7000	400	500	100	-	-	76	46	5999
6m heavy duty	5700	168	1200	1000	6700	400	600	115	130	76	89	71	10404
8m standard duty	7700	168	1200	1200	8900	400	600	115	130	76	89	89	10072
8m heavy duty	7700	168	1300	1200	9000	500	600	115	250	101	114	107	15699
8m extra heavy duty	7700	194	1300	1200	9000	500	600	115	250	127	140	136	18973
10m standard duty	9700	168	1300	1500	11200	500	600	115	250	101	114	150	18067
10m heavy duty	9700	194	1300	1500	11200	500	600	115	250	127	140	168	23193
10m extra heavy duty	9700	194	1300	1500	11200	500	600	115	250	152	168	220	28317
12m standard duty	11700	194	1300	1700	13400	500	600	115	250	127	140	213	26251
12m heavy duty	11700	194	1300	1700	13400	500	600	115	250	127	168	260	40390

* Exclusion TBC

2.5-6m std Poles	**Flange Plate FB1**	**Bolts**	M18 x 400
8-12m std Poles	**Flange Plate FB2**	**Bolts**	M24 x 820

Flange Plate and Anchor Bolt information will be confirmed at time of order due to the necessity in ensuring the correct plate and Anchor Bolts are supplied.

Column type to be confirmed at time of order as this is based on luminaire weight, windage and geographical location.

stepped steel - CityMax Large only

post top

	Nominal Height	Base Diameter	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length	Spigot Diameter	Shaft Diameter	Weight kg	Bending Moment (ULS) Nm
description	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**		
6m	6000	140	1075	1000	7000	400	500	115	-	-	-	46	5999
8m	7700	168	1300	1200	9000	500	600	115	100	76	114	107	15699
10m	9700	168	1300	1500	11200	500	600	115	100	76	114	150	18067
12m	11700	194	1300	1700	13400	500	600	115	100	76	140	168	26251
15m	14700	194	1200	2000	17000	400	600	115	100	76	168	306	40300

twin head

	Nominal Height	Base Diameter	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length	Spigot Diameter	Shaft Diameter	Weight kg	Bending Moment (ULS) Nm
description	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**		
8m	7400	194	1200	1200	8800	400	600	115	200	127	139.7	125	22610
10m	9400	194	1200	1500	11100	400	600	115	200	152.4	168.3	208	39131
12m	11400	194	2500	1700	13300	1000	600	115	200	152.4	168.3	295	41585

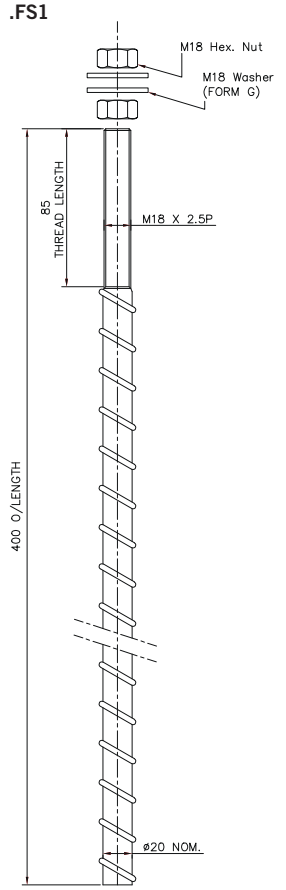
Note: For Terrain Category 2 locations LMZ, HVZ & HEZ

For columns supplied with optional flange base Holophane offers two types of foundation bolts.

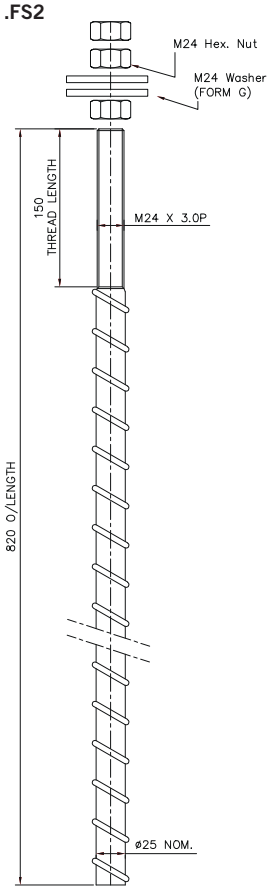
Note: The material used for the bolts is Fe E500 grade steel, with yield strength 500 N/mm2 and minimum UTS 550 N/mm2.

HEL.FS1 M18 Bolts (FS1) x 400 mm long
HEL.FS2 M24 Bolts (FS2) x 820 mm long

.FS1



.FS2



› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM092.FWE.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM092.FWE.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.9,000 lm with a nominal 2700°K colour temperature
• Forward throw extra light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

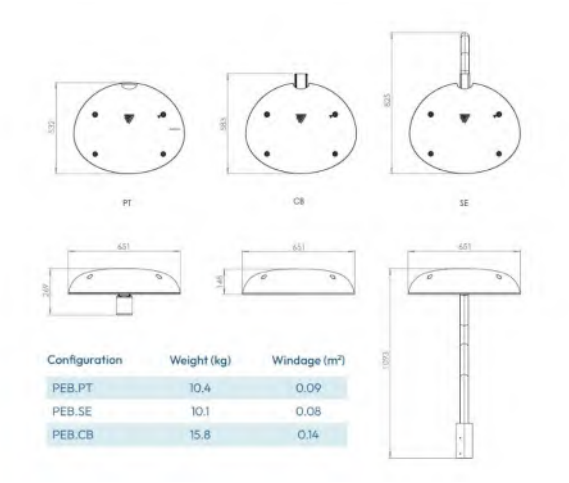
Performance

Drive Current from Driver:	545mA
Power:	57W
Fitting Current:	0.26A
Fitting Inrush:	46A - 0.25ms
Number of Drivers:	1
1x Driver 1 Inrush:	46A - 0.25ms
Max Drivers per 16A Type B MCB:	11
Max Fittings per 16A Type B MCB:	11
Total Number of LEDs:	288
Minimum Dim Level:	13%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

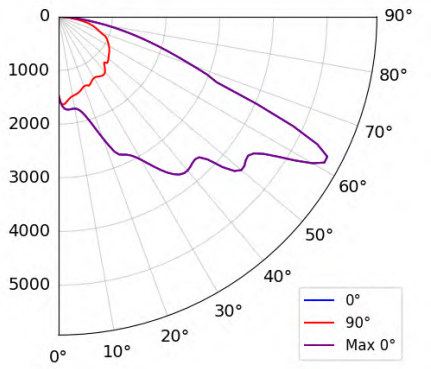


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

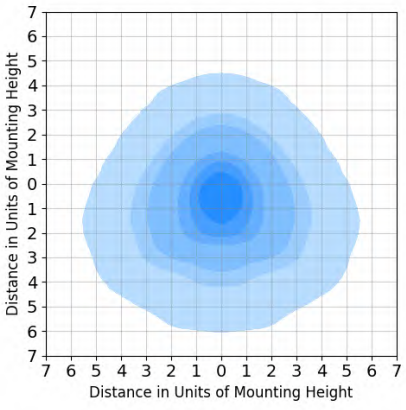
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	8,342
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM092.FWE
G-Class:	G*2 Imax @ ⊠ 70°: 391 Imax @ ⊠ 80°: 119 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM082.FWE.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM082.FWE.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.8,000 lm with a nominal 2700°K colour temperature
• Forward throw extra light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

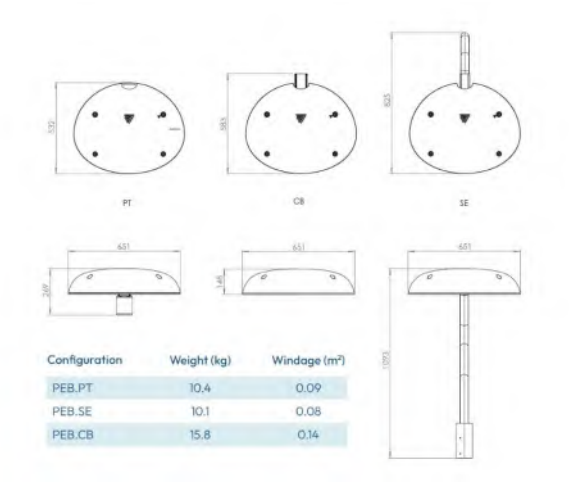
Performance

Drive Current from Driver:	962mA
Power:	50W
Fitting Current:	0.22A
Fitting Inrush:	46A - 0.25ms
Number of Drivers:	1
1x Driver 1 Inrush:	46A - 0.25ms
Max Drivers per 16A Type B MCB:	11
Max Fittings per 16A Type B MCB:	11
Total Number of LEDs:	288
Minimum Dim Level:	7%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

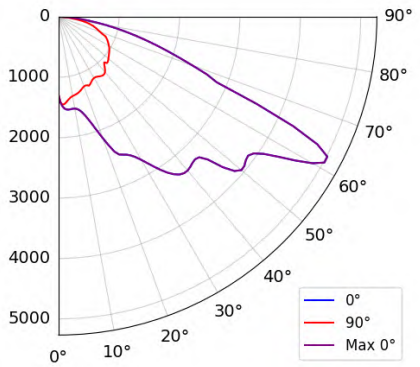


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

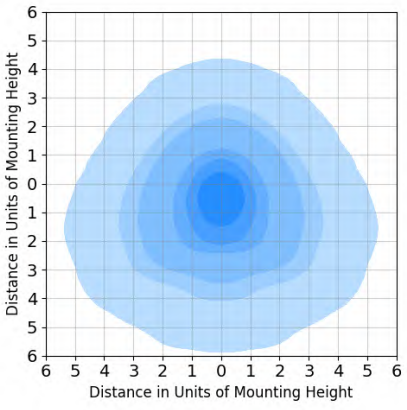
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	7,413
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM082.FWE
G-Class:	G*2 Imax @ ⊠ 70°: 391 Imax @ ⊠ 80°: 119 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM072.FWE.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM072.FWE.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.7,000 lm with a nominal 2700°K colour temperature
• Forward throw extra light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

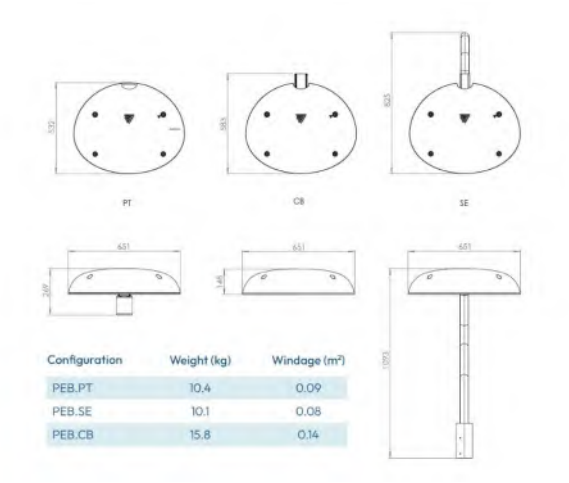
Performance

Drive Current from Driver:	836mA
Power:	44W
Fitting Current:	0.2A
Fitting Inrush:	22A - 0.29ms
Number of Drivers:	1
1x Driver 1 Inrush:	22A - 0.29ms
Max Drivers per 16A Type B MCB:	20
Max Fittings per 16A Type B MCB:	20
Total Number of LEDs:	288
Minimum Dim Level:	8%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

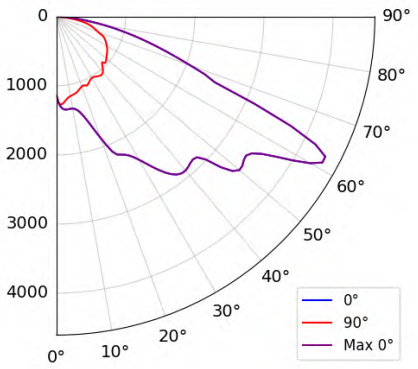


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

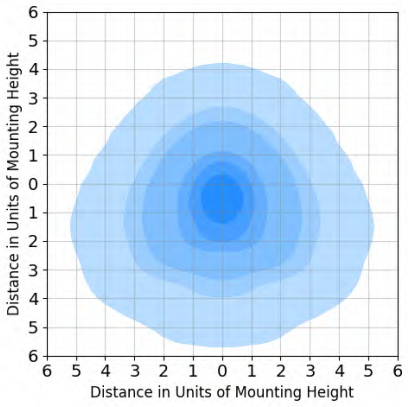
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	6,483
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM072.FWE
G-Class:	G*2 Imax @ ⊠ 70°: 391 Imax @ ⊠ 80°: 119 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM062.FWE.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM062.FWE.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.6,000 lm with a nominal 2700°K colour temperature
• Forward throw extra light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

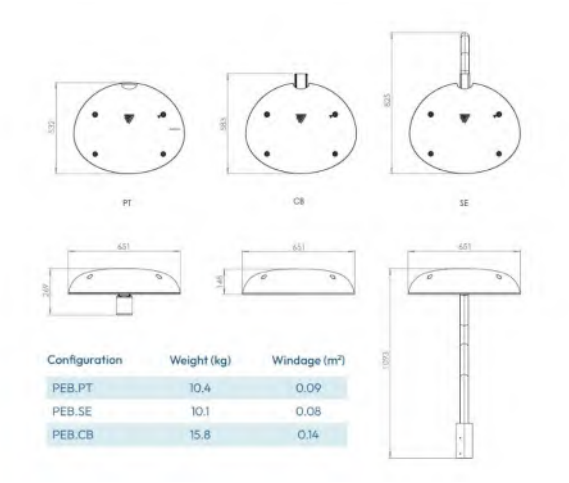
Performance

Drive Current from Driver:	714mA
Power:	38W
Fitting Current:	0.17A
Fitting Inrush:	22A - 0.29ms
Number of Drivers:	1
1x Driver 1 Inrush:	22A - 0.29ms
Max Drivers per 16A Type B MCB:	20
Max Fittings per 16A Type B MCB:	20
Total Number of LEDs:	288
Minimum Dim Level:	10%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

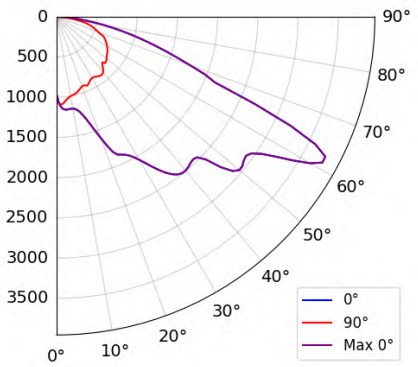


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

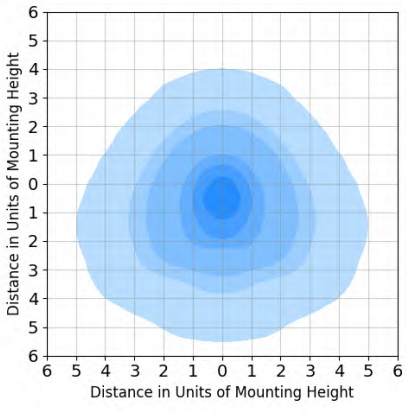
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	5,566
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM062.FWE
G-Class:	G*2 Imax @ ⊠ 70°: 391 Imax @ ⊠ 80°: 119 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM052.FWE.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM052.FWE.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.5,000 lm with a nominal 2700°K colour temperature
• Forward throw extra light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

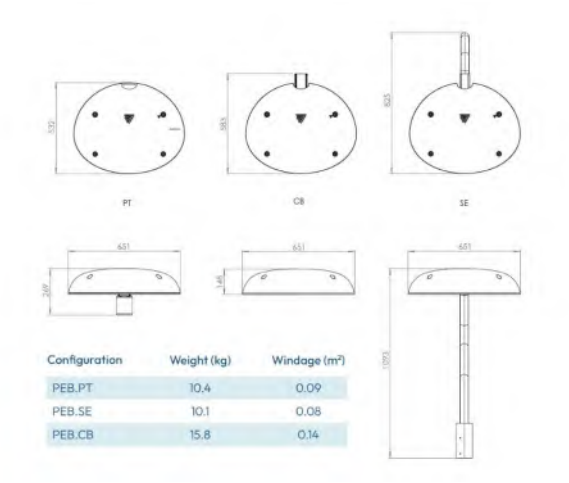
Performance

Drive Current from Driver:	594mA
Power:	32W
Fitting Current:	0.14A
Fitting Inrush:	22A - 0.29ms
Number of Drivers:	1
1x Driver 1 Inrush:	22A - 0.29ms
Max Drivers per 16A Type B MCB:	20
Max Fittings per 16A Type B MCB:	20
Total Number of LEDs:	288
Minimum Dim Level:	12%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

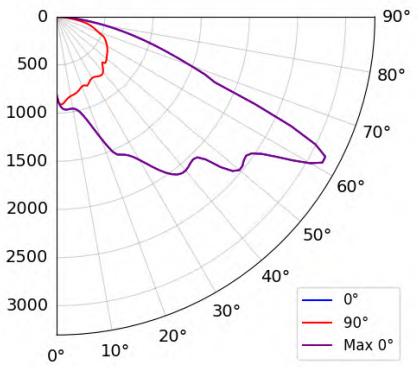


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

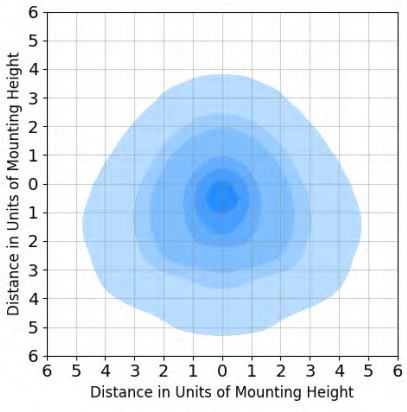
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	4,648
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM052.FWE
G-Class:	G*2 Imax @ ⊠ 70°: 391 Imax @ ⊠ 80°: 119 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM102.SY.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM102.SY.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.10,000 lm with a nominal 2700°K colour temperature
• A symmetrical light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

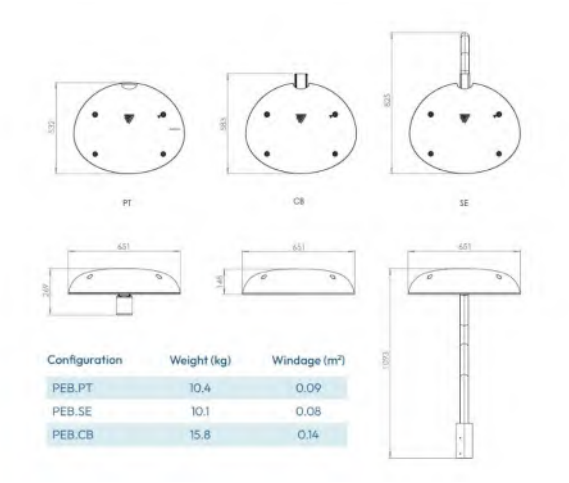
Performance

Drive Current from Driver:	640mA
Power:	66W
Fitting Current:	0.3A
Fitting Inrush:	46A - 0.25ms
Number of Drivers:	1
1x Driver 1 Inrush:	46A - 0.25ms
Max Drivers per 16A Type B MCB:	11
Max Fittings per 16A Type B MCB:	11
Total Number of LEDs:	288
Minimum Dim Level:	11%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

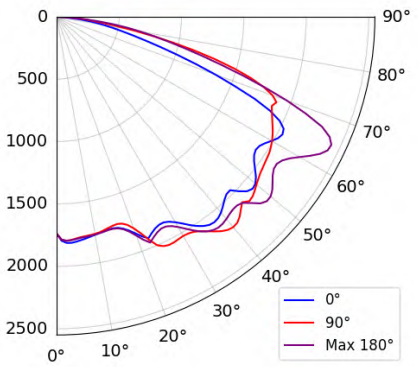


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

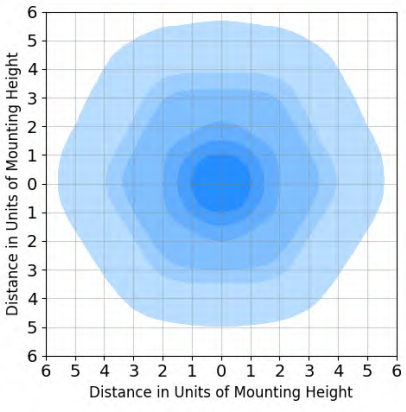
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	9,731
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM102.SY
G-Class:	G*6 Imax @ ⊠ 70°: 222 Imax @ ⊠ 80°: 80 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM082.NR.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM082.NR.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.8,000 lm with a nominal 2700°K colour temperature
• Long and Narrow light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

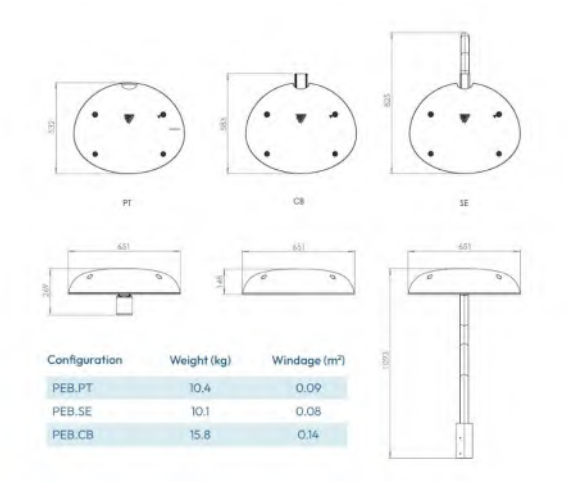
Performance

Drive Current from Driver:	962mA
Power:	50W
Fitting Current:	0.22A
Fitting Inrush:	46A - 0.25ms
Number of Drivers:	1
1x Driver 1 Inrush:	46A - 0.25ms
Max Drivers per 16A Type B MCB:	11
Max Fittings per 16A Type B MCB:	11
Total Number of LEDs:	288
Minimum Dim Level:	7%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

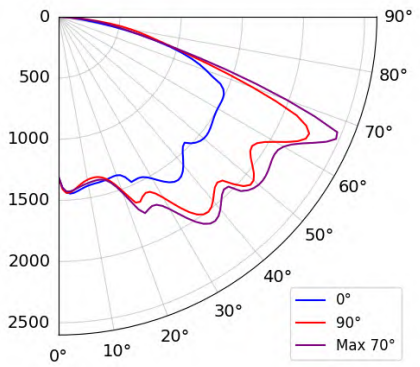


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

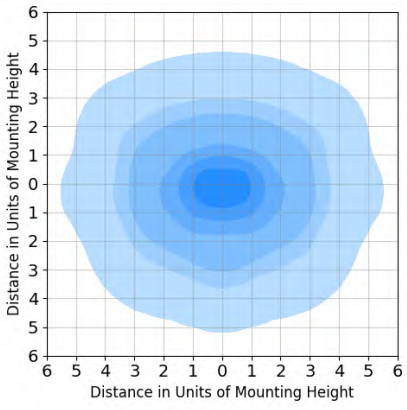
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	7,434
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM082.NR
G-Class:	G*6 Imax @ ⊠ 70°: 267 Imax @ ⊠ 80°: 84 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM062.SY.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM062.SY.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.6,000 lm with a nominal 2700°K colour temperature
• A symmetrical light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

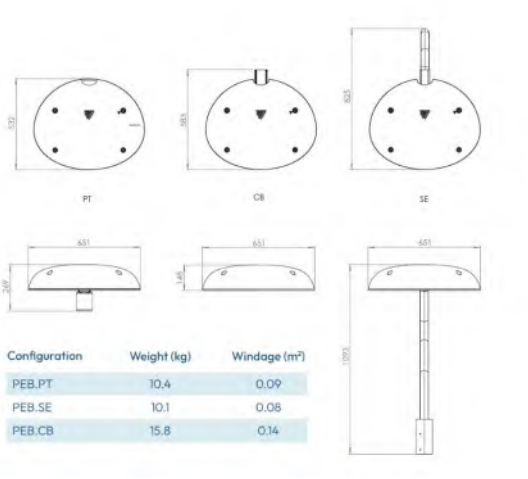
Performance

Drive Current from Driver:	714mA
Power:	38W
Fitting Current:	0.17A
Fitting Inrush:	22A - 0.29ms
Number of Drivers:	1
1x Driver 1 Inrush:	22A - 0.29ms
Max Drivers per 16A Type B MCB:	20
Max Fittings per 16A Type B MCB:	20
Total Number of LEDs:	288
Minimum Dim Level:	10%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

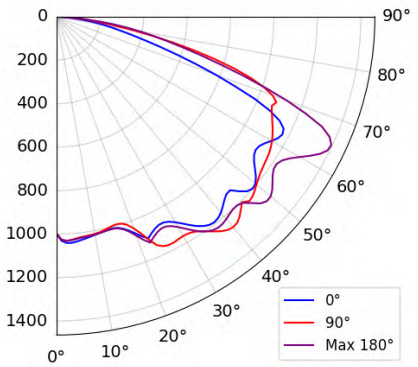


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

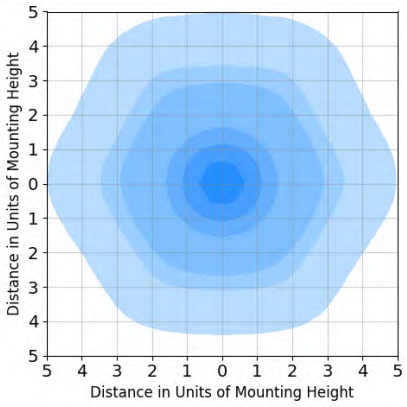
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	5,589
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM062.SY
G-Class:	G*6 Imax @ ⊠ 70°: 222 Imax @ ⊠ 80°: 80 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM062.NR.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM062.NR.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.6,000 lm with a nominal 2700°K colour temperature
• Long and Narrow light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.6.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 6 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

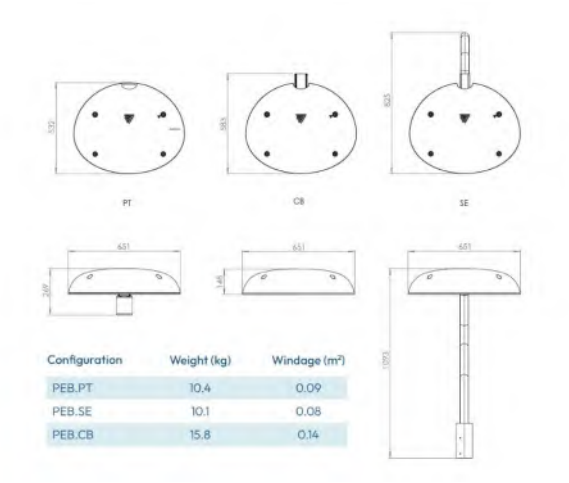
Performance

Drive Current from Driver:	714mA
Power:	38W
Fitting Current:	0.17A
Fitting Inrush:	22A - 0.29ms
Number of Drivers:	1
1x Driver 1 Inrush:	22A - 0.29ms
Max Drivers per 16A Type B MCB:	20
Max Fittings per 16A Type B MCB:	20
Total Number of LEDs:	288
Minimum Dim Level:	10%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

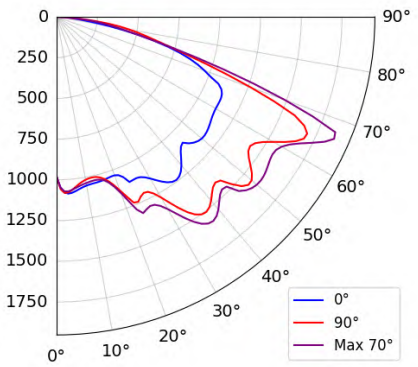


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

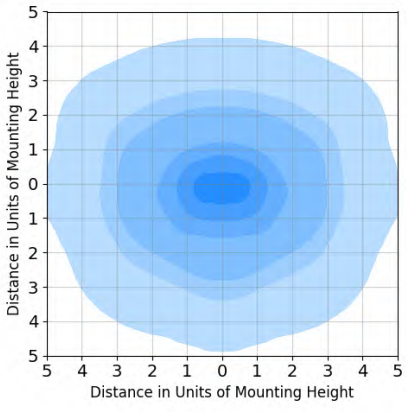
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	5,581
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM062.NR
G-Class:	G*6 Imax @ ⊠ 70°: 267 Imax @ ⊠ 80°: 84 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

› **Datasheet - ROADWAY - SLI**

SLI.NCPA.1.LA042.NR.PT1.C7.F140.NIR



MADE IN BRITAIN

ida DARK SKY APPROVED by the International Dark-Sky Association darksky.org

Product image may not represent the final configuration stated above.



This is a bespoke product configuration. The performance data, dimensions and photometry included on this Datasheet are for a standard configured product only and may differ to the specification outlined below.

Product Specification

SLI.NCPA.1.LA042.NR.PT1.C7.F140.NIR

Holophane S-Line luminaire. Die cast aluminium ((EN AC-44100)(AL.Si12)) body and hinged door for access to electrical termination via single point M5 stainless steel. Luminaire sealed to IP66. Suitable for either post mounting or side entry (please specify) with ability to adjust onsite by -10° to +10° tilt. International Dark-Sky Association Approved (colour temperatures 3000K or warmer are approved under the IDA).
This specific SKU includes:

• Series 1
• LED light engine producing c.4,000 lm with a nominal 2700°K colour temperature
• Long and Narrow light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

SLIB.6.PT76.HVZ

Holophane tubular base compartment column for use with Line Luminaires. 6 metre, 76mm post top mounting, For heavy area wind zones (compliant to EN40).
• Direct embedment

Performance

Power:	34W
Fitting Current:	0.15A
Optical Risk Group:	1
Energy Class:	B



4Kg$_2$



0.0297M



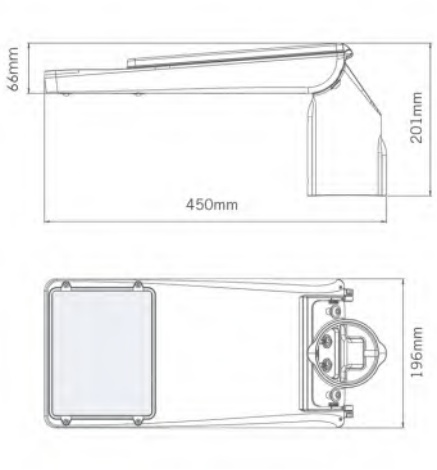
42 0034 0000 100*



Installation Guide

*Generic UMSUG code based on product wattage and some or all of product family being included within Elexon data base.

Dimensions



CIBSE TM66 - CEAM Rating



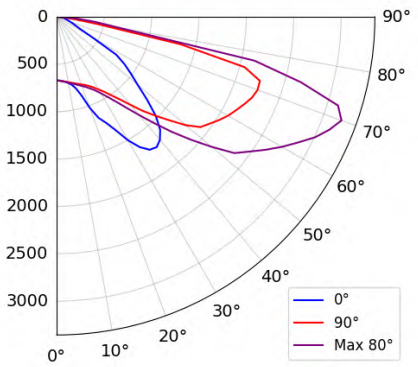
2.5 to 4.0	1.5 to 2.5	0.5 to 1.5	0 to 0.5
Excellent circularity	Definite/ substantial progress to circularity	Some circular economy functionality	Very poor circular economy performance

Assured Score

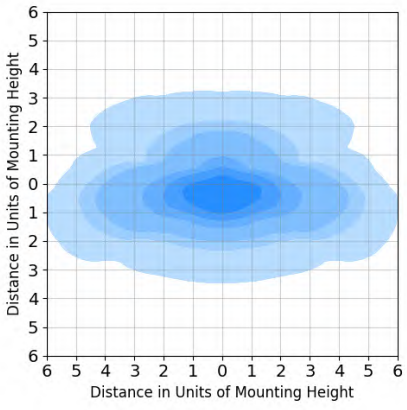
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	4,540
CCT:	2700K
CRI:	70
IES File:	SLI.1.LA042.NR
G-Class:	G*2 Imax @ ⊠ 70°: 704 Imax @ ⊠ 80°: 149 Imax @ ⊠ 90°: 0

Colour Temperatures Available;

3000K

4000K

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

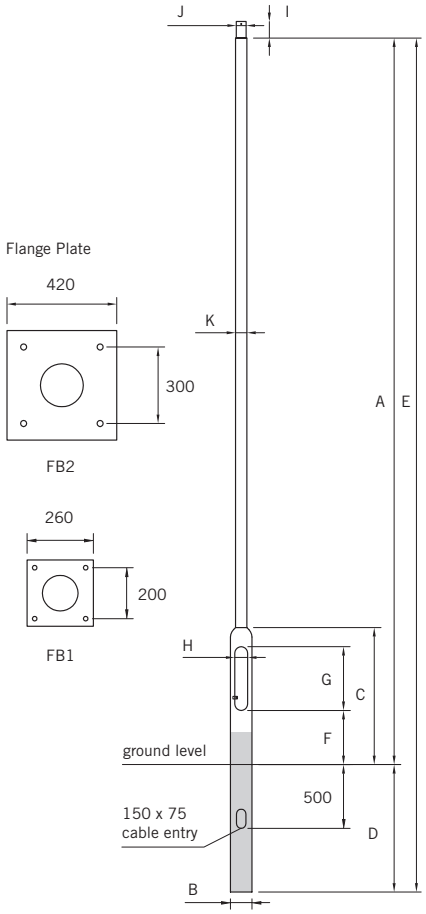
› **Datasheet**

SLIB.6.PT76.HVZ



Holophane products that are suitable

CityMax
Denver Elite pole
D-Series
Factor
Factor small
V-Max



	Nominal Height	Base Diameter*	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length*	Spigot Diameter*	Shaft Diameter*	Weight kg*	Bending Moment (ULS) Nm
description	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**		
2.5m standard duty	2500	140	1075	800	3300	400	500	100	-	-	76	27	2100
3m standard duty	3000	140	1075	800	3800	400	500	100	-	-	76	30	4666
3.5m standard duty	3500	140	1075	800	4300	400	500	100	-	-	76	32	2100
4m standard duty	4000	140	1075	800	4800	400	500	100	-	-	76	34	6484
4.5m standard duty	4500	140	1075	800	5300	400	500	100	-	-	76	37	5108
5m standard duty	5000	140	1075	800	5800	400	500	100	-	-	76	39	6149
5.5m standard duty	5500	140	1075	1000	6500	400	500	100	-	-	76	44	6003
6m standard duty	6000	140	1075	1000	7000	400	500	100	-	-	76	46	5999
6m heavy duty	5700	168	1200	1000	6700	400	600	115	130	76	89	71	10404
8m standard duty	7700	168	1200	1200	8900	400	600	115	130	76	89	89	10072
8m heavy duty	7700	168	1300	1200	9000	500	600	115	250	101	114	107	15699
8m extra heavy duty	7700	194	1300	1200	9000	500	600	115	250	127	140	136	18973
10m standard duty	9700	168	1300	1500	11200	500	600	115	250	101	114	150	18067
10m heavy duty	9700	194	1300	1500	11200	500	600	115	250	127	140	168	23193
10m extra heavy duty	9700	194	1300	1500	11200	500	600	115	250	152	168	220	28317
12m standard duty	11700	194	1300	1700	13400	500	600	115	250	127	140	213	26251
12m heavy duty	11700	194	1300	1700	13400	500	600	115	250	127	168	260	40390

* Exclusion TBC

2.5-6m std Poles	**Flange Plate FB1**	**Bolts**	M18 x 400
8-12m std Poles	**Flange Plate FB2**	**Bolts**	M24 x 820

Flange Plate and Anchor Bolt information will be confirmed at time of order due to the necessity in ensuring the correct plate and Anchor Bolts are supplied.

Column type to be confirmed at time of order as this is based on luminaire weight, windage and geographical location.

stepped steel - CityMax Large only

post top

	Nominal Height	Base Diameter	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length	Spigot Diameter	Shaft Diameter	Weight kg	Bending Moment (ULS) Nm
description	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**		
6m	6000	140	1075	1000	7000	400	500	115	-	-	-	46	5999
8m	7700	168	1300	1200	9000	500	600	115	100	76	114	107	15699
10m	9700	168	1300	1500	11200	500	600	115	100	76	114	150	18067
12m	11700	194	1300	1700	13400	500	600	115	100	76	140	168	26251
15m	14700	194	1200	2000	17000	400	600	115	100	76	168	306	40300

twin head

	Nominal Height	Base Diameter	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length	Spigot Diameter	Shaft Diameter	Weight kg	Bending Moment (ULS) Nm
description	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**		
8m	7400	194	1200	1200	8800	400	600	115	200	127	139.7	125	22610
10m	9400	194	1200	1500	11100	400	600	115	200	152.4	168.3	208	39131
12m	11400	194	2500	1700	13300	1000	600	115	200	152.4	168.3	295	41585

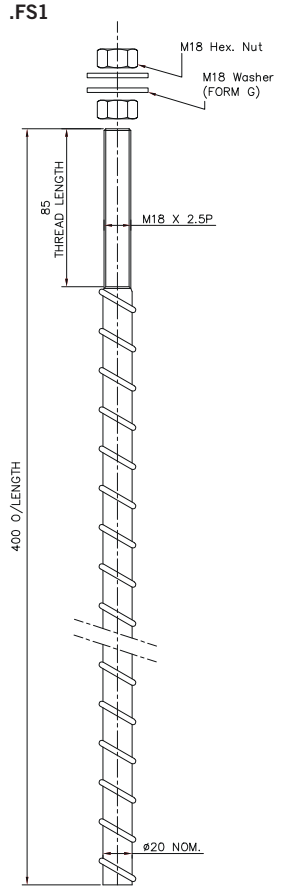
Note: For Terrain Category 2 locations LMZ, HVZ & HEZ

For columns supplied with optional flange base Holophane offers two types of foundation bolts.

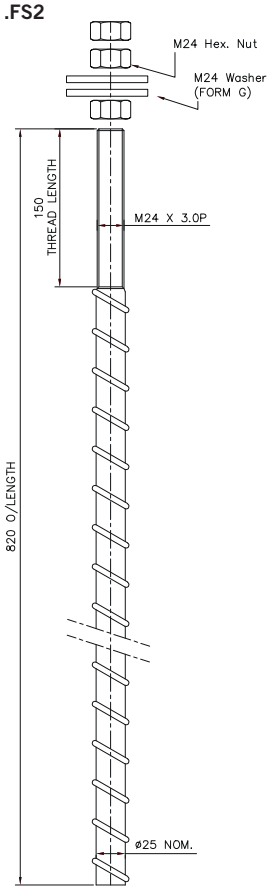
Note: The material used for the bolts is Fe E500 grade steel, with yield strength 500 N/mm2 and minimum UTS 550 N/mm2.

HEL.FS1 M18 Bolts (FS1) x 400 mm long
HEL.FS2 M24 Bolts (FS2) x 820 mm long

.FS1



.FS2



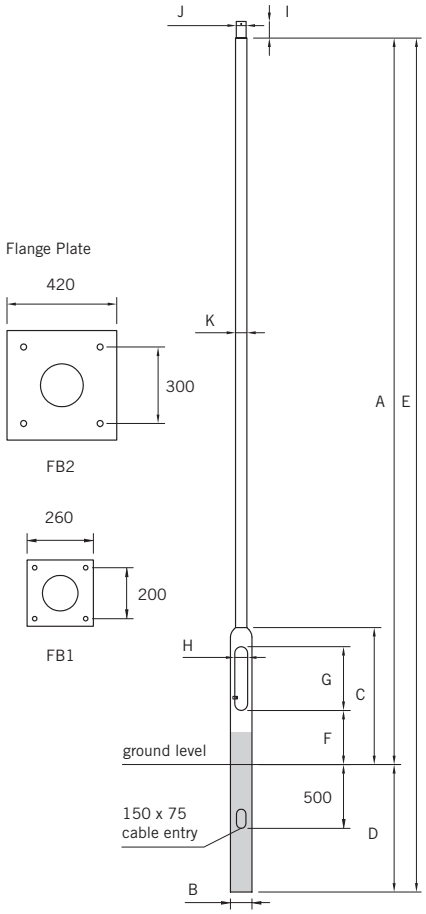
› **Datasheet**

PEBB.4.PT1.HVZ



Holophane products that are suitable

CityMax
Denver Elite pole
D-Series
Factor
Factor small
V-Max



	Nominal Height	Base Diameter*	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length*	Spigot Diameter*	Shaft Diameter*	Weight kg*	Bending Moment (ULS) Nm
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* Exclusion TBC

2.5-6m std Poles	**Flange Plate FB1**	**Bolts**	M18 x 400
8-12m std Poles	**Flange Plate FB2**	**Bolts**	M24 x 820

Flange Plate and Anchor Bolt information will be confirmed at time of order due to the necessity in ensuring the correct plate and Anchor Bolts are supplied.

Column type to be confirmed at time of order as this is based on luminaire weight, windage and geographical location.

stepped steel - CityMax Large only

post top

	Nominal Height	Base Diameter	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length	Spigot Diameter	Shaft Diameter	Weight kg	Bending Moment (ULS) Nm
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12m	11700	194	1300	1700	13400	500	600	115	100	76	140	168	26251
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twin head

	Nominal Height	Base Diameter	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length	Spigot Diameter	Shaft Diameter	Weight kg	Bending Moment (ULS) Nm
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10m	9400	194	1200	1500	11100	400	600	115	200	152.4	168.3	208	39131
12m	11400	194	2500	1700	13300	1000	600	115	200	152.4	168.3	295	41585

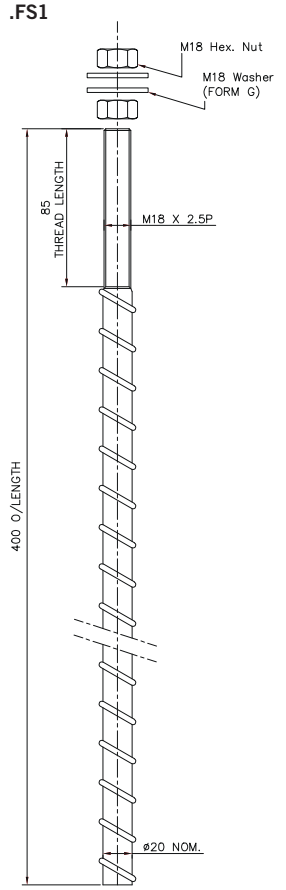
Note: For Terrain Category 2 locations LMZ, HVZ & HEZ

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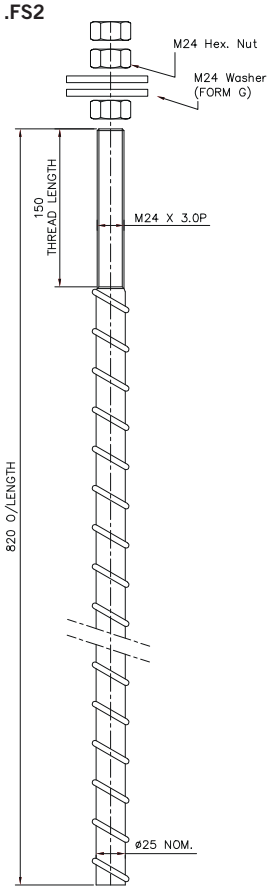
Note: The material used for the bolts is Fe E500 grade steel, with yield strength 500 N/mm2 and minimum UTS 550 N/mm2.

HEL.FS1 M18 Bolts (FS1) x 400 mm long
HEL.FS2 M24 Bolts (FS2) x 820 mm long

.FS1



.FS2



› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM072.NR.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

PEB.1.LM072.NR.PT1.C7.NIR

Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.7,000 lm with a nominal 2700°K colour temperature
• Long and Narrow light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

PEBB.4.PT1.HVZ

Holophane tubular base compartment column for use with Pebble luminaires. 4 metre, 60/76mm post top mounting only, For heavy area wind zones (compliant to EN40).
• DO NOT REMOVE THIS RECORD

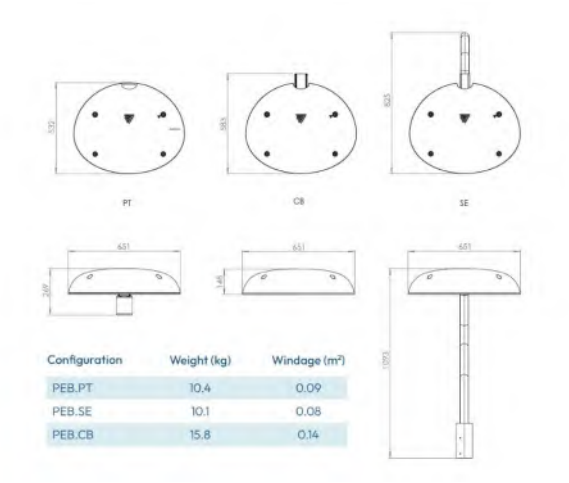
Performance

Drive Current from Driver:	836mA
Power:	44W
Fitting Current:	0.2A
Fitting Inrush:	22A - 0.29ms
Number of Drivers:	1
1x Driver 1 Inrush:	22A - 0.29ms
Max Drivers per 16A Type B MCB:	20
Max Fittings per 16A Type B MCB:	20
Total Number of LEDs:	288
Minimum Dim Level:	8%
SDCM/MacAdam Ellipse:	3



Installation Guide

Dimensions

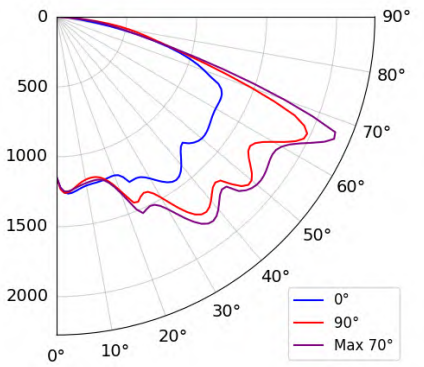


Configuration	Weight (kg)	Windage (m²)
PEB.PT	10.4	0.09
PEB.SE	10.1	0.08
PEB.CB	15.8	0.14

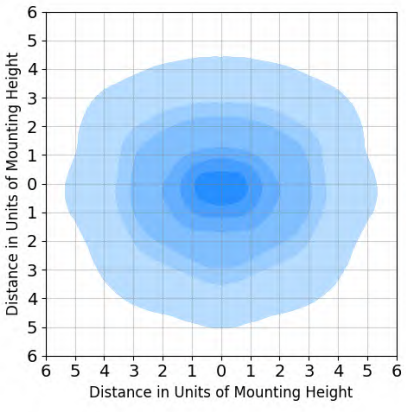
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	6,502
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM072.NR
G-Class:	G*6 Imax @ ⊠ 70°: 267 Imax @ ⊠ 80°: 84 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

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› **Datasheet - ROADWAY - SLI**

SLI.NCPA.1.LA042.AY.PT1.C7.F140.NIR



MADE IN BRITAIN

ida DARK SKY APPROVED

Product image may not represent the final configuration stated above.



This is a bespoke product configuration. The performance data, dimensions and photometry included on this Datasheet are for a standard configured product only and may differ to the specification outlined below.

Product Specification

Holophane S-Line luminaire. Die cast aluminium ((EN AC-44100)(AL.Si12)) body and hinged door for access to electrical termination via single point M5 stainless steel. Luminaire sealed to IP66. Suitable for either post mounting or side entry (please specify) with ability to adjust onsite by -10° to +10° tilt. International Dark-Sky Association Approved (colour temperatures 3000K or warmer are approved under the IDA).
This specific SKU includes:

- Series 1
- Asymmetric light distribution
- 60/76mm post top mounting only
- Black (RAL9005)

Performance

Power:	34W
Fitting Current:	0.15A
Optical Risk Group:	1
Energy Class:	B

4Kg$_2$

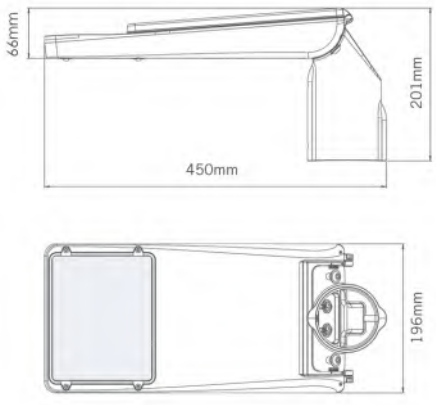
0.0297M

42 0034 0000 100*

Installation Guide

*Generic UMSUG code based on product wattage and some or all of product family being included within Elexon data base.

Dimensions



CIBSE TM66 - CEAM Rating



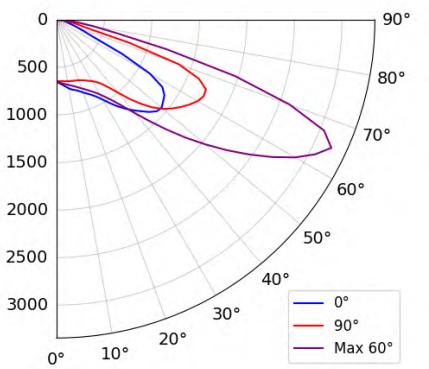
2.5 to 4.0	1.5 to 2.5	0.5 to 1.5	0 to 0.5
Excellent circularity	Definite/ substantial progress to circularity	Some circular economy functionality	Very poor circular economy performance

Assured Score

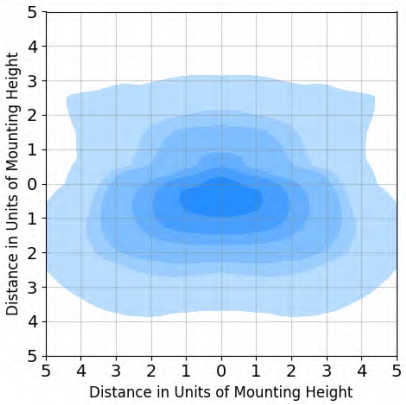
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	4,412
CCT:	2700K
CRI:	70
IES File:	SLI.1.LA042.AY
G-Class:	G*2 Imax @ ⊠ 70°: 652 Imax @ ⊠ 80°: 116 Imax @ ⊠ 90°: 0

Colour Temperatures Available;

3000K

4000K

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

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› **Datasheet - EXTERNAL - PEBBLE**

PEB.1.LM072.AY.PT1.C7.NIR



MADE IN BRITAIN

Product image may not represent the final configuration stated above.



Product Specification

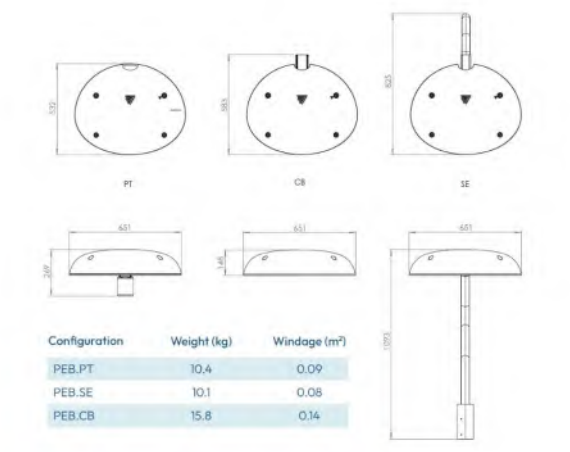
Holophane Pebble luminaire is a outdoor area light with a low-profile design and patented modular light engine concept. The product is manufactured from die-cast marine grade aluminium and sealed to IP65 with individual prismatic polycarbonate optic pods. The optical pods deliver 'Comfort Optic' solution that combines prismatic control with a soft illuminated surface to deliver balanced light with reduced glare and improved visibility.
Access to driver and electrical terminations is via a detachable housing on top of the luminaire.
This specific SKU includes:
Series 1
• LED light engine producing c.7,000 lm with a nominal 2700°K colour temperature
• Asymmetric light distribution
• 60/76mm post top mounting only
• Black (RAL9005)

Performance

Drive Current from Driver:	836mA
Power:	44W
Fitting Current:	0.2A
Fitting Inrush:	22A - 0.29ms
Number of Drivers:	1
1x Driver 1 Inrush:	22A - 0.29ms
Max Drivers per 16A Type B MCB:	20
Max Fittings per 16A Type B MCB:	20
Total Number of LEDs:	288
Minimum Dim Level:	8%
SDCM/MacAdam Ellipse:	3

Installation Guide

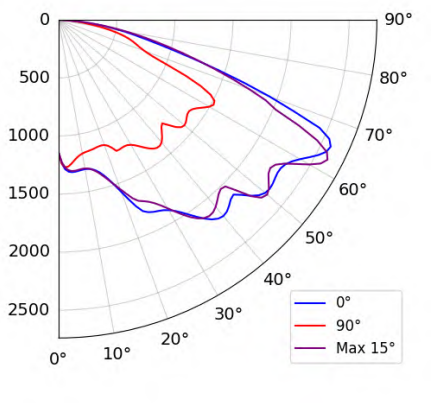
Dimensions



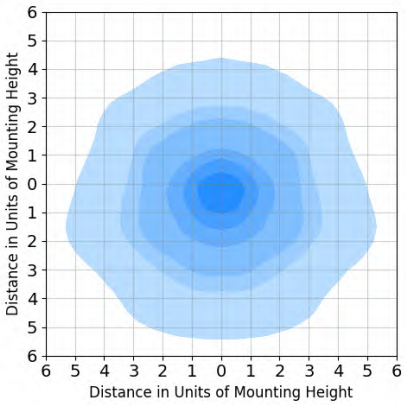
Photometry

IES File

Polar Plot



Isoilluminance Plot



Lumens:	6,519
CCT:	2700K
CRI:	70
IES File:	PEB.1.LM072.AY
G-Class:	G*6 Imax @ ⊠ 70°: 297 Imax @ ⊠ 80°: 99 Imax @ ⊠ 90°: 0

Colours

Selected Colour

C7 Black (RAL9005)

Custom Colour Available

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Standard Colours Available

C1 Smooth White (RAL9016)

C4 graphite (RAL7011)

C6 Smooth Grey (RAL7035)

C7 Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the Holophane luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the Holophane catalogue, Datasheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

Summary P752-2995 - Hodson Bay Waterfront Park (NI)

Line No.	Item Ref	Quantity	Catalogue
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
10	A1	1	PEB.1.LM102.FWE.PT1.C7.NIR
11	A1	1	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
20	B1	2	PEB.1.LM092.FWE.PT1.C7.NIR
21	B1	2	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
30	C1	6	PEB.1.LM082.FWE.PT1.C7.NIR
31	C1	6	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
40	D1	7	PEB.1.LM072.FWE.PT1.C7.NIR
41	D1	7	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
50	F1	3	PEB.1.LM062.FWE.PT1.C7.NIR
51	F1	3	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
60	G1	5	PEB.1.LM052.FWE.PT1.C7.NIR
61	G1	5	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
70	G2	4	PEB.1.LM052.FWE.PT1.C7.NIR
71	G2	4	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
80	H1	3	PEB.1.LM102.SY.PT1.C7.NIR
81	H1	3	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
90	I1	10	PEB.1.LM082.NR.PT1.C7.NIR
91	I1	10	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
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101	J1	5	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
110	K1	2	PEB.1.LM062.NR.PT1.C7.NIR
111	K1	2	PEBB.6.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
130	L1	19	SLI.NCPA.1.LA042.NR.PT1.C7.F140.NIR
131	L1	19	SLIB.6.PT76.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			
140	M1-4	8	PEB.1.LM062.NR.PT1.C7.NIR
141	M1-4	8	PEBB.4.PT1.HVZ
LUMINAIRE, COLUMN AND BRACKET PACKAGE			

150	M1-6	2	PEB.1.LM062.NR.PT1.C7.NIR
151	M1-6	2	PEBB.6.PT1.HVZ

LUMINAIRE, COLUMN AND BRACKET PACKAGE

160	N1	8	PEB.1.LM082.FWE.PT1.C7.NIR
161	N1	8	PEBB.4.PT1.HVZ

LUMINAIRE, COLUMN AND BRACKET PACKAGE

170	O1	28	PEB.1.LM062.FWE.PT1.C7.NIR
171	O1	28	PEBB.4.PT1.HVZ

LUMINAIRE, COLUMN AND BRACKET PACKAGE

180	P1	5	PEB.1.LM062.SY.PT1.C7.NIR
181	P1	5	PEBB.4.PT1.HVZ

LUMINAIRE, COLUMN AND BRACKET PACKAGE

190	Q1	6	PEB.1.LM052.FWE.PT1.C7.NIR
191	Q1	6	PEBB.4.PT1.HVZ

LUMINAIRE, COLUMN AND BRACKET PACKAGE

200	R1	7	PEB.1.LM072.NR.PT1.C7.NIR
201	R1	7	PEBB.4.PT1.HVZ

LUMINAIRE, COLUMN AND BRACKET PACKAGE

210	S1	4	PEB.1.LM062.FWE.PT1.C7.NIR
211	S1	4	PEBB.4.PT1.HVZ

LUMINAIRE, COLUMN AND BRACKET PACKAGE

220	T1	7	PEB.1.LM062.NR.PT1.C7.NIR
221	T1	7	PEBB.4.PT1.HVZ

LUMINAIRE, COLUMN AND BRACKET PACKAGE

230	U1	58	SLI.NCPA.1.LA042.AY.PT1.C7.F140.NIR
231	U1	58	PEBB.6.PT1.HVZ

LUMINAIRE, COLUMN AND BRACKET PACKAGE

240	ZW	#	PEB.1.LM072.AY.PT1.C7.NIR
241	ZW	#	Wall Brackets

ACCESSORY

230	BLS	142	PEB.BLS

APPENDIX 4:
MACROPHYTE SURVEY RESULTS

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

Appendix 4 - Aquatic Macrophyte Survey Report

Hodson Bay Waterfront Park, Co. Roscommon

DOCUMENT DETAILS

Client:	**Roscommon County Council**
Project Title:	**Hodson Bay Waterfront Park, Co. Roscommon**
Project Number:	**241220**
Document Title:	**Aquatic Macrophyte Survey Report**
Document File Name:	**Appendix 4 – Aquatic Macrophyte Survey Report – F – 2026.08.14–241220**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Final	14/08/2026	NR	AvdGM

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1. INTRODUCTION

1.1 Context

MKO was commissioned to undertake macrophyte surveys within areas of Eutrophic lake (FL5) habitat in Lough Ree, occurring at the Proposed Development at Hodson Bay, Co. Roscommon. Surveys aimed to provide an evaluation of conformity with the habitat *3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation,* listed in Annex I of the EU Habitats Directive and included as a Qualifying Interest of Lough Ree SAC [Site code: 000440], as well as provide a baseline of macrophytes recorded within the lake habitat within and adjacent to the proposed development.

Surveys included transect surveys conducted via a combination of manual wading, grapnel throws and using an aquatic drone in prohibitively deep water which could not be waded.

Manual wading surveys and grapnel throws, and Aquatic drone surveys were conducted on 16th July 2025 and 28th July 2025, respectively, by Aran von der Geest Moroney and Niamh Rowan of MKO.

Detailed methodologies and guidance followed during these surveys are outlined below.

2. SURVEY METHODS

2.1 Macrophyte transect surveys

Dedicated macrophyte surveys were undertaken by MKO along transects extending from the shore of Lough Ree within, adjacent to and in the vicinity of the Proposed Development Site. Methodology to conduct both qualitative manual wading surveys and qualitative aquatic drone surveys was based on standard methodology used by the Environmental Protection Agency to assess the status of water bodies in relation to the EU Water Framework Directive (EPA, 2020). Transects were waded or surveyed using a FIFish aquatic drone (methodologies as per: Keena & Lally, 2023).

4 no. transects from the shoreline were waded, 1 no. transect was surveyed via grapnel throw, while 9 no. transects were surveyed using an aquatic drone. The length of wading transects were determined by the wadable depth of water at each. While the tether of the drone measures 100 m, the length of drone transects conducted was approx. 90 m from the starting point, taking into account the effect of currents within Lough Ree. Using the robotic arm attachment on the aquatic drone, grab samples were taken along each of the aquatic drone transects. Locations of both manual wading surveys and aquatic drone surveys are shown in Figure 2-1.

Plants were viewed using a bathyscope or aquatic drone camera along respective wading and drone transects. Along wading transects, plants were sampled periodically using grapnel throw or manual hand collection, while samples were obtained via the robotic arm of the aquatic drone periodically throughout deeper water transects. Species were noted along each transect, with an assessment of their abundance on a five-point DAFOR scale (Dominant, Abundant, Frequent, Occasional, Rare).

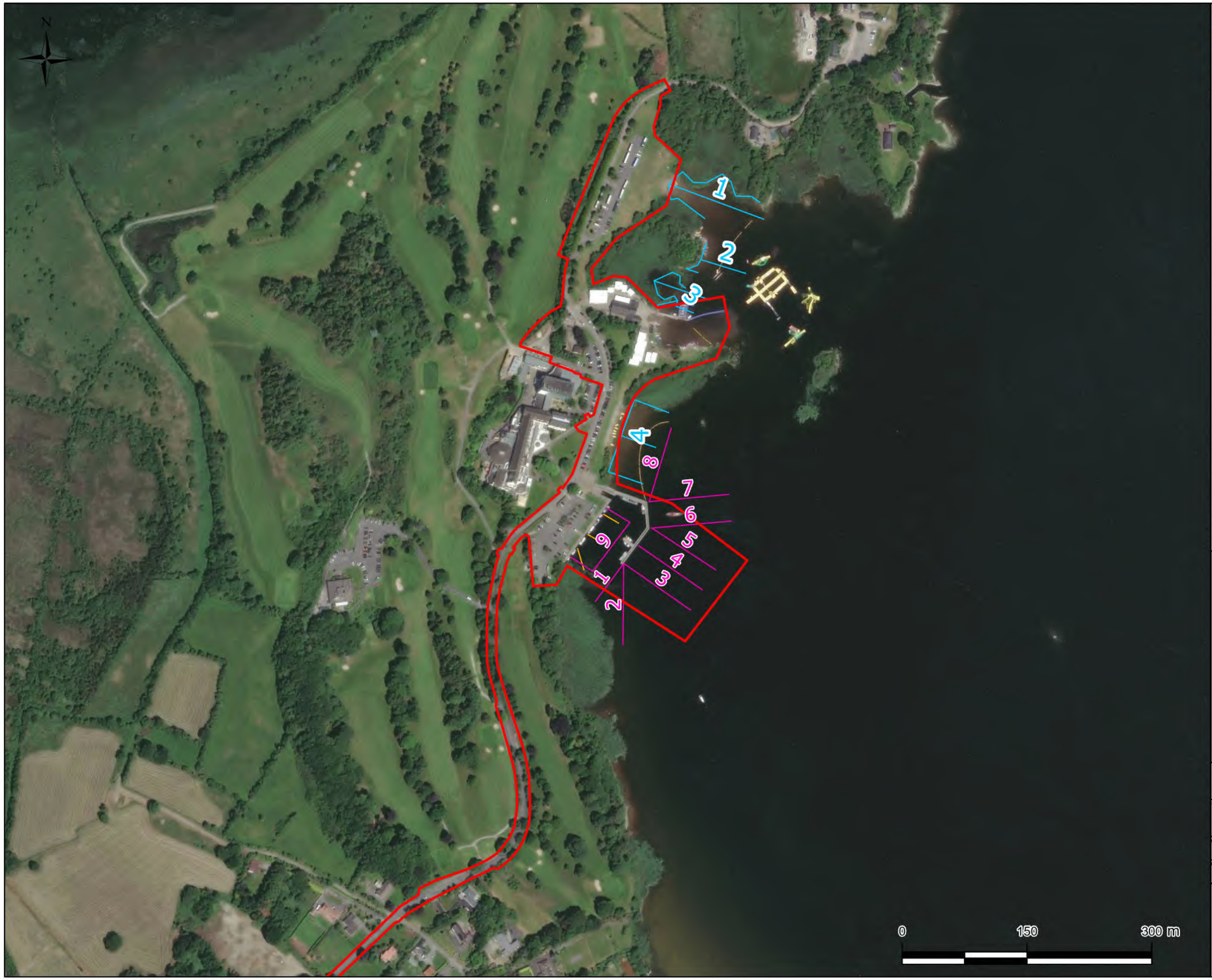
Initial wading and grapnel trawl surveys conducted on 16th July 2025 provided an understanding of the baseline and informed further aquatic drone survey transects on 28th July 2025.

The habitat assessment surveys described in this report have been undertaken with reference to the following guidelines:

- Commission of the European Communities (2013) *Interpretation manual of European Union habitats*. Eur 28. European Commission DG Environment.
- *NPWS (2025). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report.* Edited by: Domhnall Finch, Aoife Delaney, Fionnuala O'Neill and Deirdre Lynn.

Macrophytes were identified using various botanical keys and guides, including Inland Fisheries Ireland Aquatic Plants in Ireland a Photographic Guide (Caffrey, Matson & O'Briain, 2023).

Plant nomenclature for vascular plants follows '*New Flora of the British Isles*' (Stace, 2010).



Map Legend

- Proposed Development Site
- Wading Macrophyte Transects
- Grapnel Throw
- Aquatic Drone Transects

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title
Location of macrophyte transect surveys

Project Title
Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Project No.	Drawing No.	Scale
241220	Figure 2-1	1:8,000
Drawn By	Checked By	Date
BOC	AvdGM	11/08/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

3. SURVEY RESULTS

3.1 Wading transect surveys

3.1.1 Wading Macrophyte survey - transect 1

Wading Macrophyte transect 1 was conducted through the northern-most bay, partially within the Proposed Development Site. Macrophyte assemblage up to 20 m perpendicular to the shoreline consisted of ***Occasional*** patches of pondweeds (including Long-leaved Pondweed *(Potamogeton lucens x gramineus = P. x angustifolius),* Small pondweed *(Potamogeton berchtoldii),* Shining Pondweed *(Potamogeton lucens)* and perfoliate pondweed *(Potamogeton perfoliate)* and the Third Scheduled Invasive species Nuttall's waterweed *(Elodea nutallii),* among otherwise bare silt and sand based lake bed substrates (Plate 3-1)

More dense patches of an assemblage of the above pondweed species were recorded in more ***Frequent*** density from approx. 65 m perpendicular to the shoreline, as well as ***Occasional*** spiked water-milfoil *(Myriophyllum spicatum)* and ***Rare*** patches of delicate stonewort *(Chara virgata)* and greater water-moss *(Fontinalis antipyretica)* (Plate 3-2).

Reed and large sedge swamp (FS1) habitat bordered the central wading transect 1 to the north and south, with species throughout these dense habitats including reed-canary grass *(Phalaris arundinacea)* and common reed *(Phragmites australis),* both recorded as ***Dominant***, with unbranched bur-reed *(Sparganium emersum)* and arrowhead *(Sagittaria sagittifolia),* both recorded as ***Frequent***, found below the waterline on the border of this habitat. Common club-rush (Schoenoplectus lacustris) was also recorded as ***Abundant*** throughout stands of common reed and reed-canary grass. Other species which were recorded as ***Occasional*** included common spike-rush *(Eleocharis palustris)*, yellow water lily *(Nuphar lutea)*, water horsetail *(Equisetum fluviatile). Cladophora sp.* algae was present throughout macrophytes in open water and around reedbeds.

Along the outcrop of land on the northern side of the transect, marginal species recorded along the shoreline included amphibious bistort *(Persicaria amphibia)*, water-plantain *(Alisma plantago-aquatica),* water germander *(Teucrium scordium)*, water mint *(Mentha aquatica)*, marsh pennywort *(Hydrocotyle vulgaris)*, shoreweed *(Littorella uniflora)* Lesser spearwort *(Ranunculus flammula)*, purple loosestrife *(Lythrum salicaria)*, sneezewort *(Achillea ptarmica),* hemp agrimony *(Eupatorium cannabinum),* tufted vetch *(Vicia cracca)* and marsh horsetail *(Equisetum palustre).*

Encrusted deposits of quagga and zebra mussel were present intermittently along the lakebed throughout wading transect 1 (Plate 3-5).



Plate 3-1. A representative photo of sparse macrophyte coverage and silt and sand substrates throughout the first 65 m of wading macrophyte transect 1



Plate 3-2. A representative photo of denser macrophyte coverage from 65 m out in wading transect 1



*Plate 3-3. A representative photo of **Reed and large sedge swamp (FS1)** habitat dominated by common reed and reed-canary grass*



*Plate 3-4. A representative photo of common club-rush dominant sections of **Reed and large sedge swamp (FS1)** habitat along wading transect 1*



Plate 3-5. A representative photo of quagga and zebra mussel found along wading macrophyte transect 1

3.1.2 Wading Macrophyte survey - transect 2

Lakebed substrates at wading Macrophyte transect 2 was conducted partially within the Proposed Development Site and consisted of more cobble-based substrates. The wadable length of transect 2 was limited to 65 m from the shoreline due to prohibitive depths, with grapnel throws performed to approx. 20 m further out.

Between 5–65 m from the shoreline, macrophytes on the lakebed consisted of Nutall's waterweed ***(Dominant)***, long-leaved pondweed and perfoliate pondweed ***(Frequent)*** and small pondweed ***(Occasional)***, with beds of ***Frequent*** delicate stonewort (Plate 3-6).

Along the southern side of the transect, stands of **Reed and large sedge swamp (FS1)** consisting of common reed, reed-canary grass and common club-rush (all recorded as ***Dominant)*** were present continuously from the shoreline to 20 m perpendicular to the shoreline (Plate 3-8). Yellow water lily, unbranched bur-reed and arrowhead (all recorded as ***Frequent)*** were present along the margins between reedbeds and open water.

Grapnel throws from the limit of accessible depth (65 m from shoreline) showed further ***Dominant*** coverage of Nutall's waterweed and ***Frequent*** coverage of delicate stonewort.

Similar to wading transect 1, quagga and zebra mussel were present in encrusted formations on the lakebed throughout the transect.



Plate 3-6. A representative photo of cobble-dominant lakebed substrate at wading macrophyte transect 2



*Plate 3-7. A representative photo of areas of **Reed and large sedge swamp (FS1)** habitat along wading macrophyte transect 2*



Plate 3-8. A representative photo of common reed and reed-canary grass dominant reed beds along the southern side of wading macrophyte transect 2

3.1.3 Wading Macrophyte survey - transect 3

Wading Macrophyte transect 3 was conducted within the Proposed Development Site, located along the area of Lough Ree directly north of the Baysports facility. Lakebed substrate consisted of a mixture of sand and silt, as well as gravel and cobbles. Quagga and zebra mussel encrustations were observed throughout the transect. Within the bounds of the existing Baysports water sports facility, habitat consisted largely of areas of highly disturbed lakebed, with gravel, sand and silt substrates and little to no macrophyte coverage (Plate 3-9, Plate 3-10), with a fringing **Reed and large sedge swamp (FS1)** habitat bordering between the Baysports facility and adjacent bay (Plate 3-11).

As with transects 1 and 2, marginal and emergent macrophytes along both the northern and southern sides of the transect consisted of common reed, reed-canary grass (recorded as ***Dominant)*** and common club-rush (recorded as ***Abundant)*** from the beginning of the transect (0 m) to 50 m perpendicular to the start point (Plate 3-12). Yellow water lily was recorded as ***Frequent*** along areas of reed bed (Plate 3-13). Arrowhead and unbranched bur-reed were also recorded as ***Frequent*** along the northern margin of the transect, with lesser water plantain *(Baldellia ranunculoides)* recorded as ***Occasional.*** Filamentous green algae (FGA) was found throughout reed beds along the transect.

Through the centre of the transect up to 70 m (the limit of wadable depth at the time of survey), Nuttall's waterweed ***(Dominant)***, perfoliate pondweed and delicate stonewort ***(Frequent)*** and small pondweed ***(Occasional)*** were recorded during wading, as well as beyond the 70 m via grapnel throw (Plate 3-14) Throughout *Chara* beds were recorded within the first 45 m of wading transect 3, shoreweed was recorded approx. 30 m from the beginning of the transect.



Plate 3-9. A representative photo of lakebed substrate in areas with high levels of existing disturbance within the Baysports Facility



Plate 3-10. A representative photo of lakebed substrate in areas with high levels of existing disturbance within the Baysports Facility



Plate 3-11. A representative photo of bordering ***Reed and large sedge swamp (FS1)*** *habitat between the Baysports facility and northern bay*



Plate 3-12. A representative photo of the centre of wading macrophyte transect 3



Plate 3-13. A representative photo of yellow water lily present throughout macrophyte transect 3



Plate 3-14. A representative photo of charophyte beds with pondweed sp. and Nuttall's pondweed throughout

3.1.4 Wading Macrophyte survey - transect 4

Wading macrophyte transect 4 was conducted from the shoreline directly north of the existing marina, partially within the Proposed Development Site. Lakebeds substrates were primarily composed of silt and sand, similar to wading transect 1. However, macrophyte coverage on the lakebed was denser, although still patchy. Macrophytes recorded as ***Frequent*** up to 70 m from the shoreline (the limit of wadable depth) included delicate stonewort, long-leaved pondweed and perfoliate pondweed. Nuttall's pondweed was recorded as ***Abundant,*** particularly in areas of deeper water along the northern side of the existing marina. Fennel-leaf pondweed *(Stuckenia pectinata)* was also recorded as ***Frequent*** throughout the bay in wading transect 4. Much of the submerged macrophytes in wading transect 4 were overlain with siltation (Plate 3-15, Plate 3-16, Plate 3-17).

Along the northern side of the bay, **Reed and large sedge swamp (FS1)** habitat extended up to 60 m perpendicular to the shoreline and consisted of common reed and reed-canary grass ***(Dominant)***, common club-rush ***(Frequent)*** and bulrush *(Typha latifola,* ***Occasional).*** Plants recorded marginally and emergently along the shoreline included water mint ***(Occasional)*** and horsetail *(Equisetum sp.,* ***Rare****),* common spike-rush ***(Rare)*** and lesser spearwort *(Ranunculus flammula,* ***Rare)***



Plate 3-15. A representative image of the bay in which wading macrophyte transect 4 was conducted

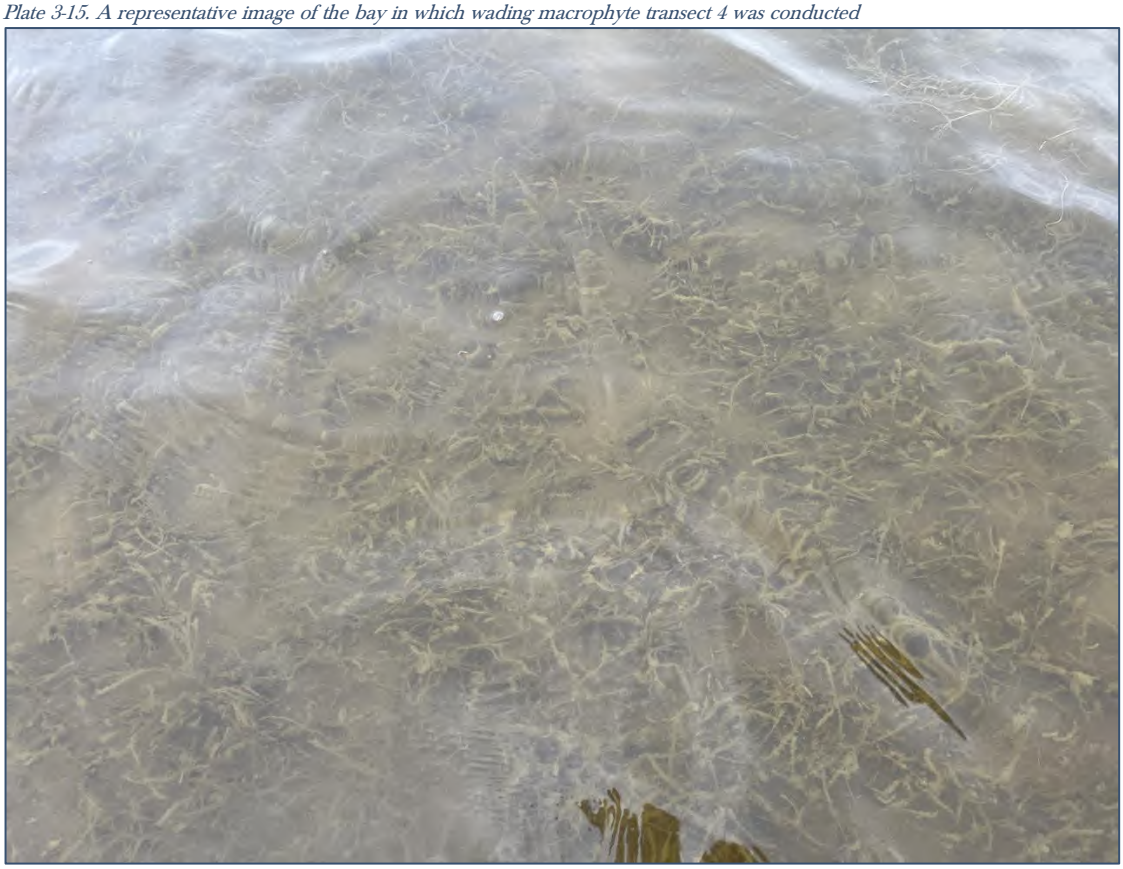


Plate 3-16. A representative image of continuous but patchy macrophyte coverage at wading transect 4



Plate 3-17. A representative photo of Fennel-leaf pondweed identified throughout wading transect 4



*Plate 3-18. A representative photo of **Reed and large sedge swamp (FS1)** habitat located along the northern side of wading macrophyte transect 4*



Plate 3-19. A representative photo of vegetation assemblage on the shoreline, including common-club rush and common spike-rush

3.1.5 Grapnel Macrophyte survey - transect 5

Due to prohibitive depths in the vicinity of the existing marina, grapnel throw surveys were conducted a 2 no. points within the marina and one along the southern-most reed beds, both within the Proposed Development Site. **Reed and large sedge swamp (FS1)** habitat consisting of common reed and reed-canary grass ***(both recorded as Dominant)*** extend up to 125 m from the front of the existing marina. Yellow water lily was recorded as ***Occasional*** along the southern reed beds.

Canadian waterweed *(Elodea Canadensis)* and Nuttall's waterweed were ***Dominant*** throughout the marina, in conjunction with Ivy-leaved duckweed *(Lemna triscula)* recorded as ***Abundant.*** The invasive species starry stonewort *(Nitellopsis obtusa)* was also recorded as ***Abundant*** throughout the marina. Perfoliate pondweed and greater water-moss were recorded as ***Frequent*** in areas of grapnel throw survey (Plate 3-20, Plate 3-21).



Plate 3-20. A representative photo of the prohibitively deep water in the vicinity of the existing marina

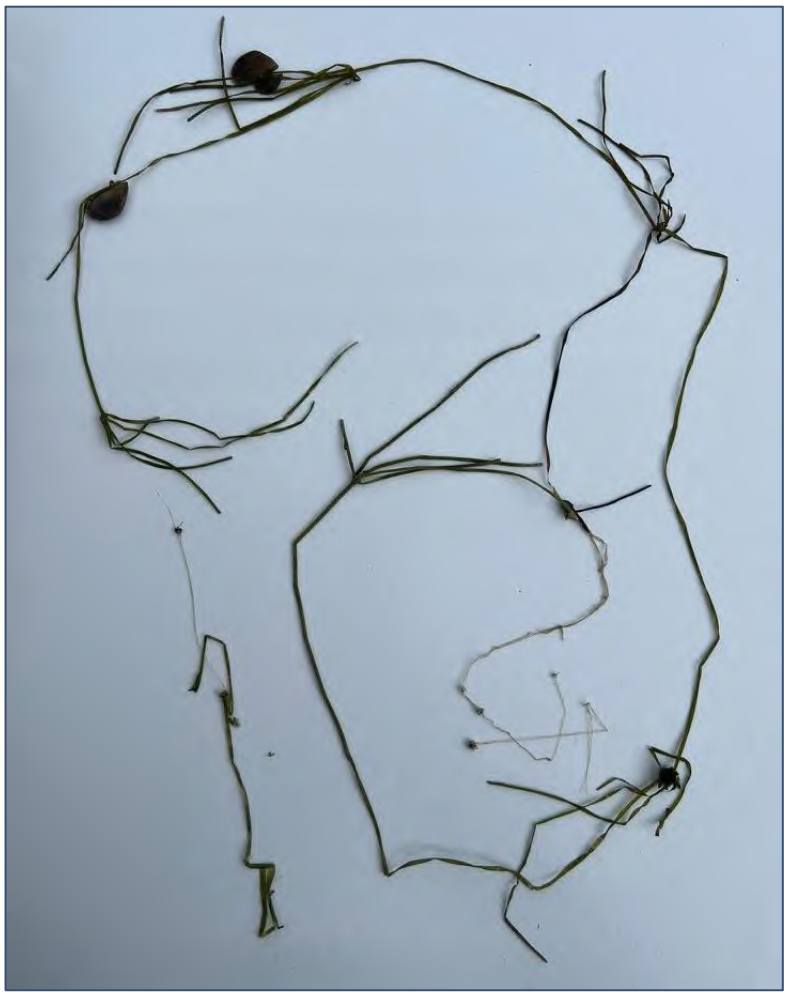


Plate 3-21. A representative photo of the invasive species starry stonewort (Nitellopsis obtusa) found during macrophyte grapnel throws within the existing marina

3.2 Aquatic Drone transect surveys

3.2.1 Aquatic drone - transect 1

Aquatic drone transect 1 was conducted from the end of the marina, moving approx. 55 m southwest toward the reed beds south of the marina. Aquatic drone transect 1 was conducted partially within the Proposed Development Site. Lakebed substrates consisted primarily of silt and sand-based substrates, with continuous, patchy coverage of Nuttall's waterweed and Canadian waterweed recorded as ***Dominant***, in conjunction with ivy-leaved duckweed recorded as ***Abundant***, up to 2.2m deep throughout the transect (Plate 3-22).

The invasive species starry stonewort was recorded as ***Abundant*** along the lakebed throughout much of the transect. Juvenile quagga mussels were frequently found in association with starry stonewort (Plate 3-23), with encrustations of zebra and quagga mussel along the lakebed throughout aquatic drone transect one. In areas of shallower water toward the reedbeds, underwater leaves of arrowhead and yellow water lily were also observed, both recorded as ***Occasional***, while shining and perfoliate pondweed were recorded as ***Frequent*** on the margins of reedbeds to the south (Plate 3-24).

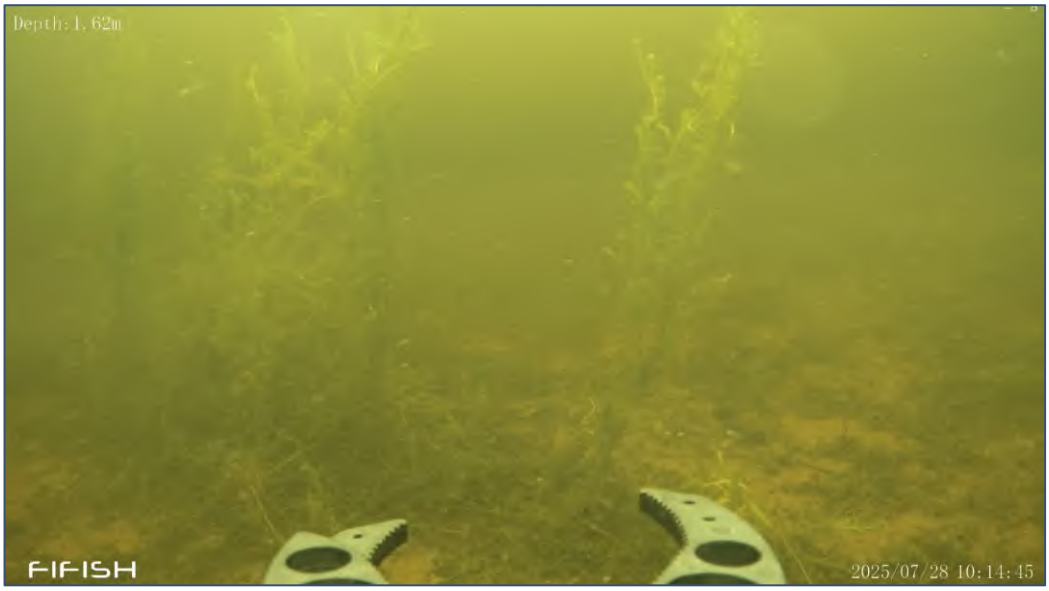


Plate 3-22. A representative photo taken via aquatic drone of Canadian and Nuttall's waterweed throughout aquatic drone transect 1

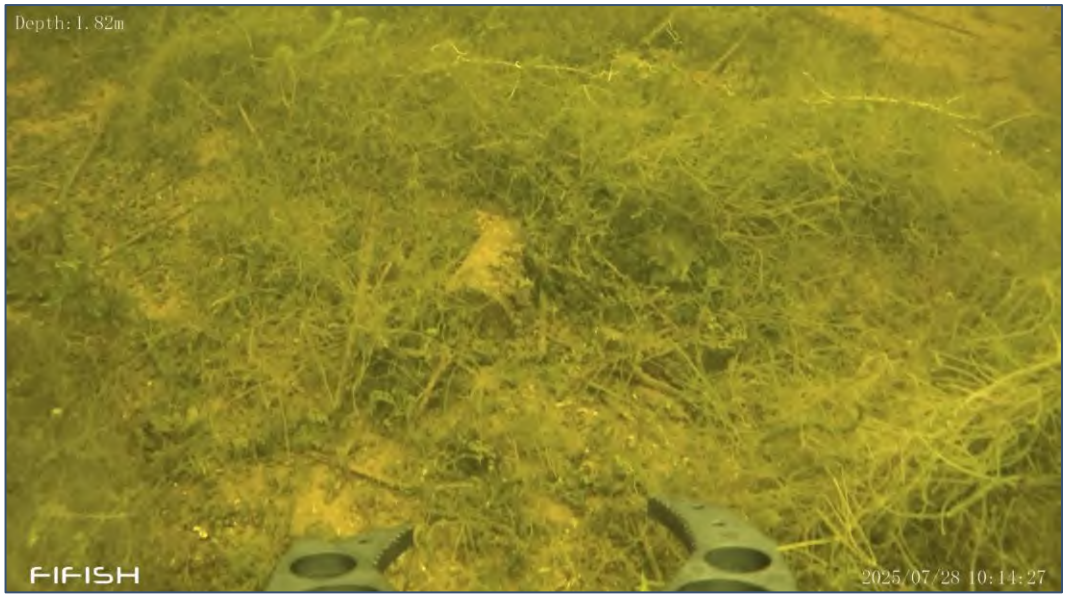


Plate 3-23. A representative photo taken via aquatic drone of the lakebed, dominated by starry stonewort, Canadian waterweed and Nuttall's waterweed



Plate 3-24. A representative photo of aquatic drone transect 1 from the marina

3.2.2 Aquatic drone - transect 2

Aquatic drone transect 2 was conducted from the end of the marina, moving approx. 90 m south from the corner of the marina. Aquatic drone transect 2 was conducted partially within the Proposed Development Site. Similar to aquatic drone transect 1, lakebed substrates consisted primarily of silt and sand-based substrates, with continuous, patchy coverage of Nuttall's waterweed and Canadian waterweed both recorded as ***Dominant***, in conjunction with ivy-leaved duckweed, recorded as ***Abundant***, greater water moss, recorded as ***Frequent***, up to 2.1m deep throughout the transect. Moving toward the end of the transect, underwater leaves of yellow water lily and common club-rush, both recorded as ***Frequent,*** and arrowhead, recorded as ***Occasional*** were noted. Perfoliate pondweed was recorded as ***Abundant,*** particularly toward the end of the transect (from approx. 58 m – 90 m) (Plate 3-25).

Charophyte beds were present throughout beds of Nutall's and Canadian waterweed from approx. 25 m along the transect, up to 1.85 m deep semi-continuously along the transect. *Chara* species consisted

of delicate stonewort (recorded as ***Frequent)*** but was dominated by the non-native species starry stonewort, which was recorded as ***Abundant*** (Plate 3-26). Plate 3-27 shows a representative photo of the location of aquatic drone transect 2.

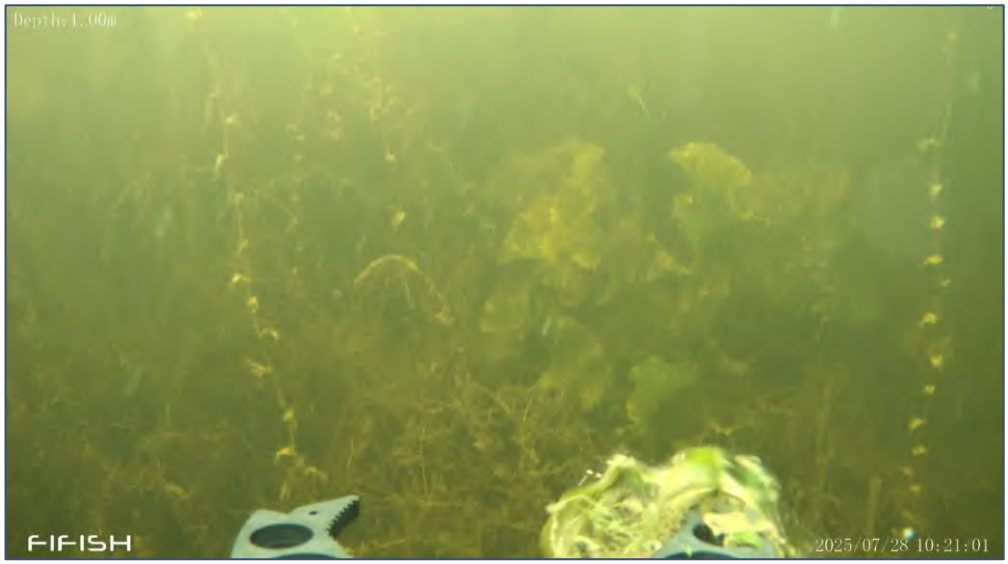


Plate 3-25. A representative photo of species recorded along aquatic drone transect 2, including pondweed, yellow water lily and charophytes

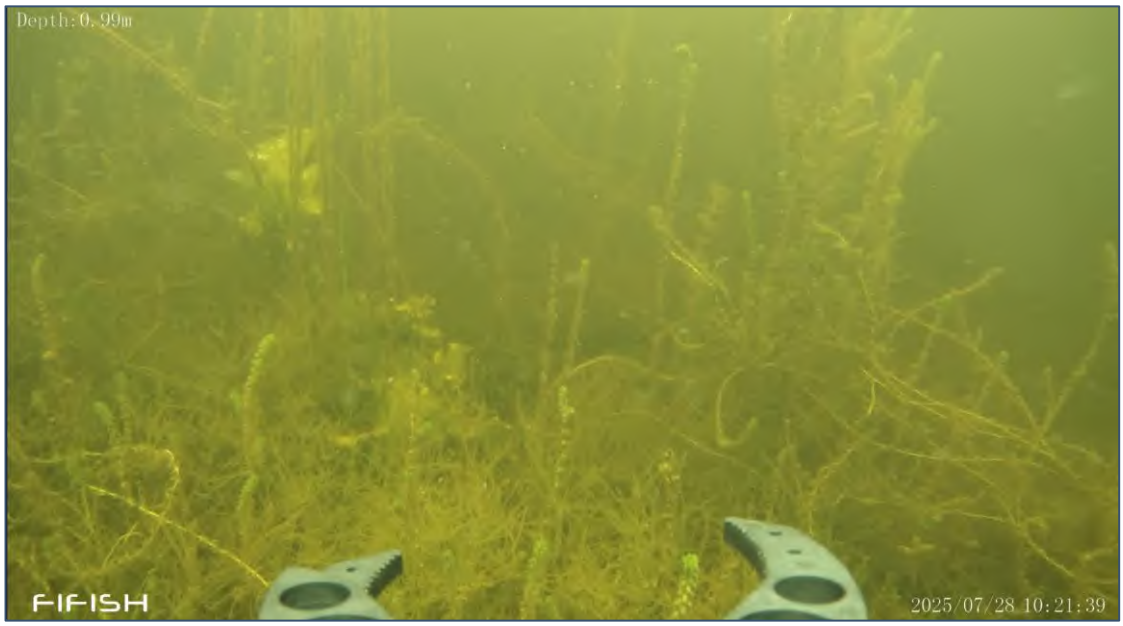


Plate 3-26. A representative photo of areas of Elodea spp. beds, with charophytes throughout



Plate 3-27. A representative photo of aquatic drone transect 2 from the marina

3.2.3 Aquatic drone - transect 3

Aquatic drone transect 3 was conducted from the end of the marina, moving approx. 90 m southeast from the southern corner of the marina. Aquatic drone transect 3 was conducted partially within the Proposed Development Site. Lakebed substrates along this transect consisted primarily of silt and sand, with encrustations of quagga and zebra mussel noted, particularly in the first 20 m of the transect. High levels of siltation were evident along aquatic drone transect 3 in the vicinity of the existing marina.

Macrophyte coverage was sparse in the first 20 m of the transect. Sparse macrophytes observed were recorded as follow: charophytes (***Rare*** delicate stonewort and non-native starry stonewort), ***Frequent*** *Cladophora sp.* and ***Occasional*** perfoliate pondweed and Nuttall's waterweed. Underwater leaves of arrowhead were also noted, recorded as ***Rare*** (Plate 3-28). Fly tipping was frequent extending from the front of the existing marina.

From approx. 30 m along the transect, pondweed beds, dominated by perfoliate pondweed, densely vegetated the lakebed (recorded as ***Abundant).*** Moving further out along the transect toward open water, vegetation coverage transition to charophyte beds with ***Abundant*** delicate stonewort and non-native native starry stonewort, ***Occasional*** common stonewort *(Chara vulgaris)* and ***Frequent*** perfoliate pondweed throughout. Charophyte beds featured ***Abundant*** *Cladophora sp.* throughout.



Plate 3-28. A representative photo of the sparsely vegetated initial sections of aquatic drone transect 3

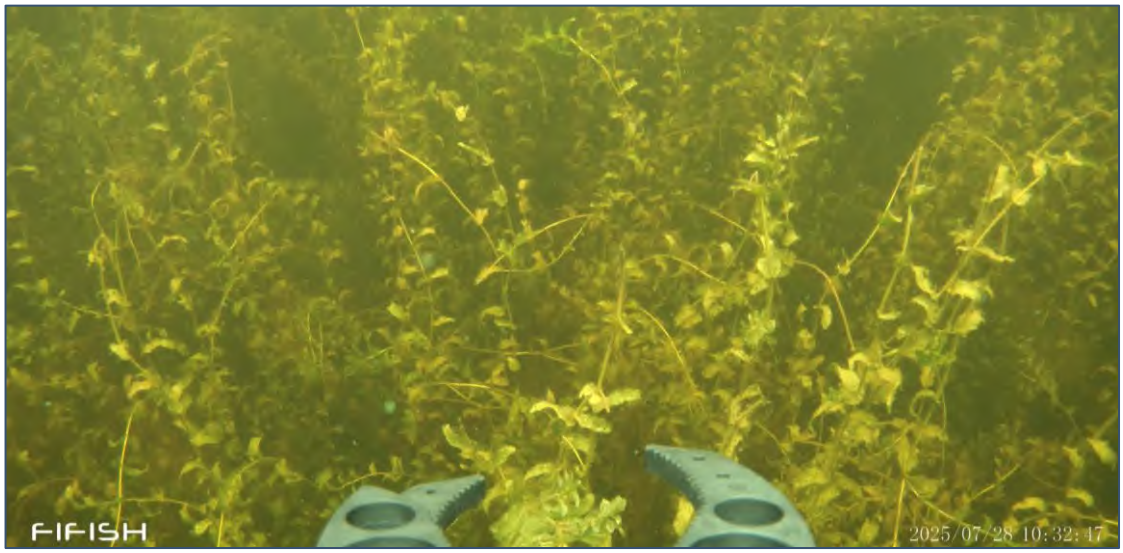


Plate 3-29. A representative photo of pondweed-dominant areas of lakebed along aquatic drone transect 3



Plate 3-30. A representative photo of charophyte beds toward the end of aquatic drone transect 3



Plate 3-31. A representative photo of the location of aquatic drone transect 3

3.2.4 Aquatic drone - transect 4

Aquatic drone transect 4 was conducted from the middle of the outer walkover of the existing marina, moving approx. 90 m southeast from the front of the marina. Aquatic drone transect 4 was conducted within the Proposed Development Site. The macrophyte assemblage, coverage and structure throughout aquatic drone transect 4 was aligned with that found along aquatic drone transect 3. Similar to aquatic drone transect 3, high levels of siltation were evident along aquatic drone transect 4 in the vicinity of the existing marina and extending out into open water.

Lakebed substrates along this transect again consisted primarily of silt and sand, with encrustations of quagga and zebra mussel noted, particularly in the first 20 m of the transect, grading into charophyte ***Dominant*** beds at up to 2 m deep, featuring delicate stonewort, common stonewort and the non-native stonewort (Plate 3-32). From approx. 65 m out along the transect, pondweed beds, dominated by perfoliate pondweed ***(Dominant)*** were present and also featured Nuttall's waterweed ***(Frequent)*** and the aforementioned charophyte species throughout (recorded as ***Abundant*** throughout this section). *Cladophora sp.* was also present throughout pondweed beds, recorded as ***Abundant*** (Plate 3-33, Plate 3-34).

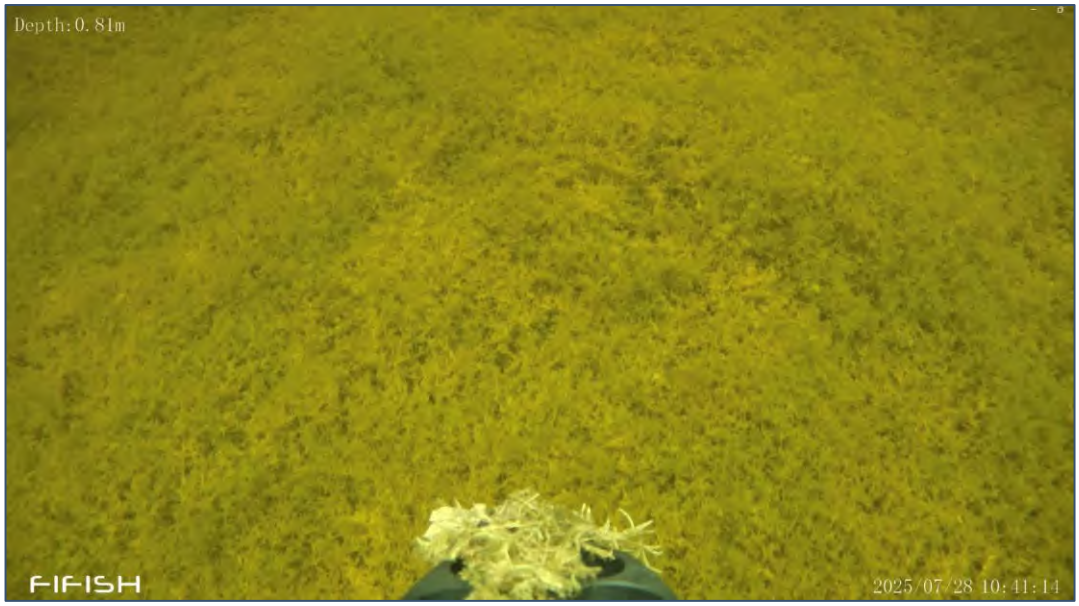


Plate 3-32. A representative photo of charophyte beds along aquatic drone transect 4

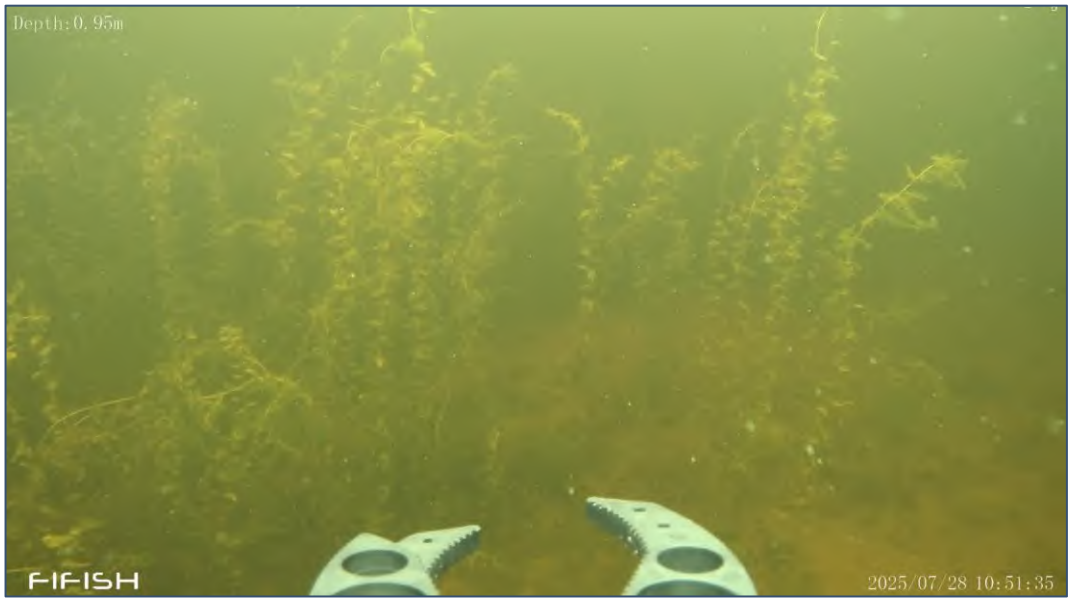


Plate 3-33. A representative photo of sparse areas of pondweed beds at the approximate halfway point of aquatic drone transect 4

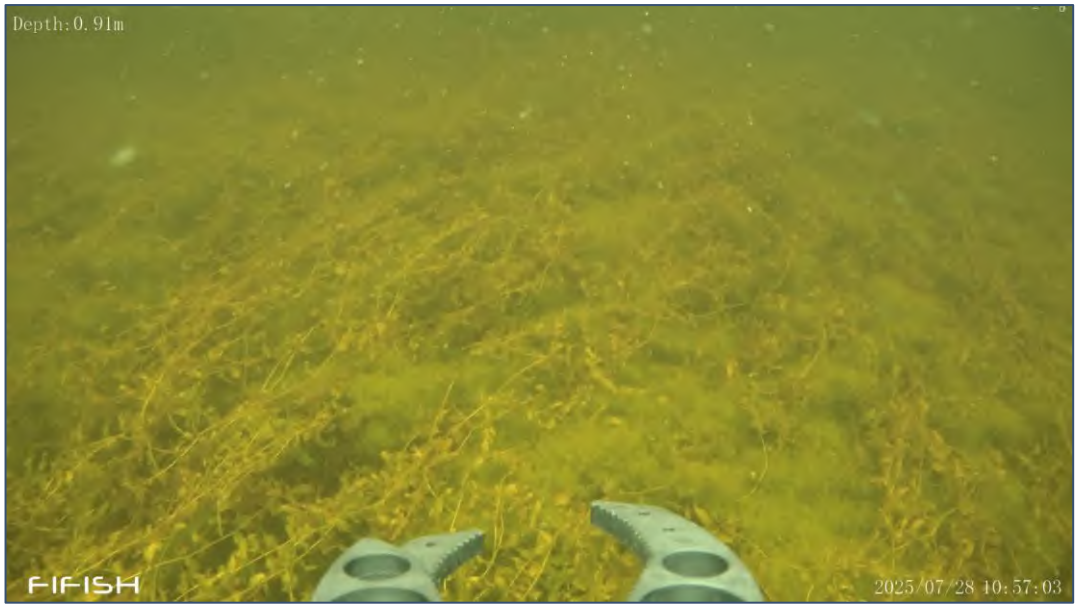


Plate 3-34. A representative photo of dense pondweed beds with Cladophora sp. throughout aquatic drone transect 4

3.2.5 Aquatic drone - transect 5

Aquatic drone transect 5 was conducted from the end of the outer walkover of the existing marina, moving approx. 90 m southeast from this point. Aquatic drone transect 5 was conducted within the Proposed Development Site. The macrophyte assemblage, coverage and structure throughout aquatic drone transect 5 was again aligned with that found along aquatic drone transects 3 and 4. Macrophytes were absent from within the first approx. 10 m of the transect, with sparse macrophyte coverage within the first 10–20 m of the transect. Quagga and zebra mussels were present on the lakebed and existing marina within transect 5, as well as transects 3 and 4. Fly tipping was present in the initial 1- m of this transect (Plate 3-35, Plate 3-36). Siltation was evident along the lakebed and throughout lakebed vegetation along the entire length of aquatic drone transect 5.

Moving from the marina out to open water, the underwater leaves of yellow water lily were present, recorded as ***Occasionally.*** Pondweed beds, featuring ***Abundant*** perfoliate pondweed and Nuttall's waterweed, were recorded from approx. 20 m out along the transect, with ***Occasional*** underwater leaves of arrowhead (Plate 3-37).

Pondweed-dominant beds became denser as the transect continued out to open water (densest at approx. 32 m, where lakebed depth was 2.3 m at the time of survey). Ivy-leaved duckweed and the non-native starry stonewort were present throughout pondweed beds, as well as ***Abundant*** *Cladophora sp.* (Plate 3-38).



Plate 3-35. A representative photo of the lakebed within the first 5 m of aquatic drone transect 5

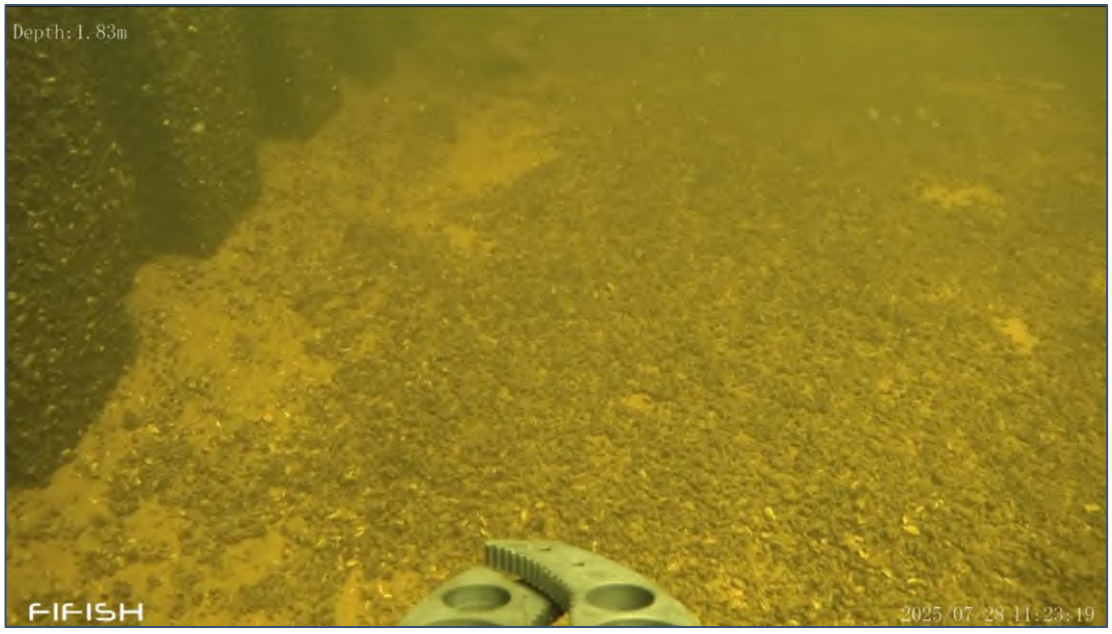


Plate 3-36. A representative photo of zebra and quagga mussel coverage on the lakebed and existing marina within the first 5 m of transect 5



Plate 3-37. A representative photo of perfoliate pondweed with Nuttall's waterweed and underwater leaves of arrowhead

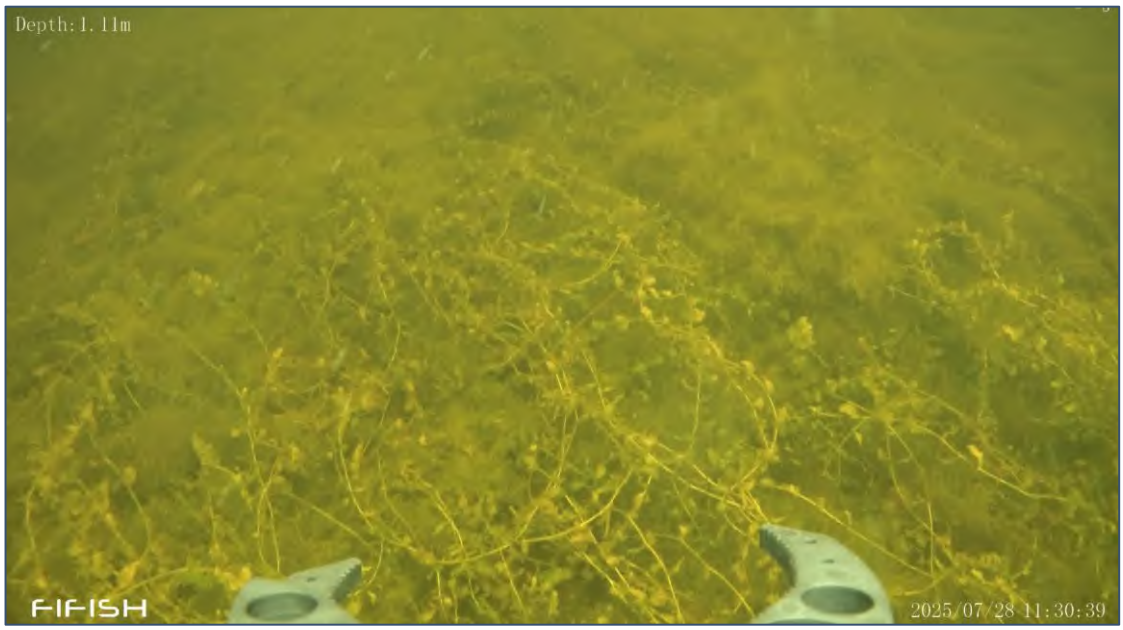


Plate 3-38. A representative photo of dense pondweed beds with charophytes and Cladophora sp. throughout



Plate 3-39. A representative photo of the open water in which aquatic drone transects 4 and 5 were conducted

3.2.6 Aquatic drone - transect 6

Aquatic drone transect 6 was conducted from the end of the outer walkover of the existing marina, moving approx. 90 m east from this point. Aquatic drone transect 6 was conducted partially within the Proposed Development Site. Similar to the aquatic drone transects 3, 4 and 5, the first 5 m of the transect consisted predominantly of sand and silt substrates, with dense quagga and zebra mussel coverage both on the marina and as encrustations on the lakebed.

At approx. 20 m along the transect, the lakebed was covered with dense mats of perfoliate pondweed, recorded as ***Dominant*** , with dense *Cladophora sp.* coverage throughout. Charophyte beds, consisting of delicate stonewort and the non-native starry stonewort (both recorded as ***Abundant)*** were present throughout pondweed growth from approx. 24 m along the transect, with stony starwort and *Cladophora sp.* becoming the dominant coverage beyond approx. 30 m. Nuttall's waterweed was present throughout charophytes from approx. 37 m along the transect (Plate 3-40, Plate 3-41). Arrowhead was identified throughout the transect, recorded as ***Frequent*** (Plate 3-43). Moving beyond approx. 43 m, starry stonewort became ***Dominant***, with perfoliate pondweed throughout, still recorded as ***Abundant***. This coverage and species composition continued for much of the remainder of the transect (Plate 3-42, Plate 3-44).

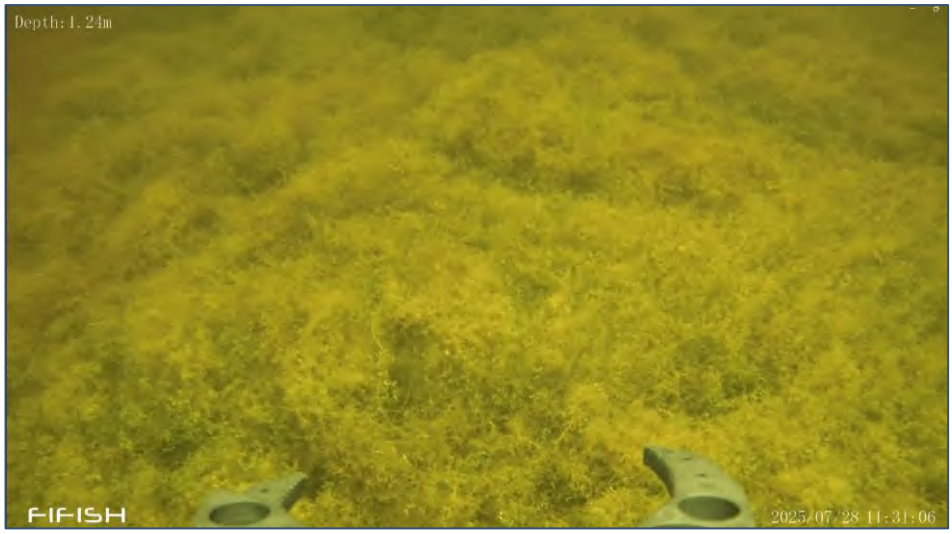


Plate 3-40. A representative photo of dense pondweed beds with Cladophora throughout.

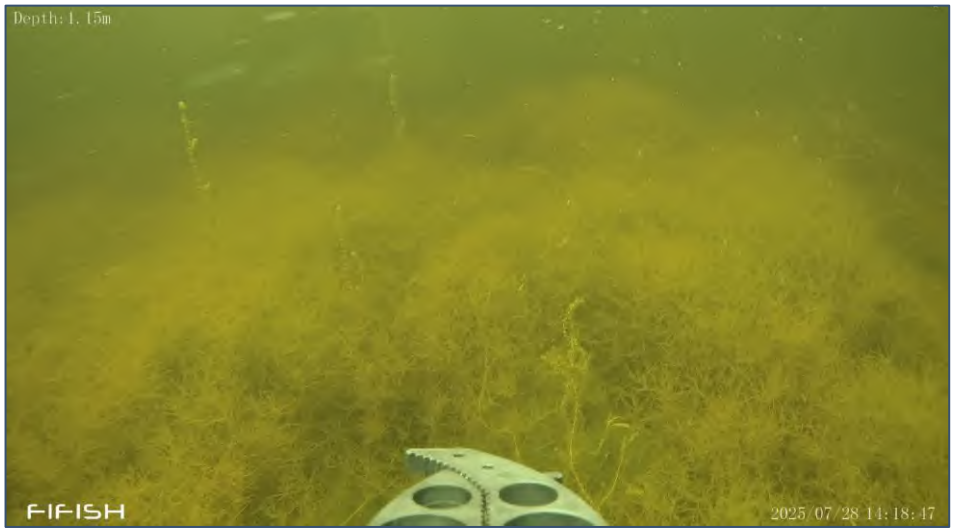


Plate 3-41. A representative photo Nuttall's waterweed present throughout dense mats of stony starwort and Cladophora sp., along aquatic drone transect 6



*Plate 3-42. A representative of **Abundant** non-native starry stonewort and underwater leaves of arrowhead throughout aquatic drone transect 6*

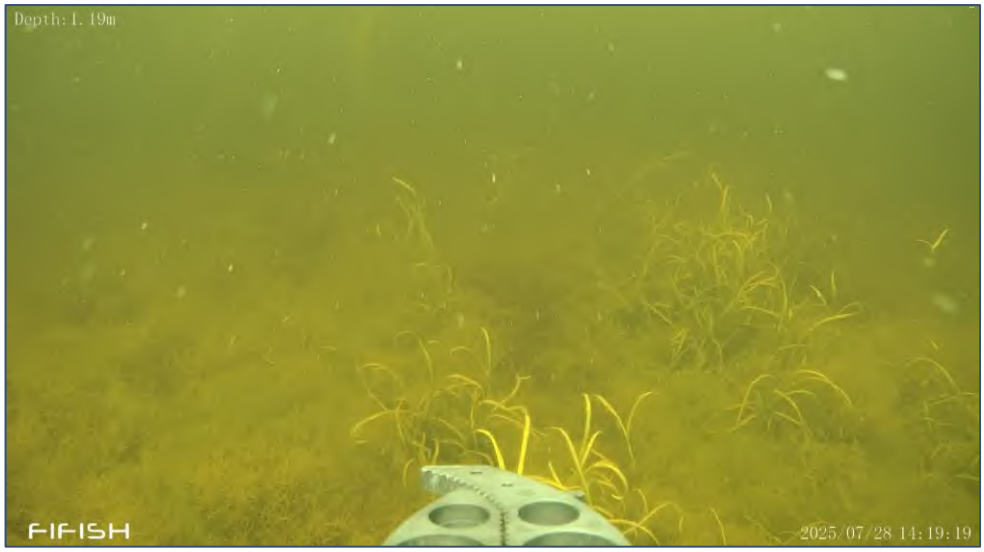


Plate 3-43. A representative photo of the underwater leaves of arrowhead throughout

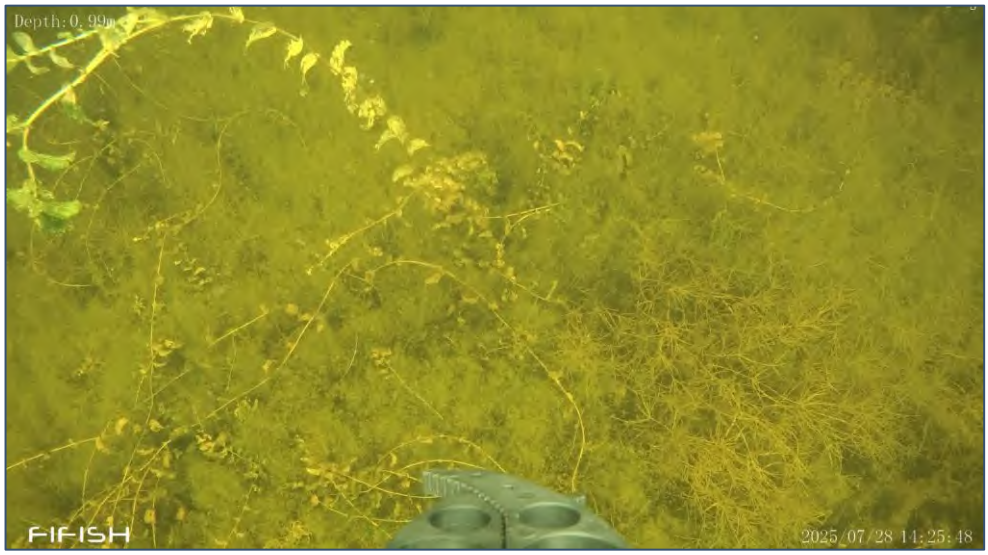


Plate 3-44. A representative photo of perfoliate pondweed and starry stonewort, with Cladophora sp. throughout



Plate 3-45. A representative photo of the location of aquatic drone transect 6

3.2.7 Aquatic drone - transect 7

Aquatic drone transect 7 was conducted from the northern corner of the marina, moving approx. 90 m northeast from this point. Aquatic drone transect 7 was conducted partially within the Proposed Development Site. The first 10 m of this transect consisted exclusively of silt, sand, gravel and zebra and quagga mussel, with patchy distribution of charophytes (Plate 3-45). As with drone transects 3 and 5, fly tipping was evident throughout aquatic drone transect 7 (Plate 3-46).

Between 10 m and 35 m along transect, lakebed macrophyte coverage consisted primarily of ***Abundant*** but patchy perfoliate pondweed coverage, with ivy leaved duckweed ***(Frequent)*** and *Cladophora sp.* ***(Abundant)*** throughout (Plate 3-48). Moving beyond 40 m to the end of the transect, the lakebed was covered by charophyte beds featuring ***Dominant*** starry stonewort and ***Frequent*** delicate stonewort (Plate 3-49).

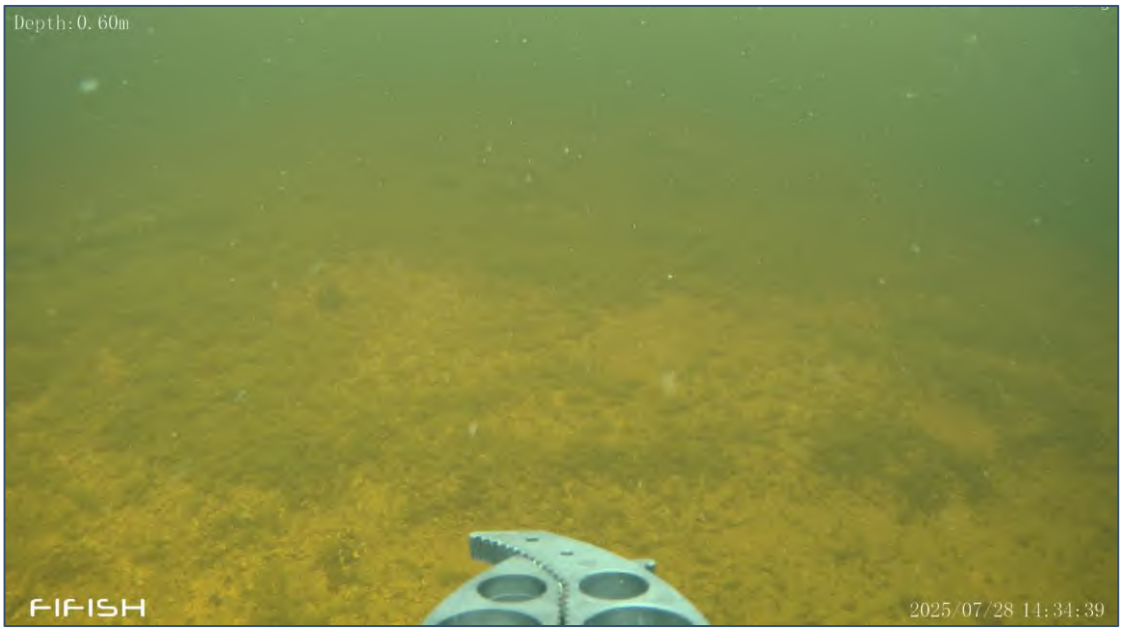


Plate 3-46. A representative photo of the first 10 m of aquatic drone transect 7



Plate 3-47. A representative photo of fly tipping present throughout aquatic drone transect 7

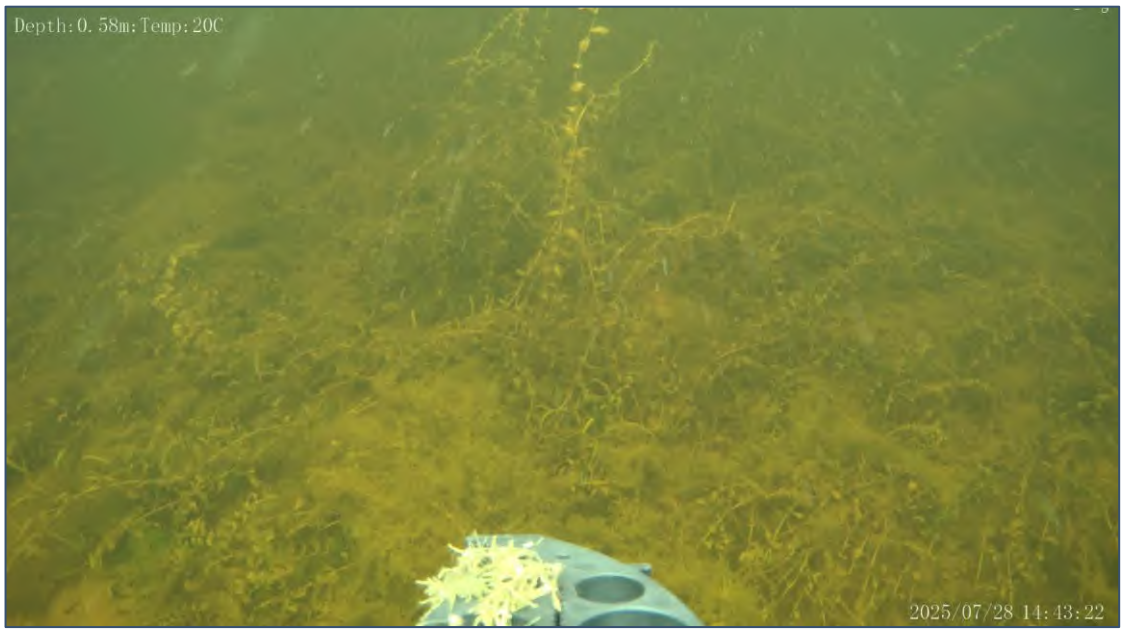


Plate 3-48. A representative photo of perfoliate pondweed with Cladophora throughout along aquatic drone transect 7

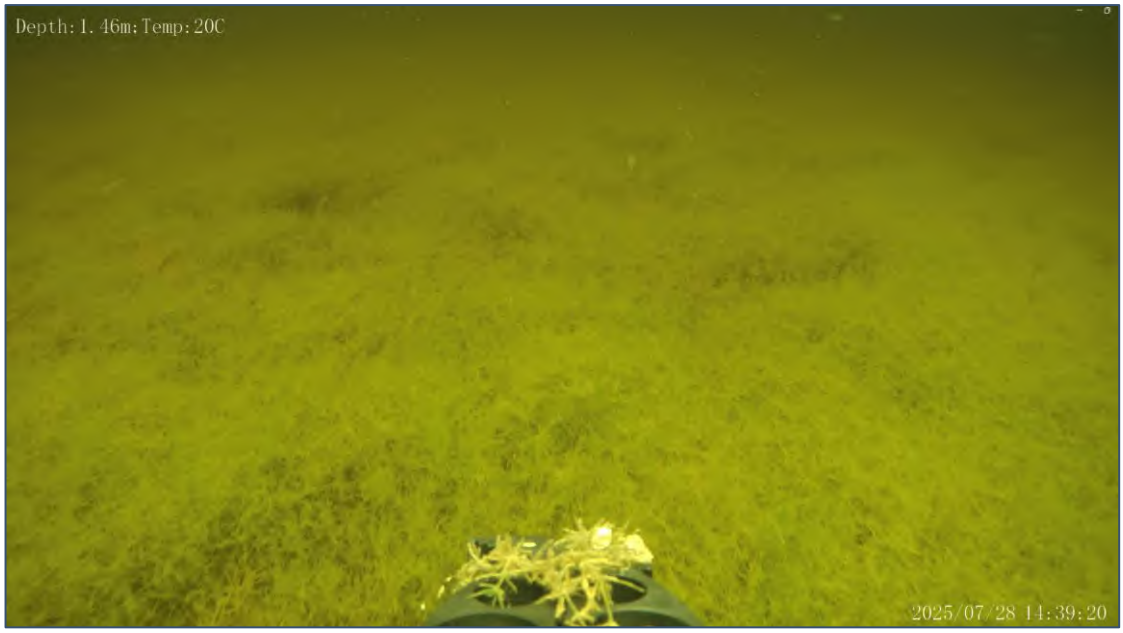


Plate 3-49. A representative photo of charophyte beds which dominated the lakebed from 40 m along aquatic drone transect 7

3.2.8 Aquatic drone – transect 8

Aquatic drone transect 8 was conducted from the first corner of the marina, moving approx. 90 m north-northeast from this point. Aquatic drone transect 8 was conducted partially within the Proposed Development Site. Similar to previous aquatic drone transects, the first 10 m of this transect consisted primarily of silt, sand, gravel, with zebra and quagga mussel and a patchy distribution of charophytes. Water depth was shallower throughout transect 8 as a result of the inlet across which the transect was conducted.

From approx. 12 m along the transect, continuous *Chara sp.* beds, including delicate stonewort and common stonewort ***(Abundant)***, as well as the non-native starry stonewort ***(Dominant).*** Large sediment deposits covered with quagga and zebra mussel were frequent throughout the transect, with ***Occasional*** underwater leaves of yellow water lily (Plate 3-50, Plate 3-51).

Moving further along the transect to the 50 m mark, spiked water milfoil ***(Abundant)***, perfoliate pondweed and Nuttall's waterweed (both ***Frequent)*** were present. Charophyte beds continued beyond the midpoint of the transect, with ***Abundant*** *Cladophora sp.* and starry stonewort throughout.

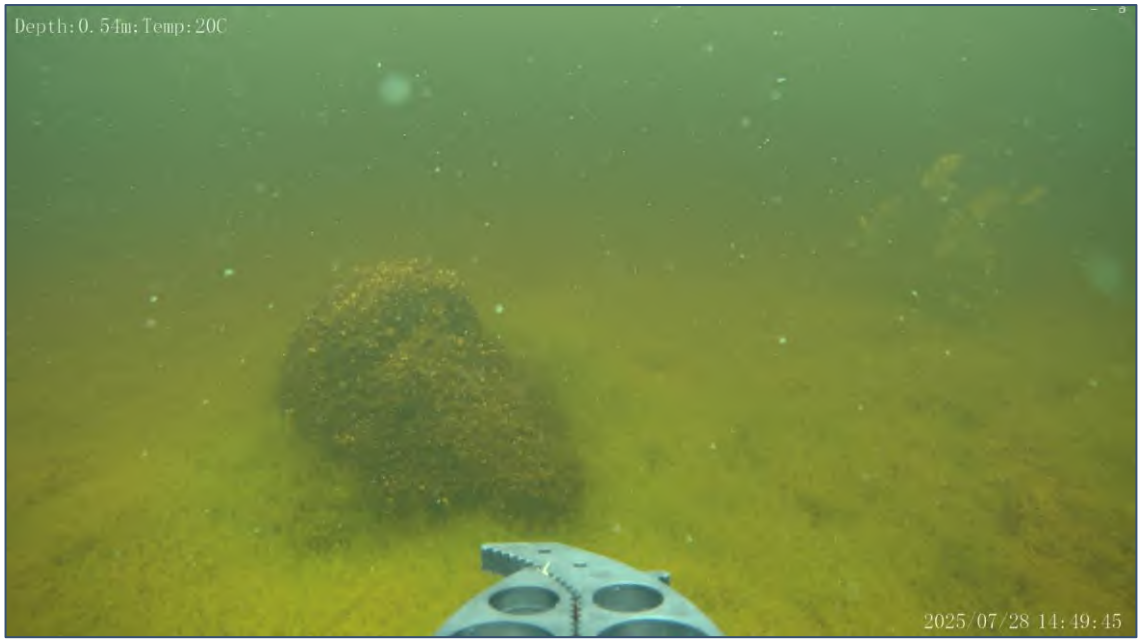


*Plate 3-50. A representative picture of quagga and zebra mussel deposits, **Occasional** underwater yellow water lily leaves and continuous charophyte beds*

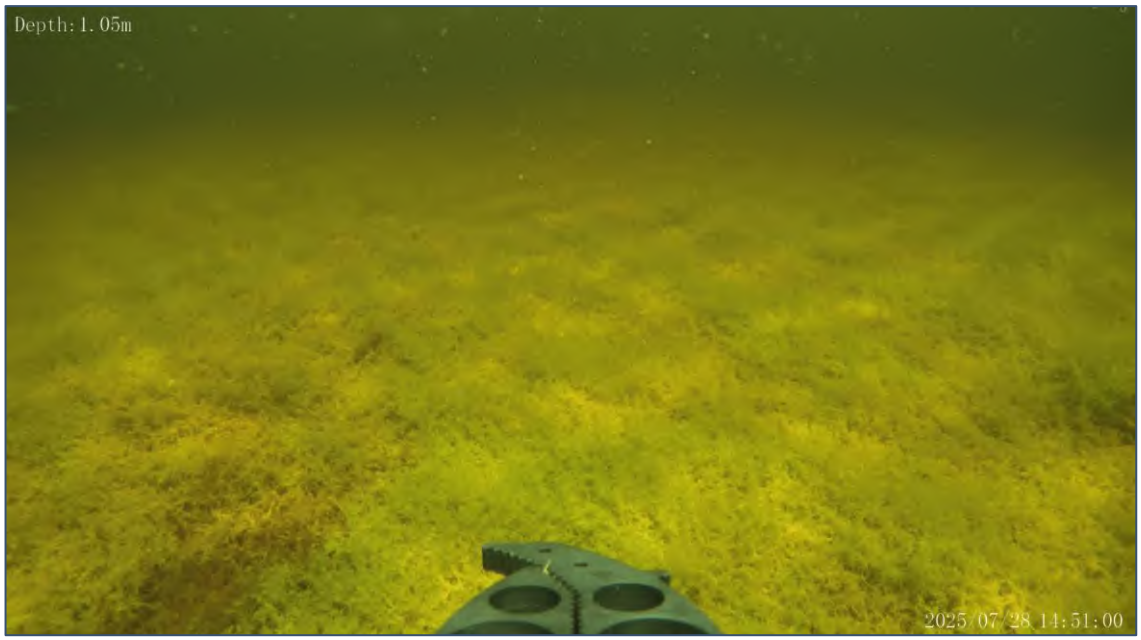


Plate 3-51. A representative photo of continuous charophyte beds throughout aquatic drone transect

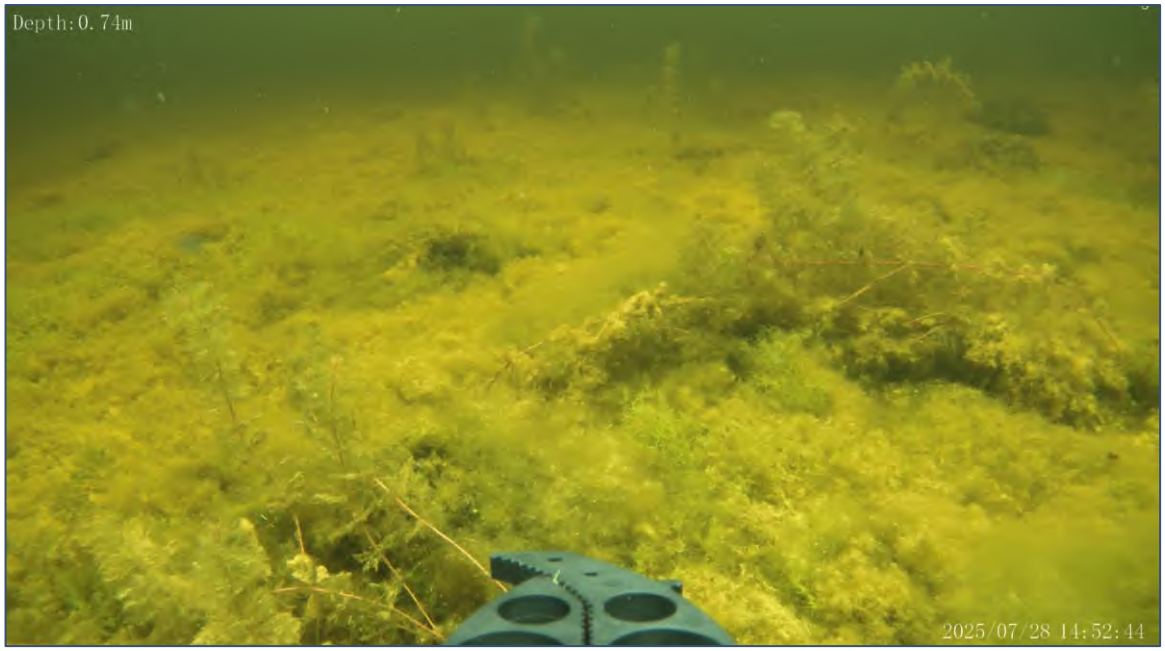


Plate 3-52. A representative photo of spiked water milfoil, perfoliate pondweed and charophytes beyond the midpoint of aquatic drone transect 8

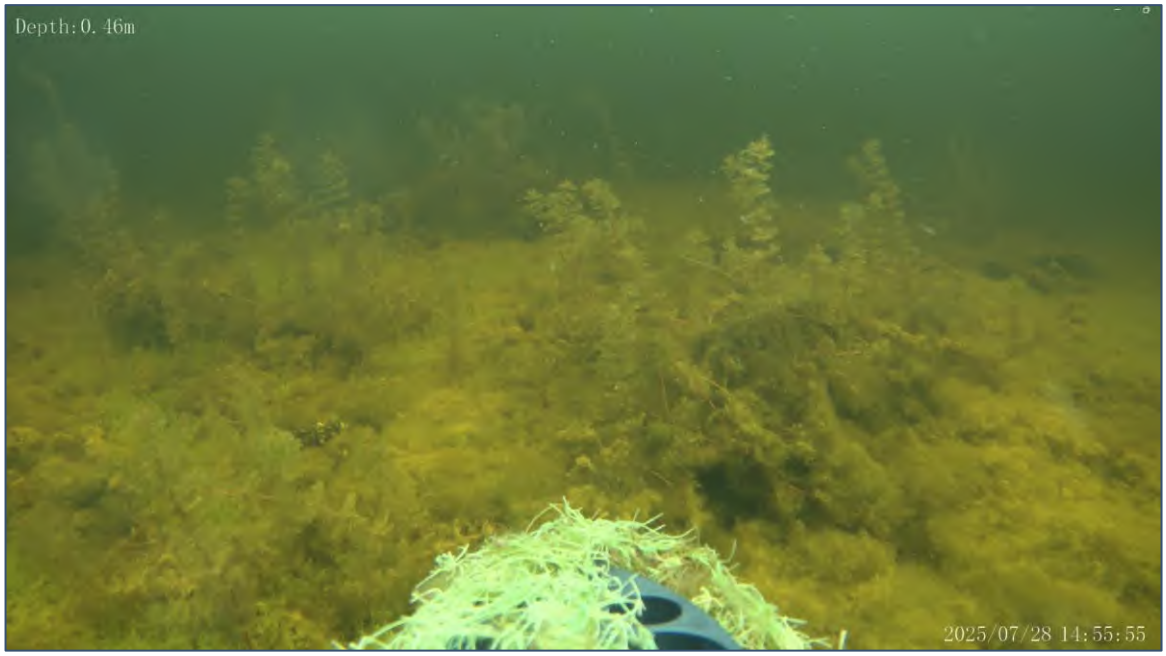


*Plate 3-53. A representative photo of a spiked water milfoil **Dominant** section of aquatic drone transect 8*

3.2.9 Aquatic drone - transect 9

Aquatic drone transect 9 was conducted throughout the inner existing marina. Aquatic drone transect 1 was conducted within the Proposed Development Site. High levels of siltation were noted throughout aquatic drone transect 9, with homogenous macrophyte species presence and coverage throughout the transect. Macrophyte species present consisted almost entirely of non-native starry stonewort and the Third Schedule Invasive species Canadian waterweed and Nuttall's waterweed (all recorded as ***Dominant)***.

Ivy-leaved duckweed (recorded as ***Abundant)*** was found in conjunction with the aforementioned species. Greater water-moss was recorded as ***Occasional.*** Quagga mussel was also found frequently attached to starry stonewort following grab samples.



Plate 3-54. A representative photo of Elodea sp. entangled throughout aquatic drone transect 9 within the existing marina

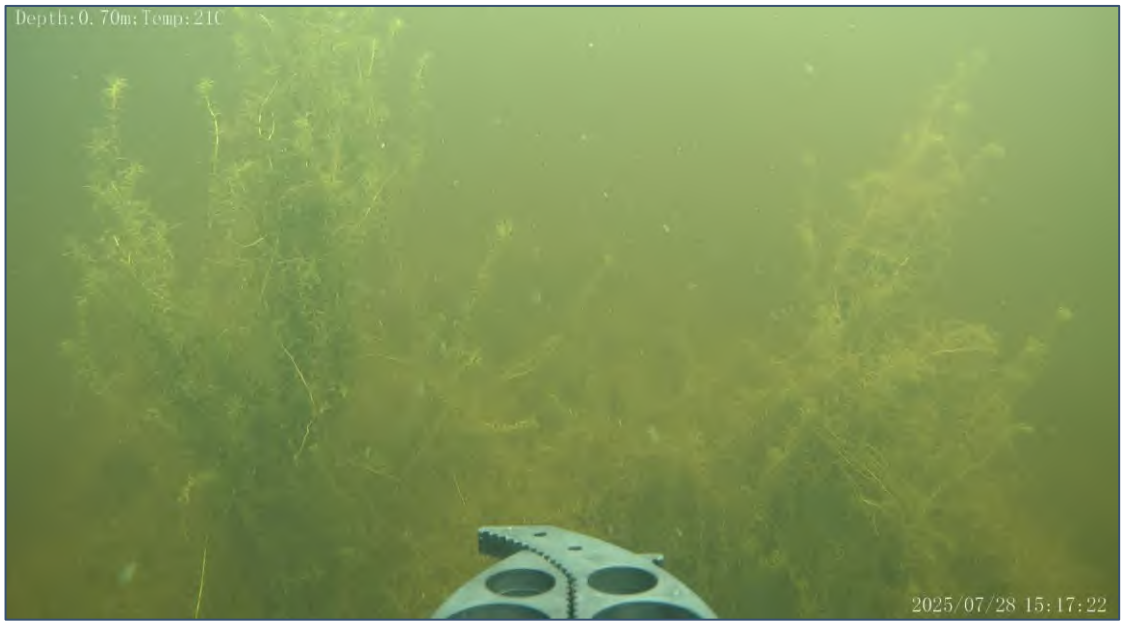


Plate 3-55. A representative photo of Elodea sp. observed throughout aquatic drone transect 9

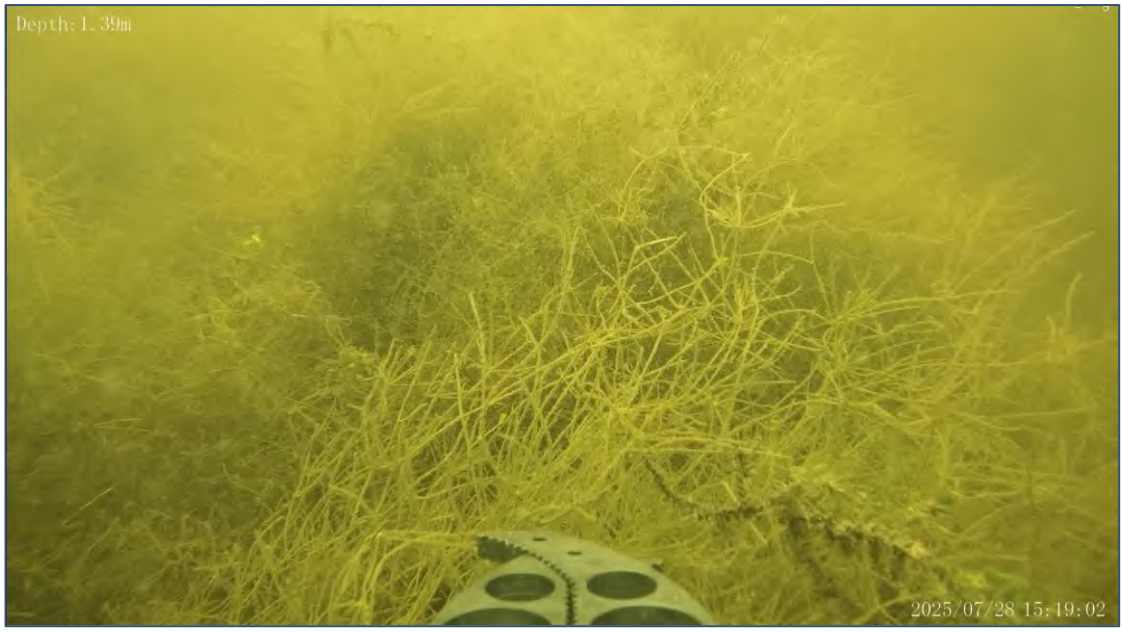


*Plate 3-56. A representative photo of the non-native starry stonewort (Nitellopsis obtusa) **Dominant** sections of aquatic drone section 9*

4. CONCLUSION

Species assemblage throughout Lough Ree in the vicinity of the Proposed Development showed affinity to habitat *3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation,* listed in Annex I of the EU Habitats Directive and included as a Qualifying Interest of Lough Ree SAC [Site code: 000440].

Areas of the lakebed within up to the first 20 m were disturbed, with largely absent macrophytes. Disturbance via both water sports activities, wild swimming and boating is frequent along all areas of the shoreline within the Proposed Development Site. Areas of lake conforming to this habitat are already subject to a high level of existing disturbance within the Proposed Development Site.

Invasive, non-native species frequently observed during aquatic drone and wading transect surveys included starry stonewort, Third Schedule invasive species Canadian waterweed, First and Third Schedule invasive species Nuttall's waterweed, as well as the First and Third Schedule invasive faunal quagga mussel and zebra mussel, which densely colonised both the existing marina and the lakebed. Macroalgal coverage was also high throughout aquatic drone and wading transects.

5. REFERENCES

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Smith, G. F., O'Donoghue, P., O'Hora, K., & Delaney, E. (2011) *Best Practice Guidance for Habitat Survey and Mapping*.

APPENDIX 5:
ALLUVIAL FOREST CONDITION ASSESSMENT RESULTS

Rialtas na hÉireann Government of Ireland
Arna chomhchistiú ag an Aontas Eorpach Co-funded by the European Union
Tionól Reigiúnach Oirthir agus Lár-Tíre Eastern and Midland Regional Assembly
Fáilte Ireland
Comhairle Contae Ros Comáin Roscommon County Council
Waterways Ireland

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

Planning and Environmental Consultants

Appendix 5 - 91E0 Alluvial Forest Condition Assessment Report

Hodson Bay Waterfront Park, Co. Roscommon

DOCUMENT DETAILS

Client:	**Roscommon County Council**
Project Title:	**Hodson Bay Waterfront Park, Co. Roscommon**
Project Number:	**241220**
Document Title:	**91E0 Alluvial Forest Condition Assessment Report**
Document File Name:	**Appendix 5 – 91E0 Alluvial Forest Condition Assessment Report - F - 2026.08.14 – 241220**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Final	14/08/2026	TOC/NR	AvdGM

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1. INTRODUCTION

1.1 Context

MKO was commissioned to undertake condition assessments of areas of potential *91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*, listed in Annex I of the EU Habitats Directive and included as a Qualifying Interest of Lough Ree SAC [Site code: 000440]. Surveys aimed to provide an evaluation and assessment of this habitat occurring within and in the vicinity of the Proposed Development at Hodson Bay, Co. Roscommon.

Conditions assessments of potential 91E0 alluvial forest focused on areas of the habitat occurring within the Proposed Development. Surveys included detailed botanical surveys of the areas of potential 91E0 habitat using methodology as outlined in Irish Wildlife Manual No. 71, *'Results of monitoring survey of old sessile oak woods and alluvial forests'* (O'Neill & Barron, 2013).

Areas of potential Annex I 91E0 habitat were identified within the Proposed Development Site during multi-disciplinary ecological walkover survey on 29th May 2025, with detailed condition assessments of these areas conducted on 28th July 2025. Detailed condition assessment surveys were conducted by Timothy O' Ceallaigh (B.Sc.). Detailed methodologies and guidance followed during these surveys are outlined below.

2. SURVEY METHODS

2.1 Dedicated Habitat and Vegetation Composition Surveys

The habitat assessment surveys described in this report have been undertaken with reference to the following guidelines and interpretation documents:

- Commission of the European Communities (2013) *Interpretation manual of European Union habitats*. Eur 28. European Commission DG Environment.
- *NPWS (2025). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report.* Edited by: Domhnall Finch, Aoife Delaney, Fionnuala O'Neill and Deirdre Lynn.
- O'Neill, F.H. & Barron, S.J. (2013) Results of monitoring survey of old sessile oak woods and alluvial forests. Irish Wildlife Manuals, No. 71. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Plant nomenclature for vascular plants follows '*New Flora of the British Isles*' (Stace, 2010).

2.2 Alluvial forest Condition Assessment

Detailed habitat classification and assessment was undertaken by MKO at targeted locations identified as areas of potential Annex I alluvial forest both within the Proposed Development Site and within Lough Ree SAC [Site code: 000440] adjacent and in the vicinity of the Proposed Development Site, with relevés and condition habitat assessment undertaken at each of the identified survey sites to assess habitat conformity to the 91E0 alluvial forest Annex I habitat.

Botanical assessment was carried out using methods detailed in Ó' Neill and Barron (2013). This included species composition including target species, indicator species (woody, ferns, herbs and bryophytes) and negative indicator species, as well as woodland structure and function, including grazing pressure, tree regeneration, tree size class and the presence of deadwood.

Condition assessment was conducted at 5 no. monitoring plots. Where possible, condition assessment was carried out in 20 m x 20 m plots. Where this was not possible due to insufficient overall area of the identified woodland habitats, 10 m x 10 m plots, as well as linear 10 m x 2 m (along the lake margins north of the existing Baysports facility) were carried out. Due to the fragmented, non-continuous nature and small area of alluvial woodland habitat within the Proposed Development Site, plot sizes were variable. Additionally, the overall small area size of woodland habitat limited assessment of these habitats on a four-plot level. Therefore, assessments were made at the individual plot level, but not four plot level, as detailed by Ó'Neill and Barron. For the individual plot assessment, eight out of ten criteria needed to pass to achieve an overall pass.

Table 2-1 provides a summary of the assessment criteria and required passing criteria for each assessment. The results of these condition assessments are presented in Section 2 of this report. A representative photograph was also taken for each of the areas of this habitat recorded. The locations of all condition assessments conducted for alluvial forest are shown in Table 2-1 within Section 2 of this report.

Table 2-1. Assessment Criteria and Associated Pass Criteria for each

Assessment Criteria	Passing criteria
Positive indicator species	Positive indicator species for 91E0 woodlands: › Target species: ○ *Alnus glutinosa* ○ *Fraxinus excelsior* ○ *Salix cinerea* ○ *Salix spp.* › Other woody species: ○ *Betula pubescens* ○ *Crataegus monogyna* ○ *Solanum dulcamara (2012 only)* ○ *Viburnum opulus* › Herbs & Ferns: ○ *Agrostis stolonifera* ○ *Angelica sylvestris* ○ *Carex remota* ○ *Filipendula ulmaria* ○ *Galium palustre* ○ *Iris pseudacorus* ○ *Lycopus europaeus (2012 only)* ○ *Mentha aquatica* ○ *Phalaris arundinacea* ○ *Ranunculus repens* ○ *Rumex sanguineus* ○ *Urtica dioica* › Mosses & Liverworts: ○ *Calliergonella cuspidata* ○ *Climacium dendroides* ○ *Thamnobryum alopecurum* Habitats must display at least 1 target species and ≥ 6 positive species to achieve a pass
Negative species cover	Negative indicator species for 91E0 woodlands: › *Acer pseudoplatanus* › *Fagus sylvatica* › *Picea sitchensis* › *Larix decidua* › *Cotoneaster sp.* › *Prunus laurocerasus* › *Rhododendron ponticum* › *Symphoricarpos albus* › *Cornus sericea* Negative species cover must constitute ≤10% cover of the plot to achieve a pass
Negative species regeneration	The regeneration of negative species must be absent in order to achieve a pass

Medium canopy height	Medium canopy height must be ≥7 m to achieve a pass
Total canopy cover	Total canopy cover must be ≥30% of the plot to achieve a pass
Proportion of target species in canopy	The proportion of target species in the canopy must make up ≥50% of the plot to achieve a pass
Native shrub layer cover	Native shrub layer cover must make up 10 – 75% of the plot to achieve a pass
Native field layer	Native field layer must cover ≥20% of the plot to achieve a pass
Bryophyte cover	Bryophyte cover must constitute ≥4% to achieve a pass
Grazing pressure	All 5 grazing pressure indicators must be absent to achieve a pass: › Topiary effect on shrubs and young trees › Browse line on mature trees › Abundant dung › Recent bark stripping › Trampling
Plot level assessment	8 of the 10 criteria to achieve a Pass



Map Legend

Proposed Development Site

[91E0] Alluvial forest condition assessment survey locations

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title

Location of alluvial forest condition assessment surveys

Project Title

Hodson Bay Waterfront Park and Marina Redevelopment, Co. Roscommon

Project No.	Drawing No.	Scale
241220	Figure 2-1	1:8,000
Drawn By	Checked By	Date
BOC	AvdGM	11/08/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

3. RESULTS

The results of the 91E0 condition assessments are presented in the following sections. A summary figure of all the alluvial forest monitoring plots is presented in Figure 2-1 above.

During surveys carried out on the 28th of July 2025, five areas of 91E0 alluvial forest were recorded within the Proposed Development Site. The five areas of 91E0 were recorded in areas of lake shore, in conjunction with an outer buffer of wetland habitats such as Reed and large sedge swamp (FS1). All areas of 91E0 habitat showed signs of hydrological inundation at the time of survey.

Areas of 91E0 occurred in fragmented, non-continuous plots of varied sizes, with the largest areas of habitat conforming to 91E0 habitat at monitoring plots 1 and 5. Plots 2, 3 and 4 occurred in smaller, often linear areas of woodland, with some level of connectivity between plots 2, plot 3, and plot 4. Trees were of small-medium trunk diameter, although the drier areas contained some larger trees. A healthy understory and field layer was usually present, with relatively low moss abundance across all five plots. Grazing pressure was absent across all five plots, with healthy native regeneration recorded. The occurrence of negative indicator species was low overall, with only two species recorded across all five plots.

Details on survey results at each plot are described below, with a summary of plot assessment in Table 3-1 below. All five monitoring plots passed the condition assessment for 91E0 alluvial forest habitat at individual plot level assessment. Consequently, all five monitoring plots are considered to conform to Annex I *91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* habitat.

Table 3-1. A summary of individual plot level assessment results

Assessment Criteria	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5
Positive indicator species	Pass	Pass	Pass	Pass	Pass
Negative species cover	Pass	Pass	Pass	Pass	Pass
Negative species regeneration	Pass	Pass	Pass	Pass	Pass
Medium canopy height	Pass	Fail	Fail	Fail	Pass
Total canopy cover	Pass	Pass	Pass	Pass	Pass
Proportion of target species in canopy	Pass	Pass	Pass	Pass	Pass
Native shrub layer cover	Pass	Pass	Pass	Pass	Pass
Native field layer	Pass	Pass	Pass	Pass	Pass
Bryophyte cover	Fail	Pass	Fail	Fail	Pass
Grazing pressure	Pass	Pass	Pass	Pass	Pass
Plot level assessment	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

3.1 Plot 1

Plot one was carried out in the area of woodland to the north of the Proposed Development, located outside of the Proposed Development Site. At plot 1, the canopy largely consisted of grey willow (*Salix cinerea*) as well as occasional ash (*Fraxinus excelsior*). Larger trees were present further away from the lakeshore, whilst fallen deadwood was frequent. A healthy shrub layer consisting of hawthorn (*Crataegus monogyna*), guelder rose (*Viburnum opulus*) and alder buckthorn (*Frangual alnus*) was recorded. A field layer consisting of creeping bent (*Agrostis stolonifera*), remote sedge (*Carex remota*), wild angelica (*Anglica sylvestris*), meadow-sweat (*Filipendula ulmaria*), mint (*Mentha aquatica*), reed-canary grass (*Phalaris arundinacea*), purple loosestrife, (*Lythrum salicaria*), yellow loosestrife (*Lysimachia vulgaris*), common reed (*Phragmites australis)*, yellow iris (*Iris pseudacorus*), marsh horsetail (*Equisetum palustre*), bramble (*Rubus fruticosus agg.*), common sedge (*Carex nigra)*, and bladder sedge (*Carex vesicaria)* were recorded. The moss *Thamnobryum alopecurum* occurred frequently in the rockier areas as well as scattered *Kindbergia praelonga and Plagionium sp.* Trees contained abundant moss epiphytes such as *Neckera complanata*, *Ulota sp.,* and *Orthotrichum sp.* The negative indicator species sycamore (*Acer pseudoplatanus*) occurred in small amounts to the edge of the plot one.



Plate 3-1. A representative image of 91E0 monitoring plot 1

3.2 Plot 2

Plot two was recorded in an area of linear alluvial forest which extends directly along the lake edge to the north of the Proposed Development Site, north of the location of the Proposed Water Sports Pavillion. The canopy consisted of grey willow (*Salix cinerea*), ash (*Fraxinus excelsior*) with oak (*Quercus robur*) in the drier areas. Varied sized trees as well as fallen deadwood was recorded from plot two. An abundant shrub layer consisting of hawthorn (*Crataegus monogyna*), guelder rose (*Viburnum opulus*), crab apple (*Malus sylvestris*) and alder buckthorn (*Frangual alnus*) was recorded. A field layer consisting of creeping bent (*Agrostis stolonifera*), wild angelica (*Anglica sylvestris*), meadow-sweet (*Filipendula ulmaria*), mint (*Mentha aquatica*), reed-canary grass (*Phalaris arundinacea*), horsetails (*Equisetum sp.*), purple loosestrife, (*Lythrum salicaria*), yellow loosestrife (*Lysimachia vulgaris*), yellow iris (*Iris pseudacorus*), marsh ragwort (*Jacobaea aquatica*) was recorded. The moss species *Thamnobryum alopecurum*, *Calliergonella cuspidata* and *Kindbergia praelonga* were also present in plot two.



Plate 3-2. A representative image of 91E0 monitoring plot 2

3.3 Plot 3

Plot three was recorded in a small woodland which extended back into the shoreline, north of the Proposed Development Site and location of the Proposed Water Sports Pavillion Building. The canopy consisted of grey willow (*Salix cinerea*) and ash (*Fraxinus excelsior*). A mix of tree sizes and fallen deadwood was recorded from this area. A shrub layer consisting of hawthorn (*Crataegus monogyna*), guelder rose (*Viburnum opulus*), crab apple (*Malus sylvestris*) and alder buckthorn (*Frangual alnus*) was recorded. A field layer consisting of creeping bent (*Agrostis stolonifera*), (*Phragmites australis), gipsywort (Lycopus europaeus),* meadow-sweat (*Filipendula ulmaria*), mint (*Mentha aquatica*), marsh horsetail (*Equisetum palustre.*), purple loosestrife (*Lythrum salicaria*), yellow loosestrife (*Lysimachia vulgaris*), greater willow-herb (*Epilobium hirsutum*), marsh ragwort (*Jacobaea aquatica*), water forget-me-not (*Myosotis scorpioides*), with the moss *Kindbergia praelonga* also recorded occasionally in the area.



Plate 3-3. A representative image of 91E0 monitoring plot 3

3.4 Plot 4

Plot four was recorded along a linear area of woodland habitat area along the lake edge, north of the location of the Proposed Water Sports Pavillion. The canopy consisted of grey willow (*Salix cinerea*) and ash (*Fraxinus excelsior*). A mix of tree sizes was recorded. Some rotten stumps as well as frequent fallen deadwood were recorded from this area. A shrub layer consisting of hawthorn (*Crataegus monogyna*), crab apple (*Malus sylvestris*) and alder buckthorn (*Frangual alnus*) was recorded. A field layer consisting of creeping bent (*Agrostis stolonifera*), wild angelica (*Angelica sylvestris*), common reed (*Phragmites australis), gipsywort (Lycopus europaeus),* meadow-sweat (*Filipendula ulmaria*), mint (*Mentha aquatica*), marsh bedstraw (*Galium palustre*), field horsetail (*Equisetum arvensis.*), field bindweed (*Calystegia sepium*), Stone bramble (*Rubus saxatillis*), purple loosestrife, *(Lythrum salicaria*), yellow loosestrife (*Lysimachia vulgaris*), greater willow-herb (*Epilobium hirsutum*) , marsh ragwort (*Jacobaea aquatica*), creeping bent (*Ranunculus repens*), water forget-me-not (*Myosotis scorpioides*) were recorded.



Plate 3-4. A representative image of 91E0 monitoring plot 4

3.5 Plot 5

Plot five was recorded from within a woodland area along the lake edge, south of the existing marina. The canopy consisted of grey willow (*Salix cinerea*) alder (*Alnus glutinosa*) and ash (*Fraxinus excelsior*). A diverse mix of tree sizes was recorded as well as frequent fallen deadwood. A shrub layer consisting of guelder rose (*Viburnum opulus*), hawthorn (*Crataegus monogyna*), and alder buckthorn (*Frangual alnus*) was recorded. The field layer consisted of creeping bent (*Agrostis stolonifera*), wild angelica (*Angelica sylvestris*), common reed (*Phragmites australis), gipsywort (Lycopus europaeus),* meadow-sweat (*Filipendula ulmaria*), mint (*Mentha aquatica)*, horsetails (*Equisetum sp.)*, purple loosestrife, (*Lythrum salicaria*), yellow loosestrife (*Lysimachia vulgaris*), lesser skullcap (*Scutellaria minor*), marsh ragwort (*Jacobaea aquatica*) and creeping bent (*Ranunculus repens*). The moss species *Calliergonella cuspidata* and *Kindbergia praelonga* were recorded occasionally from the area. The negative indicator species red osier-dogwood (*Cornus sericea*) occurred in the form of a single plant.



Plate 3-5. A representative image of 91E0 monitoring plot 5

4. REFERENCES

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APPENDIX 6:
CHAPTER 8 OF THE EIAR (INCLUDING CHAPTER 8 APPENDICES

Rialtas na hÉireann Government of Ireland
Arna chomhchistiú ag an Aontas Eorpach Co-funded by the European Union
Tionól Reigiúnach Oirthir agus Lár-Tíre Eastern and Midland Regional Assembly
Fáilte Ireland
ROSCOMMON Comhairle Contae Ros Comáin Roscommon County Council
Waterways Ireland

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8. HYDROLOGY AND HYDROGEOLOGY

8.1 Introduction

8.1.1 Background & Objectives

In this chapter of the Environmental Impact Assessment Report (EIAR), MKO, on behalf of Roscommon County Council (RCC), has assessed the likely significant effects of the proposed redevelopment of an existing Waterfront and Marina at Hodson Bay, Lough Ree (Proposed Development) on the local hydrological and hydrogeological environment (surface water and groundwater).

This chapter provides a baseline assessment of the hydrological and hydrogeological environment of the Proposed Development site (the Site) and identifies and evaluates the potential impacts associated with the construction and operational phases of the Proposed Development. Appropriate mitigation measures are outlined and recommended to avoid or minimise significant effects where identified. Additionally, it includes an evaluation of residual effects following the implementation of mitigation measures and determines the significance of these effects. It has been completed in accordance with the EIA guidance and legislation set out in Chapter 1: Introduction. The full description of the Proposed Development is provided in Chapter 4 of this EIAR

The objectives of the assessment are to:

- Produce a baseline study of the existing water environment of the Site (surface water and groundwater including connectivity with local designated sites);
- Identify likely negative impacts of the Proposed Development on surface water and groundwater during construction and operational phases of the development;
- Identify mitigation measures to avoid, remediate or reduce significant negative effects; and,
- Assess significant residual effects and cumulative impacts of the Proposed Development along with other local commercial and infrastructural developments.

8.1.2 Statement of Authority

This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Dr Bébhinn Anders and reviewed by Monika Kabza, all of MKO.

Bébhinn Anders has a BSc. in Earth and Ocean Sciences and a PhD from the University of Galway in geochemistry and sedimentary provenance. Bébhinn has 4 years of practical field experience with projects that involve environmental monitoring, hydrogeological data analysis, and flood risk assessments. She has conducted geological mapping, supervised borehole drilling, and led water sampling campaigns. Her experience also includes preparing both Land, Soils and Geology and Hydrology and Hydrogeology chapters for EIARs.

Colin Fitzgerald is an environmental geologist with over fourteen years' experience in impact assessment, contaminated land, hydrogeology, catchment science, GIS, mining, and exploration. Colin has a BSc. in Geology from UCC and a postgraduate diploma in Environmental Engineering from Trinity College Dublin. He is a professional geologist (EurGeol, PGeo) and has worked on greenfield and brownfield impact assessment for over ten years, with experience in preparing and leading teams through Land, Soils and Geology, and Hydrology and Hydrogeology chapters for EIARs.

Monika Kabza has a MSc. in Groundwater Engineering from the AGH University of Science and Technology Krakow, Poland and is a professional geologist (PGeo) with over 16 years of experience gained from environmental and infrastructure projects. She has worked on projects for Uisce Éireann, Geological Survey Ireland, National Federation of Group Water Schemes, Dublin Airport, and private

industry. Her experience includes preparing the EIAR Hydrology and Hydrogeology chapters for infrastructure projects such as the N11/M11 Improvement Scheme and wind and solar farms.

8.1.3 Relevant Legislation

This EIAR has been prepared in accordance with the requirements of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU. These Directives have been transposed into Irish legislation through S.I. No. 296 of 2018 – European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

The EIAR is prepared in accordance with the requirements of European Union and Irish legislation identified in Chapter 1 Introduction. In addition, due regard has been given to the following relevant legislation as it relates to the protection of the water environment:

- S.I. No. 349 of 1989: European Communities (Environmental Impact Assessment) Regulations, as amended (including S.I. Nos. 84 of 1994, 101 of 1996, 351 of 1998, 93 of 1999, 450 of 2000, 538 of 2001, and 134 of 2013), together with the Minerals Development Act 2017, the Planning and Development Act 2000 (as amended), and S.I. No. 600 of 2001 Planning and Development Regulations (and amendments), which implement EU Directive 85/337/EEC and its successors on the environmental assessment of certain public and private projects;
- Planning and Development Act, 2000, as amended;
- S.I. No. 293 of 1988: European Communities (Quality of Salmonid Waters) Regulations, implementing EU Directive 78/659/EEC regarding the protection and improvement of waters supporting fish life;
- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended (S.I. Nos. 296/2009, 327/2012, 386/2015, and 77/2019), which give effect to Directive 2008/105/EC on environmental quality standards and to the EU Water Framework Directive (2000/60/EC);
- S.I. No. 722 of 2003: European Communities (Water Policy) Regulations, transposing the Water Framework Directive (2000/60/EC) and the associated Groundwater Directive (2006/118/EC) on the protection of groundwater against pollution and deterioration. The Water Framework Directive, as amended by various directives (including 2008/32/EC, 2008/105/EC, 2009/31/EC, 2013/39/EU, and 2014/101/EU), has directed water management in the EU since 2000;
- S.I. No. 684 of 2007: Waste Water Discharge (Authorisation) Regulations, transposing EU Directive 80/68/EEC on the protection of groundwater from pollution caused by certain dangerous substances;
- S.I. Nos. 106 of 2007, 122 of 2014 and 99 of 2023: European Communities (Drinking Water) Regulations, implementing EU Directive 98/83/EC (the Drinking Water Directive) and relevant provisions of Directive 2000/60/EC;
- S.I. No. 9 of 2010: European Communities Environmental Objectives (Groundwater) Regulations 2010, as amended (S.I. Nos. 389/2011, 149/2012, and 366/2016, as well as the Radiological Protection (Miscellaneous Provisions) Act 2014).

Additional legislation relevant to the protection of the water environment includes:

- The Water Framework Directive (WFD) (2000/60/EC) and its transposition under S.I. No. 722 of 2003;
- The Groundwater Directive (2006/118/EC);
- The European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended;
- The European Communities Environmental Objectives (Groundwater) Regulations 2010, as amended;
- The European Communities (Quality of Salmonid Waters) Regulations;
- The European Communities (Water Policy) Regulations 2003, as amended, provide for the implementation of 'daughter'; and
- The Freshwater Pearl Mussel Regulations (S.I. of 2009).

8.1.4 Relevant Guidance

The hydrology and hydrogeology section of the EIAR is carried out in accordance with guidance contained in the following:

- Environmental Protection Agency (EPA) (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;
- European Commission (2017): Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report;
- Institute of Geologists of Ireland (IGI) (2013). Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements;
- Transport Infrastructure Ireland (TII) (formerly NRA) (2008). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes;
- Inland Fisheries Ireland (IFI) (2016): Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Watercourses;
- Roscommon County Council (2022) Roscommon County Development Plan 2022 to 2028;
- CIRIA (Construction Industry Research and Information Association) 2006: Guidance on 'Control of Water Pollution from Linear Construction Projects' (CIRIA Report No. C648, 2006); and,
- CIRIA 2006: Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors. CIRIA C532. London, 2006.

8.2 Methodology

8.2.1 Desk Study

A desk study of the Site was completed prior to completing a walkover assessment. As part of the desk study included in this chapter, the relevant geological, hydrological, hydrogeological and meteorological data were reviewed: The following data sources were reviewed:

- EPA Datasets and Map Viewer (www.catchments.ie and https://gis.epa.ie/EPAMaps);
- Geological Survey Ireland (GSI) Datasets Map Viewer (www.gsi.ie);
- Met Eireann Meteorological Databases (www.met.ie);
- National Parks & Wildlife Services (NPWS) (www.npws.ie);
- Office of Public Works (OPW) Indicative Flood Maps (www.floodinfo.ie/map/floodmaps/);
- Tailte Eireann Historic Maps (www.tailte.ie);
- Topographical Survey (CIVIC, 2025);
- Utilities Survey (CIVIC, 2025);
- Site Specific Stage 2 Flood Risk Assessment (CIVIC, 2026), and
- Drainage Strategy (CIVIC, 2026).

8.2.2 Site Investigations

An initial walkover survey was completed by an MKO staff member on 10th and 11th of April 2025. A hydrological walkover survey, including drainage mapping to establish flow directions and drainage patterns (where present) was undertaken by MKO and RCC on 18th November 2025. Four water sampling events took place on

- 18th November 2025;
- 21st January 2026;
- 7th April 2026; and
- 11th May 2026.

In addition, a topographical survey (17th September 2025) and utilities survey (20th November 2025) were undertaken by CIVIC.

8.2.3 Scoping & Consultation

The scope for this chapter of the EIAR has also been informed by consultation with statutory consultees, bodies with environmental responsibility and other interested parties. This consultation process is outlined in Section 2.5 of this EIAR. The Department of Housing, Local Government and Heritage have suggested to conduct geophysical surveys and Underwater Archaeological Impact Assessment (UAIA), to include dive/wade, metal detection surveys of all areas where underwater/in-lake works are proposed, agreed with the National Monuments Service. National Parks and Wildlife Services (NPWS) and Uisce Éireann (UE) responded as outlined in Section 2.5.2, of which all comments have been considered in this chapter. Inland Fisheries Ireland (IFI), Local Authorities Waters Programme (LAWPRO) and Office of Public Works (OPW) had not responded at the time of report writing.

8.2.4 Impact Assessment Methodology

Please refer to Chapter 1 of the EIAR for a detailed description of the impact assessment methodology, which follows the guidance provided by the Environmental Protection Agency (EPA, 2022). In addition to the general EIA methodology, the water environment receptors' sensitivity was evaluated after the completion of the desk study and baseline field studies in accordance with the criteria outlined in Table 8-1 below and Table 4.1 of the National Roads Authority (NRA) (now Transport Infrastructure Ireland (TII)) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology, and Hydrogeology for National Road Schemes (NRA, 2008). Sensitivity levels have been applied to assess the potential effect and significance of the Proposed Development's impact on hydrological (Table 8-1) and hydrogeological (Table 8-2) receptors.

Table 8-1 Receptor Sensitivity Criteria

Sensitivity Level	Sensitivity of Receptor
Not Sensitive	Receptor is of low environmental importance (e.g. surface water quality classified by EPA as A3 waters or seriously polluted, fish sporadically present or restricted). Heavily engineered or artificially modified and may dry up during summer months. Environmental equilibrium is stable and is resilient to changes which are considerably greater than natural fluctuations, without detriment to its present character. No abstractions for public or private water supplies. GSI groundwater vulnerability "Low" to "Moderate" classification and "Poor" aquifer importance.
Sensitive	Receptor is of medium environmental importance or of regional value. Surface water quality classified by EPA as A2. Salmonid species may be present and may be locally important for fisheries. Abstractions for private water supplies. Environmental equilibrium copes well with all natural fluctuations but cannot absorb some changes greater than this without altering part of its present character. GSI groundwater vulnerability "High" classification and "Locally" important aquifer.
Very Sensitive	Receptor is of high environmental importance or of national or international value i.e. NHA or SAC. Surface water quality classified by EPA as A1 and salmonid spawning grounds present. Abstractions for public drinking water supply. GSI groundwater vulnerability "Extreme" classification and "Regionally" important aquifer.

Source: Adapted from www.sepa.org.uk

Table 8-2 Estimation of Importance of Hydrology Attributes

Importance	Criteria	Examples
Extremely High	Attribute has a high quality or value on an international scale.	River, wetland or surface water body ecosystem protected by EU legislation e.g. 'European sites' designated under the Habitats Regulations or 'Salmonid waters' designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988.
Very High	Attribute has a high quality or value on a regional or national scale.	› River, wetland or surface water body ecosystem protected by national legislation – NHA status. › Regionally important potable water source supplying >2,500 homes. › Quality Class A (Biotic Index Q4, Q5). › Flood plain protecting more than 50 residential or commercial properties from flooding. › Nationally important amenity site for wide range of leisure activities.
High	Attribute has a high quality or value on a local scale.	› Salmon fishery. › Locally important potable water source supplying >1000 homes. › Quality Class B (Biotic Index Q3-4). › Flood plain protecting between 5 and 50 residential or commercial properties from flooding. › Locally important amenity site for wide range of leisure activities.
Medium	Attribute has a medium quality or value on a local scale.	› Coarse fishery. › Local potable water source supplying >50 homes. › Quality Class C (Biotic Index Q3, Q2-3). › Flood plain protecting between 1 and 5 residential or commercial properties from flooding.
Low	Attribute has a low quality or value on a local scale.	› Locally important amenity site for small range of leisure › activities. › Local potable water source supplying <50 homes. › Quality Class D (Biotic Index Q2, Q1). › Flood plain protecting 1 residential or commercial property from flooding. › Amenity site used by small numbers of local people.

Source: (NRA, 2009)

Table 8-3 Estimation of Importance of Hydrogeological Attributes

Importance	Criteria	Examples
Extremely High	Attribute has a high quality or value on an international scale	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status.

Importance	Criteria	Examples
Very High	Attribute has a high quality or value on a regional or national scale.	› Regionally Important Aquifer with multiple wellfields. › Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status. › Regionally important potable water source supplying >2500 homes. › Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale.	› Regionally Important Aquifer. › Groundwater provides large proportion of baseflow to local rivers. › Locally important potable water source supplying >1000 homes. › Outer source protection area for regionally important water source. › Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale.	› Locally Important Aquifer. › Potable water source supplying >50 homes. › Outer source protection area for locally important water source.
Low	Attribute has a low quality or value on a local scale.	› Poor Bedrock Aquifer. › Potable water source supplying <50 homes.

Source: (NRA, 2009)

8.3 Receiving Environment

8.3.1 Existing Land Use & Topography

The Proposed Development is in the townland of Barrymore, 4 kilometres (km) northwest of Athlone. The site covers an area of approximately 9 hectares (ha) and is centred around coordinates X 600814, Y 746366 Irish Transverse Mercator (ITM).

The Site is located on the southwestern shore of Lough Ree, a large freshwater lake forming part of the River Shannon system, immediately east of the Hodson Bay Hotel and north of where the River Shannon approaches Athlone to the southeast. The elevation of the Site ranges from approximately 34 to 44mAOD (metres above Ordnance Datum). The overall local topography is generally flat and gently slopes from west to east. The Site covers an area which comprises water-based recreational areas, free draining grassland, vehicular parking, and an access road. The Site location context is shown on Figure 1-1 of Chapter 1 of this EIAR.

8.3.2 Water Balance

The nearest synoptic station with long-term rainfall and evaporation data is at Mullingar, approximately 42 km east of the Site. The mean annual rainfall recorded at this station for the 30-year period 1991-2020 is 986 mm (Met Éireann). As shown in Table 8-4 below, the wettest month on average is December. The long-term average Potential Evapotranspiration (PET) for Mullingar station is 491.5 mm/year.

Table 8-4 Mean Monthly Rainfall (mm) – Mullingar Synoptic Weather Station (1991-2020)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Long term average	91.4	76.4	69.2	69.5	66.1	75.1	79.5	84.9	76.9	99.6	98.1	99.6

Note: these rainfall data are presented for baseline characterisation only and are not used in assessing runoff volumes or for drainage design purposes

According to the Qube model developed by EPA, which estimates river flows in ungauged catchments, the long-term annual average rainfall (AAR) within a 2 km radius of the Proposed Development site is approximately 923 mm/year, comparable to the 30-year average at Mullingar. The Qube model estimates the PET of the area at 476 mm/year, also comparable to Mullingar. Therefore, the effective rainfall (ER), the portion of precipitation available for surface runoff and groundwater recharge, is calculated as follows:

$$ER = AAR - PET = 923 \text{ mm/year} - 476 \text{ mm/year} = 447 \text{ mm/year}$$

Based on the groundwater recharge coefficient of 20%, as per GSI, the average annual groundwater recharge across the Site is estimated at 111 mm/year. This indicates that the area's hydrology is dominated by high surface water runoff and relatively low groundwater recharge.

8.3.3 Regional & Local Hydrology

On a regional scale, the Site is located within Hydrometric Area 26, Upper Shannon, and the WFD Upper Shannon Catchment. It lies within the Shannon[Upper]_SC_090 subcatchment, as defined under the WFD. A regional hydrology map is provided in Figure 8-1.

600,000

604,000

748,000

744,000

N61

TEMP_26N24

96 m

67 m

Carrowmurragh

Williams Lough

83 m

MOYVANNAN

N61

57 m

45 m

TEMP_26N58

Athlone Golf Club

Ree (Lough)

BALLYBAY_26

N61

68 m

47 m

Barrymore

Curraghmore

62 m

Belcourt

54 m

48 m

Coosan Point Road

Shannon[Upper]_SC_090

Shannon[Upper]_SC_100

Shannon[Upper]_SC_090

Shannon[Lower]_SC_010

Shannon [Upper]

BARR'S DRAIN

Cross [Roscommon]

0 1 2 km

R362

58 m

68 m

Cloongowna

50 m

Barrybeg

Williamstown

Coosan

TEMP_26K12

COOSAN

56 m

Clonb

[Upper] Shannon

Carrowmurragh

Upper Shannon

N61

Athlone Golf Club

Barrymore

Curraghmore

N61

Upper Shannon

Barrybeg

0 1 2 km

Upper Shannon

68 m

Cloongowna

46 m

Clonbris

Map Legend

- EIAR Site Boundary
- River Network (EPA)
- Lake Waterbodies (EPA)
- WFD SubCatchments
- WFD Catchments (inset)

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Regional Hydrology

Project Title

Hodson Bay
EIAR

Project No.	Drawing No.	Scale
241220	8-1	1:25,000
Drawn By	Checked By	Date
BOC	CF	15/07/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

599,000 600,000 601,000 602,000

747,000 746,000 745,000

Williams Lough

MOYVANNAN

TEMP_26N58

BALLYBAY_26

SW01 SW02 SW03 SW04

Ree (Lough)

Athlone Golf Club

Barrymore

Woodlands

Belcourt

The Rise

N61

46 m 41 m 55 m 45 m 43 m 42 m 62 m 49 m 47 m

0 0.5 1 km

Map Legend

- EIAR Site Boundary
- River Network (EPA)
- Lake Waterbodies (EPA)
- EPA Monitoring Station - Site 14
- Surface Water Monitoring Points

WFD River Sub Basins

- BALLYBAY_010
- SHANNON (Upper)_110

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

SITE LOCATION - NOT TO SCALE

Drawing Title
Local Hydrology and Surface Water Sampling Locations

Project Title
Hodson Bay EIAR

Project No.	Drawing No.	Scale
241220	8-2	1:12,500
Drawn By	Checked By	Date
BOC	BA	15/07/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

At the local scale, the majority of the Site is situated within the SHANNON (Upper)_110 sub basin and a section of the road to the south lies within the BALLYBAY_010 sub basin. There are currently no open surface watercourses or drains present within the Site. The closest river to the Site has been temporarily named 'TEMP_26N58' by EPA (WFD code: IE_SH_26S021660), which originates to the west of the Site and flows northward for approximately 0.8 km before discharging to Lough Ree; this river is upstream of the Site, via Lough Ree.

The Lough 'Ree' lake waterbody (WFD code: IE_SH_26_750a, Lough Ree, overlies and bounds the northern section of the Site. The lake covers approximately 100 km^2. The continuation of the River Shannon [Upper] is mapped by EPA approximately 3.6 km southeast of the Site, draining Lough Ree towards Athlone.

A local hydrology map is shown in Figure 8-2.

8.3.4 Site Drainage

There is no surface watercourse on the Site. Much of the rainfall that falls on permeable areas across the Site percolates to ground and likely travels via subsurface flow to Lough Ree which is located at the western site boundary. There is also likely some infiltration through the moderately permeable subsoils to the limestone bedrock. As the overall local topography gently slopes from west to east, any overland runoff will generally flow eastward.

The majority of the Site is urban fabric with artificial surfaces that are served with a stormwater network. The Site also contains areas of alluvial woodland and reedbeds. The surrounding area is primarily artificial vegetated grassland (golf course) to the north, and a mix of residential and agricultural land to the south of the Site. A substantial amount of rainfall is collected through gullies and the stormwater network, with likely outfall to Lough Ree. Some ponding of water has been observed at the gullies and car parking spaces in the northern area of the Site, which is likely due to blocked drainages or high lake water levels in winter. The existing roadway is served by gullies which are assumed to outfall to Lough Ree.

The existing stormwater network for the Hodson Bay Hotel is included in Appendix C of the Drainage Strategy Report included in Appendix 4-4 of the EIAR. There is one observed existing stormwater outflow which passes through an oil interceptor before discharging into Lough Ree along the marina wall to the north (local authority reference number: WP-16-11, ID 2023_983).

8.3.5 Flood Risk Identification

To assess potential flood risk for the Site, several sources were consulted, including the OPW Indicative River and Coastal Flood Map, the Preliminary Flood Risk Assessment (PFRA) maps from the CFRAM programme, the Department of Climate Energy and the Environment online planning portal, and historical 6" and 25" Ordnance Survey mapping.

Tidal flooding is not possible at the Site considering the elevation of the Site (approximately 35 metres above sea level) and distance from the coastline. The Roscommon County Development Plan (RCDP) 2022 to 2028 (RCC, 2022) indicates that the lands along the shoreline of Lough Ree are liable to flooding.

A Detailed Flood Risk Assessment (DFRA) has been prepared for the Proposed Development (CIVIC, 2026). This report determined that flood risk at the Site arises from elevated lake levels within Lough Ree during extreme, catchment-wide rainfall events. A conservative 0.1% AEP design flood level of 37.5mAOD was adopted for the assessment, based on CFRAM predictive modelling and long-term OPW hydrometric analysis. The report also concluded that the development does not encroach upon functional floodplain storage, does not obstruct flood conveyance and will not increase flood risk elsewhere. It is stated that some sections of the retained promenade access may be inundated during extreme events, however, the gradual nature of lake flooding and the non-residential use of the Proposed Development ensure that residual risk is low and manageable. For further reference, the DFRA for the Site is included in Appendix 8-1.

8.3.6 Surface Water Hydrochemistry

Lough Ree is the only surface waterbody located within the Site (Figures 8-1 & 8-2). Baseline water samples were collected from four locations, during four separate sampling events. They were collected from within the Site, along Lough Ree, one each from the upstream and downstream side of the proposed main works area around the proposed Water Sports Pavilion (the WSP), and two from the existing marina (Figure 8-2). The samples were taken from November 2025 to May 2026. Field hydrochemistry data are summarised presented in Table 8-5, with the full dataset included in Appendix 8-2.

Table 8-5: Summary of Field Hydrochemistry Data

		Temperature (°C)	Dissolved O_2 (mg/l)	Conductivity (µS/cm)	pH (pH Units)	ORP (SHE)
SW01	Min.	5.4	8.2	329	7.7	315
	Mean	9.7	9.4	361	7.9	330
	Max.	14.4	10.6	396	7.9	348
SW02	Min.	4.9	8.8	328	7.9	322
	Mean	9.2	10.0	348	8.0	346
	Max.	13.2	11.5	370	8.1	385
SW03	Min.	5.2	8.9	328	7.8	323
	Mean	9.6	11.3	481	8.0	356
	Max.	14.6	14.7	692	8.4	424
SW04	Min.	5.6	9.0	319	7.3	311
	Mean	9.9	10.7	349	7.9	333
	Max.	15.0	11.6	380	8.2	354

EPA has regularly sampled (almost always quarterly) at "Site 14" on Lough Ree from 2007 until present, 200m east of the Site. A summary of the surface water quality from this location is presented on Table 8-6.

Table 8-6: Summary of EPA Water Quality Data from Lough Ree

Parameter	Unit	DWS	MAC EQS	Min.	Mean	Max.	No. of Samples	No. of Detections	No. Exceedances (DWS)	No. Exceedances (MAC EQS)
pH	pH Units	6.5<pH<9.5	4.5<pH<9.0	7.4	8.4	8.6	70	70	0	0
Conductivity @25°C	µS/cm	2500	nc	313	352	390	45	45	0	nc
Transparency	m	nc	nc	1.5	2.8	4.3	70	70	nc	nc
Apparent colour	PCU	nc	nc	37	55	76	13	13	nc	nc
True Colour	PtCo Units	nc	nc	25	48	68	12	12	nc	nc
Temperature	°C	nc	nc	4.4	14	24.7	71	71	nc	nc
Dissolved Oxygen	mg O2/l	nc	nc	7.3	10.0	12.9	71	71	nc	nc
Alkalinity-total (as $CaCO_3$)	mg/l	nc	nc	25	144	169	68	67	nc	nc
Silica (as SiO_4)	mg/l	nc	nc	0.77	2.3	4.5	71	71	nc	nc
ortho-Phosphate (as P)	mg/l	nc	0.075	0.0025	0.008	0.022	60	22	nc	0
Total Phosphorus (as P)	mg/l	nc	nc	0.008	0.01	0.032	67	42	nc	nc
Nitrate (as N)	mg/l	50	nc	0.1	0.34	0.85	48	40	0	nc
Nitrite (as N)	mg/l	0.5	nc	0.0045	0.007	0.02	48	18	0	nc
Ammonia-Total (as N)	mg/l	0.5	0.14	0.005	0.02	0.18	70	39	0	1
Total Oxidised Nitrogen (as N)	mg/l	50.5	nc	0.1	0.36	0.87	71	60	0	nc
Fluoride	mg/l	1.5	0.5	0.05	0.08	0.12	25	22	0	0
nc = no criteria										

The following observations can be made from the physicochemical data summarised on Table 8-5 and Table 8-6:

- The field data show an expected seasonal temperature range for the months sampled (November to May). These temperatures are reflected in the lower temperature of EPA data.
- The field and EPA data reflect expected dissolved oxygen and oxidation-reduction potential (ORP) ranges for an oxygenated surface water body.
- The pH values are slightly alkaline in both datasets, reflecting the carbonate geological setting of the River Shannon basin, and the catchment area for Lough Ree.
- The mean electrical conductivity in both datasets reflect the expected values for a freshwater lake with a groundwater influence from a limestone aquifer(s).

The screening of site specific hydrochemistry data is introduced and described below. However, the full EPA hydrochemistry dataset summarised in Table 8-6 was also screened against environmental quality standards (EQS) for surface waters. One sample exceeded the maximum allowable concentration (MAC)-EQS threshold of 0.14 mg/l for total ammonia (as N). The sample was collected on 20th November 2024, had a concentration of 0.18 mg/l, and is the only exceedance of the total 70 sampling events in the EPA dataset, where total ammonia (as N) was analysed for each event. There were no other exceedances of the MAC-EQS or annual average (AA)-EQS in the 19 years of hydrochemistry testing at this location.

The screening of laboratory surface water quality results is presented in Appendix 8-3. The full set of original laboratory reports are included in Appendix 8-4. These results were screened against the relevant surface water quality regulations:

- European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009, as amended); referred to as environmental quality standard (EQS).
- European Communities Directive (on the quality of fresh waters needing protection or improvement in order to support fish life) 2006 (2006/44/EC); referred to as the salmonid and cyprinid standards (SCWS).
- European Communities (Drinking Water) Regulations 2007 (S.I. No. 106 of 2007, as amended); referred to as drinking water regulations (DWS).

A summary of the screened exceedances is presented in Table 8-7, Table 8-8 and Table 8-9.

Table 8-7: Summary of DWS Exceedances from MKO Samples (Nov. 2025 to May 2026)

Test	Units	DWS	Min. (> LOD)	Mean	Max.	No. of Samples	No. of DWS Exceedances
Total Coliforms	cfu/100ml	0	1	29	>100	16	16
Faecal Coliforms	cfu/100ml	0	1	23	>100	16	15
Fluoride	mg/l	1.5	1.9	1.9	1.9	16	1

Table 8-8: Summary of MAC-EQS Exceedances from MKO Samples (Nov. 2025 to May 2026)

Test	Units	MAC-EQS	Min. (> LOD)	Mean	Max.	No. of Samples	No. of MAC-EQS Exceedances
Fluoride	mg/l	0.5	1.9	1.9	1.9	16	1

Table 8-9: Summary of SCWS Exceedances from MKO Samples (Nov. 2025 to May 2026)

Test	Units	SCWS	Min. (> LOD)	Mean	Max.	No. of Samples	No. of SCWS Exceedances
Ammoniacal Nitrogen as N	mg/l	0.065	0.03	0.04	0.05	16	10
Total Suspended Solids	mg/l	25	15	30	49	16	4
Nitrite as N	mg/l	0.01	0.007	0.009	0.011	16	1

Total coliforms were detected, and therefore exceeded the DWS, in all samples. Considering faecal coliforms were detected in all but one sample and the relative concentrations of each, faecal coliforms likely represent the majority of coliforms detected. This indicates a wastewater or agricultural runoff source of these coliforms, and in the context of the environmental setting of the Site, it is likely the latter. Flouride exceeded the DWS and the maximum allowable concentration (MAC)-EQS in 1 no. sample, however, as it was not detected in the remaining 15 no. samples, including 3 no. at the same location, it is not prevalent in the surface water environment close to the Site.

Although Lough Ree is not a known salmonid and cyprinid water body, the surface water quality results were also screened against the SCWS, primarily to compare samples against the total suspended solids (TSS) threshold value (25 mg/l). TSS exceeded this SCWS threshold in four samples, during two sampling events (January and May 2026) and at all but one location (SW02). Ammoniacal Nitrogen (as N) and nitrite exceeded the SCWS in 10 no. and 4 no. samples, respectively, which can be attributed to the agricultural runoff discussed above.

To calculate an appropriate annual average (AA) of samples, only parameters with a detection in three or more of the samples at each location were screened. Where a non-detection was reported in one of these samples, half the limit of detection (LOD) was used as a positive result. There were no exceedances of the AA-EQS at any location.

All samples were analysed for volatile organic compounds (VOCs), pesticides, and total petroleum hydrocarbons criteria working group (TPH-CWG) during the initial two sampling events. There were no detections of these parameters in samples and were subsequently not scheduled for analysis in the final two sampling events.

8.3.7 Hydrogeology

The Site is underlain by Visean Limestones (undifferentiated) (Figure 7-3 of Chapter 7), and the bedrock aquifer has been classified by GSI as a regionally important karstified aquifer which is conduit driven (Rkc). This aquifer type is capable of supplying regionally important supplies (e.g., large public water supplies). A bedrock aquifer map is presented in Figure 8-3. The Site lies within the Funshinagh groundwater body (GWB) (WFD code: IE_SH_G_091).

8.3.7.1 Groundwater Subsoil Permeability

The subsoils mapped across the Site comprise glacial till and gravel, both derived from limestones with a localised area of cutover peat in the southwest. Detailed characteristics of these subsoils are provided in Section 7.3.2.

GSI has classified the subsoils across most of the Site as having 'Moderate' permeability, with an area of 'High' permeability in a central portion of the Site along the L2020 Local Road (Figure 8-4). Under these conditions, there is some groundwater flux expected through the subsoils. The Site walkover confirms that the subsoils present have permeability to the extent where ponding is not present on-site in areas where natural ground is in-situ.

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67 m

Carrowmurragh

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Athlone Golf Club

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Barrymore

Belcourt

48 m

Curraghmore

62 m

Coosan Point Road

Williamstown

Coosan

Bog Road

56 m

50 m

Barrybeg

58 m

Coosan Road

68 m

Cloongowna

60 m

R362

0 1 2 km

Map Legend

EIAR Site Boundary

Aquifer Category

LI - Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones

Rkc - Regionally Important Aquifer - Karstified (conduit)

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Bedrock Aquifer

Project Title

Hodson Bay EIAR

Project No.	Drawing No.	Scale
241220	8-3	1:25,000
Drawn By	Checked By	Date
BOC	CF	15/07/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

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42 m

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47 m

50 m

Athlone Golf Club

Barrymore

Belcourt

Curraghmore

Barrybeg

48 m

54 m

56 m

Coosan Point Road

Bog Road

Coosan Road

Williamstown

Coosan

Cloongowna

R362

0 1 2 km

Map Legend

EIAR Site Boundary

Subsoil Permeability

- High
- Medium
- Low
- Water
- Not mapped

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

SITE LOCATION - NOT TO SCALE

Drawing Title: Subsoil Permeability

Project Title: Hodson Bay EIAR

Project No.	Drawing No.	Scale
241220	8-4	1:25,000
Drawn By	Checked By	Date
BOC	CF	15/07/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

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Barrymore

Curraghmore

Barrybeg

Williamstown

Coosan

Cloongowna

Athlone Golf Club

Belcourt

Coosan Point Road

Bog Road

Coosan Road

96 m

67 m

43 m

57 m

45 m

46 m

42 m

47 m

48 m

54 m

68 m

62 m

50 m

56 m

60 m

0 1 2 km

Map Legend

- EIAR Site Boundary

Groundwater Vulnerability

- Extreme
- High
- Low
- Moderate
- Rock at or near Surface or Karst
- Water

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

SITE LOCATION - NOT TO SCALE

Drawing Title
Groundwater Vulnerability

Project Title
Hodson Bay
EIAR

Project No.	Drawing No.	Scale
241220	8-5	1:25,000
Drawn By	Checked By	Date
BOC	CF	15/07/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

8.3.7.2 Groundwater Vulnerability

Groundwater vulnerability across most of the Site is classified as 'Moderate', with an area of 'High' vulnerability identified in a central portion along the L2020 Local Road, where sands and gravels are present (Figure 8-5).

Due to the moderate to high permeability of the in-situ overlying subsoils across the Site, and the conduit driven nature of the karstified bedrock aquifer, there is a potential for groundwater contamination and subsequent rapid dispersion away from the Site, especially in the area of high permeability soils mentioned above.

8.3.7.3 Karst

There are no GSI mapped karst landforms within the Site, nor were there any such features observed during site walkovers or surveys.

There are a series of springs (west) and enclosed depressions (northwest) 4.2 km from the Site. At one of these springs, an underground connection has been traced 4.8 km north to a swallow hole at the southern extent of Lough Funshinagh with minimum groundwater flow rates of 70 m/hr (southwards).

8.3.7.4 Groundwater Flow and Levels

Within the Funshinagh GWB, groundwater flow is expected to concentrate in the upper epikarstic layer and in a zone of interconnected fissures extending to a depth of 30m. There may be some deeper inflows in areas associated with faults or dolomitization. Transmissivity values in karstified bedrock varies greatly from less than $1m^2/d$ up to a few thousand m^2/d (GSI, 2003).

Overall groundwater flow within the Funshinagh GWB will be towards Lough Ree (GSI, 2003). Local topography of the Site gently slopes from west to east towards Lough Ree and there no natural or artificial surface watercourses present within the Site. Accordingly, groundwater flow is likely eastward, providing minor baseflow to Lough Ree which is a local and regional hydraulic sink.

There are no groundwater wells available for groundwater measurement in the area. The status of any private or GSI mapped wells in the area is not known. However, groundwater levels across the Site are likely to reflect seasonal variations in lake water levels throughout the year.

8.3.8 Water Resources

Drinking water for the Site and the dwellings in the surrounding area is sourced from mains water supply.

A search of private well locations (accuracy of 1 – 50m only) was undertaken using the GSI well database (www.gsi.ie) (accessed on 29th July 2026). There are no GSI groundwater group water scheme (GWS) or public water supply (PWS) source protection areas within the Site; the closest is 7.5 km to the southeast. There is one public supply well (dug) located around the southeast section of the Site (GSI well unique ID: IE_GSI_GW_Well_35956), however, information on the yield or status of the well is not provided. It is unlikely any groundwater supply wells are hydrogeologically linked to the main works area around the WSP as groundwater beneath the Site likely discharges to Lough Ree.

The Site is not used for surface water drinking supply, however, an Article 7 (WFD) Abstraction for Drinking Water river waterbody, Shannon (Upper)_120, is located approximately 3 km downstream from the Site.

According to the EPA online mapping database, there is a licenced urban wastewater and sewage treatment plant (500 to 1,000 pe) within the Site named Hodson Bay and Environs (EPA licence no. D0377-01). The agglomeration boundary associated with this plant incorporates the Site. This plant has been decommissioned and is situated where an existing UE foul water pumping station is located. From here, the foul water is pumped off-site to the receiving wastewater treatment facility. For further details, please refer to the Drainage Strategy (CIVIC, 2026) (Appendix 4-4).

There is one licenced stormwater discharge (local authority reference number WP-16-11, ID 2023_983) into Lough Ree along the marina wall.

8.3.9 Groundwater Hydrochemistry

The WFD status for the underlying Funshinagh (GWB) has been assigned a 'Good' status for the latest status classification period (2019-2024).

The hydrochemical signature of the carbonate and limestone groundwater in the GWB has typical ranges of between 380 mg/l to 450 mg/l, while electrical conductivity values are of the order 500 to 700 µS/cm (GSI, 2003).

8.3.10 WFD Status & Risk Assessment

The WFD status classification for the 2019–2024 cycle and the WFD risk assessment for Ireland's third implementation cycle (2022–2027) was reviewed for the Funshinagh GWB and nearby surface water bodies, specifically the Lough 'Ree' lake waterbody. A detailed WFD report is included in Appendix 8-5.

The Lough 'Ree' lake waterbody is classified as being of 'Moderate' ecological status, with a 'high confidence' in this classification. The Lough 'Ree' lake waterbody is 'Not At Risk' of achieving its WFD 'Good Status' objective (by 2027).

8.3.11 Designated Sites & Protected Areas

The potential for the Proposed Development to have an impact on designated sites and protected areas considered the mapping and listing by NPWS of:

- Special Areas of Conservation (SACs) and Special Protection Areas for Birds (SPAs), which are designated under the EU Habitats Directive and EU Birds Directive, respectively. SACs and SPAs are collectively referred to as 'Natura 2000' or 'European Sites'.
- Natural Heritage Areas (NHAs), which are designated under Section 18 the Wildlife (Amendment) Act 2000.
- Proposed Natural Heritage Areas (pNHAs), which are designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated.
- Candidate SACs and SPAs listed (but not designated) under the terms of the EU Habitats Directive.

The source-pathway-receptor model of environmental risk assessment guided the determination of which sites might be affected. The designated sites must be potentially hydrologically or hydrogeologically connected to the Proposed Development via surface water or groundwater pathways. In addition, the designated sites and protected areas must have water-dependent qualifying interests (designation features). The latter was checked from 'site synopsis' reports and web-based resources made publicly available by the NPWS, as presented on their website (www.npws.ie).

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Lough Ree pNHA

Lough Ree SPA

Lough Ree SAC

Lough Ree pNHA

Lough Ree SPA

Athlone Golf Club

Barrymore

Belcourt

Curraghmore

Barrybeg

Williamstown

Coosan

Coosan Point Road

Bog Road

Coosan Road

R362

0 1 2 km

Map Legend

- EIAR Site Boundary
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Proposed National Heritage Area (pNHA)

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Designated Sites and Protected Areas

Project Title

Hodson Bay EIAR

Project No.	Drawing No.	Scale
241220	8-6	1:25,000
Drawn By	Checked By	Date
BOC	CF	15/07/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

The Site is located adjacent to and partially within three designated sites, in association with Lough Ree:

- Lough Ree Special Area of Conservation (SAC) [000440];
- Lough Ree Special Protection Area (SPA) [004064]; and
- Lough Ree proposed Natural Heritage Area (pNHA) [000440].

Distances to receptors are calculated from the Proposed Development boundary. These designated sites, which are hydraulically linked to, and within the Zone of Influence (ZoI) of the Site, are presented in Figure 8-6.

Lough Ree is a nutrient sensitive lake, is not a designated salmonid river, and is not within a freshwater pearl mussel catchment. The screening of all other protected sites in the area and downstream of the Site are discussed and presented in Chapter 6, Section 6.5.

8.3.12 Receptor/Attribute Sensitivity & Importance

Based on the baseline characterisation, the principal environmental receptor associated with the Site is Lough Ree. Lough Ree is a nutrient sensitive lake, is not used for drinking water supply but is upstream of a designated drinking water protected area, is not a designated salmonid river, and not within a freshwater pearl mussel catchment. The Lough 'Ree' lake waterbody is of 'Moderate' ecological status and 'Not At Risk' of achieving its WFD 'Good Status' objective (by 2027). Lough Ree comprises the Lough Ree (SAC) and Lough Ree (SPA) which are of 'Extremely High' importance (Table 8-2). Accordingly, Lough Ree is a receptor of 'Extremely High' importance.

The Site is located adjacent to and partially within two 'European sites' designated under the Habitats Regulations Figure 8-6; therefore, Lough Ree is a 'Very Sensitive' receptor (Table 8-1).

Groundwater provides minor baseflow to Lough Ree. The Funshinagh GWB has been assigned a 'Good' status and 'Not at Risk' of achieving its WFD 'Good Status' objective (by 2027). The bedrock aquifer beneath the Site is classified as a regionally important karstified aquifer which is conduit driven (Rkc), which is of 'High' importance. Accordingly, the groundwater environment beneath the Site is a potential receptor of 'High' importance.

Due to the aquifer classification (regionally important) and the 'Moderate' to 'High' vulnerability groundwater vulnerability in areas of the Site (Figure 8-5), the groundwater beneath the Site is a 'Sensitive' receptor (Table 8-1).

8.4 Description of the Proposed Development

The Proposed Development includes rebuilding the Water Sports Pavilion (WSP), redeveloping and extending the marina to approximately 59 berths, adding new public realm features like a playground, promenade and event spaces, upgrading the L2020 Local Road for cycling and walking with traffic calming and relocated parking, and delivering associated site infrastructure such as landscaping, drainage, utilities and boundary safety upgrades. A full description of the Proposed Development is outlined in Section 4.3 of this EIAR. An overview of the Proposed Development site layout is provided in Planning Drawings HB-RKD-ZZ-ZZ-DR-A-1020 to HB-RKD-ZZ-ZZ-DR-A-1023.

8.4.1 Proposed Site Infrastructure and Drainage Management

The management of stormwater and foul water for the Proposed Development has been developed by CIVIC and was prepared in accordance with the following policies and guidelines:

- National Planning Framework, Project Ireland 2024 (April 2025);
- The RCDP 2022 to 2028 (RCC, 2022);
- Greater Dublin Strategic Drainage Study: Technical Document Volume Two (2005);
- Uisce Éireann Code of Practice for Wastewater Infrastructure (August 2025);

- Implementation of Urban Nature-based Solutions (LAWPRO, 2025), and
- SuDS Manual report C753 (CIRIA , 2015).

For further detail on the management of stormwater and foul water summarised below, please refer to the Drainage Strategy (CIVIC, 2026) (Appendix 4-4).

8.4.1.1 Drainage Strategy & Design

Runoff control and drainage management are key elements in terms of mitigation against impacts on surface water bodies during the construction stage. Two distinct methods will be employed to manage drainage water within the Site. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations, construction areas and temporary storage areas.

The second method involves collecting any drainage waters from works areas within the Site that might carry silt or sediment, and nutrients, to route them towards the existing site drainage system during the construction phase via a hydrocarbon and integrated silt separation interceptor. There will be no direct discharges to surface waters.

During the construction stage all runoff from works areas (i.e. dirty water) will be attenuated and treated to a high quality prior to being released. A detailed construction stage drainage plan will be developed prior to the construction of the Proposed Development.

With the close proximity of Lough Ree to the Site, the stormwater drainage strategy for the operation stage has been developed with water quality as a primary consideration alongside nature-based solutions (NBS) and SuDS hierarchy. The natural hydrological cycle will be emulated as far as reasonably practicable, involving grading of the Site, reducing stormwater runoff entering any conventional drainage systems, and attenuating runoff in proposed SuDs features prior to discharge to Lough Ree.

Where possible, Site catchments will be routed to a nature-based attenuation solution. Select areas of the Proposed Development which cannot be routed in this manner due to the tight levels and falls for gravity outfall to Lough Ree, below ground attenuation measures will not be introduced. All stormwaters will be routed through a hydrocarbon and integrated silt separation interceptor, in line with policy requirements. The Site stormwater drainage network will be routinely inspected and maintained.

The proposed drainage design elements during the operational stage are included in Appendix 4-4.

8.4.1.2 Wastewater Infrastructure

It is anticipated that no upgrade to the surrounding infrastructure is required. Foul water will be collected from the WSP buildings and Marina washroom facilities and will connect to the existing on-site foul water pumping station operated by UE. From there, the foul water will be pumped off-site to the receiving wastewater treatment facilities which currently treat foul water from the Site. A pre-connection enquiry has been submitted to UE to confirm network capacity at the receiving wastewater treatment plant.

8.4.1.3 Water Supply

Based on existing UE water infrastructure records reviewed, a UPVC water distribution main comprising sections of 150 mmØ, 100 mmØ, and 50 mmØ is recoded beneath the L2020 Local Road, serving adjacent properties and fire hydrants at Hodson Bay.

A preliminary potable water demand assessment has been undertaken for the Proposed Development. It is anticipated that the Water Sports Pavilion and Café will be served by a new on-site potable water storage tank supplied via a new 50mmØ MDPE connection. The proposed Marina WC and shower facilities will be served via a separate direct 25mmØ MDPE connection to the existing water distribution network.

The final point of connection to UÉ's existing distribution network will be confirmed through the ongoing pre-development application process. The preferred connection strategy will be dependent upon the location of suitable existing infrastructure, available network capacity, and any network reinforcement works that may be required to accommodate the proposed development.

8.5 Potential Impacts and Mitigation Measures

8.5.1 Overview of Impact Assessment Process

The conventional source-pathway-receptor model (see below, top) was applied to assess potential impacts on downgradient and downstream environmental receptors (see below, bottom as an example) as a result of the Proposed Development.



Where potential impacts are identified, the classification of impacts in the assessment follows the descriptors provided in the Glossary of Impacts contained in the following guidance documents produced by the EPA:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022), and
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003).

The description process clearly and consistently identifies the key aspects of any potential impact source, namely its character, magnitude, duration, likelihood and whether it is of a direct or indirect nature.

In order to provide an understanding of the stepwise impact assessment process applied below (Section 8.5.3 and 8.5.4), presented below on Table 8-10 is a summary guide that defines the steps (1 to 7) taken in each element of the impact assessment process. The guide also provides definitions and descriptions of the assessment process and shows how the source-pathway-target model and the EPA impact descriptors are combined.

Using this defined approach, this impact assessment process is then applied to the development construction and operational activities which have the potential to generate a source of significant adverse impact on the geological and hydrological/ hydrogeological (including water quality) environments.

Table 8-10: Summary Guide of Impact Assessment Process

Step No.	Assessment	Process
Step 1	Identification and Description of Potential Impact Source:	Presenting and describing the activity that brings about the potential impact or the potential source of pollution. The significance of effects is briefly described.
Step 2	Pathways / Mechanisms:	The route by which a potential source of impact can transfer or migrate to an identified receptor. In terms of this type of development surface water and groundwater flows are the primary

		pathways, or for example, excavation or soil erosion are physical mechanisms by which a potential impact is generated.
Step 3	Receptors:	A receptor is a part of the natural environment which could potentially be impacted upon, e.g. human health, plant / animal species, aquatic habitats, soils/geology, water resources, water sources. The potential impact can only arise as a result of a source and pathway being present.
Step 4	Pre-Mitigation Potential Effects	Impact descriptors which describe the magnitude, likelihood, duration and direct or indirect nature of the potential impact before mitigation is put in place.
Step 5	Proposed Mitigation Measures / Impact Assessment	Control measures that will be put in place to prevent or reduce all identified significant adverse impacts. In relation to this type of development these measures are generally provided in two types: (1) mitigation by avoidance, and (2) mitigation by engineering design.
Step 6	Post-Mitigation Residual Effects	Impact descriptors which describe the magnitude, likelihood, duration and direct or indirect nature of the potential impacts after mitigation is put in place.
Step 7	Significance of Effects	Describes the likely significant post mitigation effects of the identified potential impact source on the receiving environment.

8.5.2 Do Nothing Scenario

If the Proposed Development were not to proceed, the Site would remain in its current form as a waterfront, marina and recreational facility with associated buildings, access roads, parking areas and landscaped grounds. No changes to the existing hydrological and hydrogeological environment would be anticipated under the Do-Nothing scenario. The potential direct impacts to water are considered to be neutral, imperceptible, and long-term in the Do-Nothing scenario.

The Hodson Bay/ Barrymore Area Plan which is within the RCDP (RCC, 2022) encourages and supports the retention and appropriate expansion of existing facilities to accommodate appropriate forms of additional leisure, tourism and amenity related development, subject to satisfying all environmental considerations and normal siting and development criteria. The document further states that *'In particular, appropriate low intensity green tourism developments adjacent to the shore of Lough Ree will be supported'.*

8.5.3 Construction Stage

The construction stage has the greatest potential to affect the existing hydrological and hydrogeological environment due to excavation, earthworks and construction activities. The likely significant effects of the Proposed Development and associated mitigation measures are assessed in the following sections.

The likely significant effects of the Proposed Development and mitigation measures that were considered during the approximate 30-month construction stage (see Chapter 4) relate to:

- Earthworks;
- Pumping from open pits;
- Cofferdam installation;
- Bunding and dry works area;
- Piling foundations;
- Accidental spills, leaks or other releases;
- Release of cement-based products;

- Wastewater management;
- Public and private water supplies;
- WFD water body status, and
- Designated sites.

Mitigation measures consider specific actions which are designed to avoid, prevent or lessen potential effects – i.e., mitigation by avoidance and mitigation by design.

8.5.3.1 Earthworks

Construction stage activities including landscaping, site levelling, construction activities, service trench construction, and foundation excavation will require earthworks resulting in removal of vegetation cover and excavation of any minor local pockets of organic soil/subsoils, and bedrock. The main risk will be from sediment laden surface water runoff from bare soil and soil storage areas during construction works.

Much of the surface water generally percolates to ground or enters the stormwater network through gullies and this will be allowed to continue during the construction stage. However, construction activities can result in the release of suspended solids to local drainage features and could result in an increase in the suspended sediment load, which may affect the water quality of Lough Ree.

Pathways: Drainage, runoff, surface water discharge routes.

Receptors: Downgradient surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, the potential effects will be indirect, negative, moderate, short-term, and likely.

Proposed Mitigation Measures / Impact Assessment: The Proposed Development is located adjacent to and partially within Lough Ree. The works areas for the Proposed Development will use a 50m setback distance from Lough Ree where possible and a cofferdam will be installed between the works area for the WSP and Lough Ree for the duration of works. However, surface runoff will ultimately discharge via the local storm drainage system and discharge into Lough Ree. Management of surface runoff and subsequent treatment prior to release will be undertaken during construction work as follows:

- Source controls include the covering work areas, staging areas, and stockpiles, as wells as the prioritisation of small working areas and cessation of works during heavy rainfall and inclement weather. Methods that will be employed are diversion drains, flume pipes, sandbags, oyster bags filled with gravel, and filter fabrics. A cofferdam will be installed to minimise sediment mobilisation into Lough Ree. Flexibility to adapt methods will be required based on location-specific conditions, as judged by supervising engineers from visual inspection.
- In-line controls involve settling of suspended sediments with the use of silt fences, straw bales, sand or oyster bags, weirs, baffles, and check dams. Flow limiters and sump pumping systems may be employed where needs arise in order to maintain the hydraulic functioning of the existing drain system.
- Treatment systems involve sediment traps and temporary sumps/attenuation ponds.

Adjacent drainage systems/groundwater need to be protected from sedimentation and direct surface water runoff generated onsite during the construction stage. Discharge from site will be managed and controlled within the Site boundary for the duration of the construction works. There will be no temporary uncontrolled discharges to surface water from the Site during the construction stage.

As construction advances there may be a requirement to collect and treat surface water within the Site. This will be completed using perimeter filter drains around the construction areas and discharged to the existing oil separator/petrol interceptor, which in turns discharges to Lough Ree. Sumps can be installed periodically along the perimeter filter drains to allow for collection of sediments.

All works shall be undertaken in accordance with the CIRIA document, 'Control of Water Pollution from Construction Sites, guidance for consultants and contractors'. All stockpiles will be damped down or covered, as required, which will prevent the creation of nuisance dust, and will also prevent sediment

runoff in times of heavy precipitation. Silt fencing will be installed around these stockpiles. Material stockpiles will be kept at least 10m from any manholes and >50m from lake shore where possible.

Preventative measures during construction have been incorporated into the Construction and Environmental Management Plan (CEMP) (Appendix 4-2), which will be updated upon grant of permission and to provide any additional measures required pursuant to planning conditions and agreements with the planning authority.

It should be noted for this site, that a network of stormwater drains already exists, and these will be integrated and enhanced as required and used within the Site drainage system. The main elements of interaction with existing drains will be as follows:

- Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the proposed Site drainage into the existing drainage network where possible. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion.
- Drains running parallel to the existing roads where footway widening is required will be upgraded. Velocity and silt control measures such as check dams, sand bags, oyster bags, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters;
- Silt fences will be emplaced within drains downgradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to watercourses of sand and gravel sized sediment, released from the excavation of subsoils, and entrained in surface water runoff. Inspection and maintenance of these structures during construction stage is critical to their functioning to stated purpose. They will remain in place throughout the entire construction stage. Double silt fences will be emplaced within drains downgradient of all construction areas; and
- Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters.

Airborne dust will be generated from excavation and concrete cutting across the Site. The most efficient method of reducing dust particles is to remove at source. Accordingly, all excavation and cutting sites will require the suppression of dust through the use of water and sprinkler systems.

A double-lined, floating silt curtain will be installed around the main works area (the WSP) before any near-shore or in-water works commence. The silt curtain will only be removed following the completion of the construction stage. This will allow residual dust particles to be captured and settle out within the silt curtained area of Lough Ree, close to the Site.

Excavation spoil may be deposited on road surfaces via the wheels of construction vehicles. To minimise the amount of excavation material leaving the Site in this way, wheel washes will be installed at the exit of each work area and temporary construction compound. Residual material from wheels and airborne dust may still become deposited on the Site road network, potentially impacting the water quality of the stormwater drainage network or allowing for airborne dust to be mobilised from here in dry conditions. Therefore, dust suppression vehicles will be used throughout the year during the construction stage, routinely traversing the Site road network as required; this may be continuous during the summer months.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects will be indirect, negative, imperceptible, short-term, and likely. Proven and effective measures to mitigate the risk of releases of sediment have been proposed which will break the pathway between potential sources and receptors.

Furthermore, residual effects will be monitored for, and corrective action can be taken. Slight changes in current baseline conditions are expected during the construction stage, but these are not sufficient to change the character or sensitivity of the receiving waters, and not sufficient to affect the WFD status classification of the watercourses downgradient of the Site (Appendix 8-5).

Significance of Effects: For the reasons outlined above, likely significant effects on surface water courses will not occur.

8.5.3.2 Pumping from Open Pits

It is expected that open excavations for foundation works will have to be temporarily pumped to keep the excavations free of seepage water. Water will enter directly from rainfall and via subsurface seepage when the groundwater table is intersected. In bedrock, groundwater may ingress from fractures and a 'transition zone' that may be present at the contact between subsoils and bedrock.

The quantities to be pumped are not known at this time but may be small considering the low permeability of the bedrock, unless a high groundwater conduit intercepted which is not expected at shallow depths, and the moderate permeability of subsoils across most of the Site. The pumping from excavations will only be needed for short periods of time. For most components, the time frame is measured in days to weeks. The pumped water, which is expected to contain suspended solids, will be pumped to a discharge manhole before rejoining the network of filter drains. The filter drains will be discharged to the existing oil separator/petrol interceptor, which in turns discharges to Lough Ree. Sumps will be installed periodically along the perimeter filter drains to allow for collection of sediments.

The excavation-related water will be discharged periodically, on an as-needed basis. It is not a continuous process, and the volumes pumped will vary from location to location. Discharges from sump pumping can affect the water quality of watercourses, especially with regard to suspended sediments.

Pathways: Drainage, surface water discharge routes.

Receptors: Downgradient surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, potential effects will be indirect, negative, slight, short-term, and likely. Hydrogeologically, from a quantitative perspective, pumping effects are direct, neutral, imperceptible, temporary, and unlikely.

Proposed Mitigation Measures / Impact Assessment

Mitigation by Avoidance: An upslope interceptor drain will be established upslope of the excavation area to prevent greenfield runoff into the excavations. Berms will also be used, as necessary.

Mitigation by Design: Dewatering will be provided as relevant to specific requirements with dewatered discharge pumped using a pump equipped with a silt bag on the discharge outlet. As the water passes through the silt bags, the majority of sediment and organic matter is retained by geotextile fabric. The silt bags will be used with natural vegetation filters or sedimats. The sedimats will be secured to the ground surface using stakes/pegs. They will extend to the full width of the outfall to ensure that all water passes through this treatment measure.

The pumped water will be discharged to either the existing stormwater drainage system or to a suitably vegetated area within the Site boundary. Where discharge to a vegetated area is required, level spreaders will be installed for each outfall, and the area will be enclosed with silt fencing to prevent sediment-laden runoff and ensure compliance with best practice environmental controls. Prior to the outset of works a silt fence will be erected along the lakeshore perimeter of the proposed construction area to prevent run-off to potentially floodable areas and into Lough Ree at the boundaries of the development site.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects will be indirect, negative, not significant, short-term, and unlikely. The proposed mitigation measures are standard practice methods which serve to reduce suspended matter loads from pumped discharges, in this manner, the sediment load is managed. Hydrogeologically, from a quantitative perspective, residual pumping effects are direct, neutral, imperceptible, temporary, and unlikely.

Significance of Effects: For the reasons outlined above, likely significant effects will not occur.

8.5.3.3 Cofferdam Installation

The Proposed Development is located adjacent to and partially within Lough Ree. Near-water construction works are required to develop the WSP. To protect Lough Ree from the uncontrolled release of suspended sediments during the construction stage, the installation of a cofferdam is recommended as a source control method between the works area and the lake shore (Section 8.5.3.1).

Although a mitigation measure for larger-scale works, cofferdams require in-water percussive and/or vibrative machinery for installation which is likely to cause disturbance to the lacustrine substrate. This will result in an increase in the suspended sediment load of the water and affect the water quality of Lough Ree.

Pathways: Proposed works are occurring in-water (Lough Ree).

Receptors: Lough Ree and downgradient surface water bodies.

Pre-Mitigation Potential Effects: Without mitigation, the potential effects will be direct, negative, moderate, temporary, and likely.

Proposed Mitigation Measures / Impact Assessment: Works will be completed between August and September (inclusive) aligning with IFI guidelines (2016) of sensitive periods for fish spawning, avoiding the main breeding and winter bird seasons, and coinciding with a time when water levels are at their lowest. A double-lined, floating silt curtain will be installed around the main works area (the WSP) before any near-shore or in-water works commence.

Non-intrusive or low-intrusive cofferdam systems are encouraged if possible. However, sheet piling is the likely method of cofferdam installation Differing sheet piling techniques cause differing levels of ground disturbance and pulverised drill spoil. Accordingly, percussive hammers will be minimised, and vibrative hammers will be utilised when installing sheet piles.

Disturbance of lake-substrate will be minimized through careful positioning of plant and adoption of low-impact construction methodologies. Equipment will not be dragged across the lakebed; this will avoid any additional sediment disturbance. Piles will not be advanced into bedrock to avoid any potential bridging to the karstified aquifer below the lakebed.

The top-level of the cofferdam will be installed to a minimum of 37.5mAOD to ensure that the cofferdam is not breached during flooding (Section 8.3.5).

The silt curtain will remain in place after cofferdam installation, and for the duration of the construction stage, and will only be removed once monitored suspended solids concentrations are observed at baseline levels. The silt curtain will be inspected regularly for defects and adjusted as necessary.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects will be direct, negative, slight, temporary, and likely.

Significance of Effects: For the reasons outlined above, likely significant effects will not occur.

8.5.3.4 Bunding and Dry Works Area

The cofferdam described above, will be installed around the majority of the works area encompassing the WSP. However, there is one area to the north of the works area where the installation of a cofferdam is not proposed, the area of alluvial forest north of the existing concrete hardstand.

Although, in the context of the Site, the cofferdam will be put in place to protect Lough Ree from the construction works, a cofferdam extending into this area will have a greater negative ecological impact. This area is adjacent to two sensitive ecological receptors, the alluvial forest and marine reed bed, see Section 6.8.2.1 for more details on this area.

The proposed engineering solutions for this area have been discussed and assessed in Section 3.7.1 of Chapter 3, and a low impact engineering solution has been chosen for this specific area, a combination of near-shore earth bunding and dry works.

Pathways: Drainage, runoff, surface water discharge routes.

Receptors: Downgradient surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, the potential effects will be indirect, negative, moderate, temporary, and likely.

Proposed Mitigation Measures / Impact Assessment: Mitigation measures to avoid water quality impacts during the construction stage will include the installation of sheet piled cofferdam around the lake edge following the boundary of the existing concrete hardstand at the location of the WSP.

However, to avoid any impacts on alluvial forest, alternative water quality protection solutions are required in this area. Sheet piling works are not proposed in areas of alluvial forest, and instead an earth bund structure will be installed in the vicinity of the alluvial forest. In order to avoid disturbance of root structures, the dam structure will be constructed above ground, with an earth bund installed on top of the existing concrete hardstand. The earth bund will be composed of soil, gravel or another suitable, natural material and will be completely sealed to avoid any potential interaction with lake water during elevated lake water levels. The earth bund will connect to the sheet piling at a point outside of the identified areas of alluvial forest. As with the cofferdam, the top-level of the bund will be installed to a minimum of 37.5mAOD to ensure that the bund is not breached during flooding (Section 8.3.5).

As with the cofferdam, the installation of the bund is recommended as a source control method between the lake shore and the works area to protect Lough Ree from the uncontrolled release of suspended sediments during the construction stage (Section 8.5.3.1).

Concrete removal under the earth bund will be undertaken in a sensitive manner using hand tools. Concrete removal in this area will be conducted in the dry. Around the areas of concrete removal and prior to the commencement of works, a sandbag dam will be instated with an impermeable geomembrane to minimise any potential lake water penetration. Should any water penetrate the sandbag dam, water will be pumped from the area to the Site drainage network (Section 8.5.3.2). Weather and flood forecasting will be continuously monitored, with concrete removal in this area taking place only during periods of dry weather and low lake levels. MKO can provide a weather and flood forecasting tool for these works. Silt curtains will be installed in front of areas of reed bed within this area.

Similarly, concrete pouring will be carried out during periods of dry weather and low lake levels, using water-tight shuttering and form works. Impermeable geomembrane sealing, sandbags and silt curtains will all be retained for the duration of concrete pouring and will be removed following the completion of works. Should rain be forecasted, or lake levels anticipated to rise, any concrete removal or concrete reinstatement works will cease until rain stops and lake levels return to a suitable level.

Sheet piling and concrete removal works will be undertaken in August and September (inclusive) aligning with IFI guidelines (2016) of sensitive periods for fish spawning, avoiding the main breeding and winter bird seasons, and coinciding with a time when water levels are at their lowest.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects will be indirect, negative, imperceptible, temporary, and unlikely.

Significance of Effects: For the reasons outlined above, likely significant effects will not occur.

8.5.3.5 Piling Foundations

The Proposed Development includes the construction of a new marina extending into Lough Ree and in-water construction works are required. To provide a secure pile foundation for the marina, 42 no. individual piles installed into the lacustrine substrate are required. Piling activities are likely to last four to six weeks.

Pile foundations require in-water percussive and/or vibrative machinery for installation, which is likely to cause disturbance to the lacustrine substrate. This will result in an increase in the suspended sediment load of the water and affect the water quality of Lough Ree.

Pathways: Proposed works are occurring in-water (Lough Ree).

Receptors: Lough Ree and downgradient surface water bodies.

Pre-Mitigation Potential Effects: Without mitigation, the potential effects will be direct, negative, moderate, temporary, and likely.

Proposed Mitigation Measures / Impact Assessment: A double-lined, floating silt curtain will be installed around the works area before any works commence, i.e. the silt curtain will encompass as a whole, the 42 no. piling locations.

Differing drilling techniques cause differing levels of ground disturbance and pulverised drill spoil. Accordingly, percussive hammers will be minimised, and vibrative hammers will be utilised when drilling.

Disturbance of lake-substrate will be minimized through careful positioning of plant and adoption of low-impact construction methodologies. Equipment will not be dragged across the lakebed; this will avoid any additional sediment disturbance.

Following completion of piling works, disturbed sediments will be allowed to consolidate under natural hydrological conditions. The silt curtain will be inspected regularly for defects and adjusted as necessary, will remain in place for the duration of the works, and will only be removed once monitored suspended solids concentrations are observed at baseline levels.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects will be direct, negative, slight, temporary, and likely.

Significance of Effects: For the reasons outlined above, likely significant effects will not occur.

8.5.3.6 Accidental Spills, Leaks or Other Releases

Accidental spillage of chemical or fuels during refuelling of construction plant with petroleum hydrocarbons is a significant pollution risk to groundwater, surface water and associated ecosystems, and to terrestrial ecology. The accumulation of small spills of chemical and fuels during routine plant use can also be a pollution risk. Hydrocarbons have a high toxicity to humans, and all flora and fauna, including fish, and is persistent in the environment. It is also a nutrient supply for adapted micro-organisms, which can rapidly deplete dissolved oxygen in waters, resulting in death of aquatic organisms.

Pathways: Runoff, drains, groundwater.

Receptors: Groundwater and downgradient surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, potential effects are both direct and indirect (surface water and groundwater, respectively), negative, imperceptible to profound, brief to long-term, and unlikely.

Small spills and leaks may cause effects that are imperceptible. Large or continuous spills and leaks can potentially damage the habitats and living organisms in the receiving water.

Hence, effects can be brief to long-term, depending on the nature and scale of the spills or leaks. Potential effects can be mitigated.

Proposed Mitigation Measures / Impact Assessment:

Mitigation by Design:

- The highest standards of site management will be maintained, with the utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during construction;
- An Emergency Response Plan for accidental spillages will be implemented as part of the CEMP. All construction staff will be familiar with the emergency procedures and the use of the relevant equipment;
- A named person will be given the task of overseeing the pollution prevention measures agreed for the Site to ensure that they are operating safely and effectively as well as having responsibility for the implementation of Emergency Procedures for spill control measures.
- Where possible, refuelling will occur at an off-site controlled fuelling station. On-site refuelling will be confined to the temporary construction compound(s) only, using appropriate containment measures and spill response equipment;
- On-site refuelling will be undertaken using a double skinned bowser with spill kits readily available for accidental leakages or spillages;
- Refuelling bowsers will be operated by suitably trained personnel only;
- Refuelling of construction machinery will take place using drip trays at all times;
- All plant and machinery will be serviced before being mobilised to site and will be regularly inspected and maintained to minimise the risk of leaks and spillages;
- Refuelling and maintenance of construction vehicles or plant will, where practicable, be undertaken off site;
- Fuels stored on-site will be minimised. Storage areas, where required, will be bunded appropriately for 110% of the fuel storage volume for the time period of construction and fitted with a storm drainage system and an appropriate oil interceptor;
- Concrete batching, washdown and washout activities will take place off-site. Concrete works will be managed to prevent accidental releases to soils or surface waters;
- All waste tar material arising from the potential chipping and resurfacing of roads will be removed off-site and taken to a licenced waste facility; and
- Appropriate erosion, sediment and pollution control measures will be implemented throughout the construction stage in accordance with the CEMP and relevant industry guidance.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, residual effects will be indirect, negative, imperceptible, short-term, and unlikely.

The use and storage of hydrocarbons and small volumes of chemicals is a standard risk associated with all construction sites. Proven, routine, and effective measures to mitigate the risk of releases of fuels and chemicals are proposed which will break the link between potential sources and receptors.

Significance of Effects: For the reasons outlined above, likely significant effects on surface water or groundwater quality will not occur

8.5.3.7 Release of Cement-Based Products

Entry of cement-based products into drains or surface water within the Site represents a risk to the aquatic environment at and downstream of the release.

Concrete and other cement-based products are alkaline and can be corrosive. They generate fine, highly alkaline silt (pH 11.5) that can physically damage fish. A pH range of ≥ 6 ≤ 9 is set in S.I. No. 293 of 1988 Quality of Salmonid Water Regulations, with artificial variations not in excess of ± 0.5 of a pH unit.

Washing out of concrete transport and placement machinery are the activities most likely to generate a risk of cement-based pollution. Releases of cement-based products are obvious when they happen and can be stopped. They also involve small volumes (individually). Risks are increased with repeated poor practice.

Entry of cement-based products into the Site drainage system, and hence to surface watercourses or directly into watercourses, represents a risk to the aquatic environment.

Pathways: Site drainage network.

Receptors: Downgradient surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, potential effects are both direct and indirect, negative, moderate, short term, and likely. The proximity of the effects (direct/indirect) is dependent on how and where releases occur.

Proposed Mitigation Measures / Impact Assessment:

Mitigation by Avoidance:

- Concrete will be delivered in sealed concrete delivery trucks. Batching of wet-cement products will not occur on-site.
- Ready-mixed supply of wet concrete products and emplacement of pre-cast elements will take place.
- Pre-cast elements for cofferdams, pile foundations, culverts, and concrete works will be used.
- Concrete trucks will not be washed out on-site but will be directed back to their batching plant for washout.

Mitigation Measures by Design:

- Where concrete is delivered on-site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement-contaminated waters to the construction stage drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined washout ponds.
- Where temporary lined impermeable containment areas are used, such containment areas are built using straw bales and lined with an impermeable membrane. These are covered when not in use to prevent rainwater collecting.
- Pour sites of cement will be kept free of standing water, and plastic covers will be ready in case of sudden rainfall events.

Risks of pollution will be further reduced as follows:

- Concrete will not be transported around the Site in open trailers or dumpers so as to avoid spillage while in transport.
- All concrete used in the construction will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete locally to the location where it is needed.
- Arrangements for concrete deliveries to the Site will be discussed with suppliers before work starts, confirming routes, prohibiting on-site washout and discussing emergency procedures.
- Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the Site.
- Weather forecasting will be used to assist in planning large concrete pours and large pours will be avoided where prolonged periods of heavy rain is forecast.
- Concrete pumps and machine buckets from slewing over watercourses will be restricted while placing concrete.
- Excavations will be sufficiently dewatered before concreting begins and dewatering will continue while concrete sets.
- Covers will be available for freshly placed concrete to avoid the surface washing away in heavy rain.
- Any potential, small surplus of concrete remaining after completion of a pour will be disposed at a suitable off-site facility.

Airborne dust will be generated from concrete excavation and cutting across the Site. The most efficient method of reducing dust particles is to remove at source. Accordingly, all excavation and cutting sites will require the suppression of dust through the use of water and sprinkler systems.

A double-lined, floating silt curtain will be installed around the main works area (the WSP) before any near-shore or in-water works commence. The silt curtain will only be removed following the completion of the construction stage. This will allow residual dust particles to be captured and settle out within the silt curtained area of Lough Ree, close to the Site.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, residual effects will be indirect, negative, imperceptible, short-term, and unlikely.

Proven, routine, and effective measures to mitigate the risk of releases of cement-based products are in place which will break the link between potential sources and receptors.

Significance of Effects: For the reasons outlined above, likely significant effects on surface water or groundwater quality will not occur.

8.5.3.8 Wastewater Management

Uncontrolled wastewater has the potential to impact on groundwater and surface water quality if not properly managed.

Pathways: Groundwater flow paths and site drainage network.

Receptors: Downgradient water supplies and surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, potential effects are both indirect and direct (surface wate and groundwater, respectively), negative, not significant, short-term, and likely.

Proposed Mitigation Measures / Impact Assessment:

Mitigation by Avoidance:

- Self-contained portable toilets within portacabins with an integrated waste holding tank will be used at the Site compounds, maintained by the providing contractor, and removed from site on completion of the construction works.
- Portable toilets will be numerous and located conveniently for site workers.
- Wastewater will not be treated or disposed of onsite.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, residual effects will be indirect, neutral, imperceptible, short-term, and unlikely.

Significance of Effects: For the reasons outlined above, likely significant effects on surface water or groundwater quality from wastewater will not occur.

8.5.3.9 Public and Private Water Supplies

The Site is hydrologically linked to an Article 7 (WFD) Abstraction for Drinking Water river waterbody, Shannon (Upper)_120, which is located approximately 3 km downstream of the Site. Hence, the risk of affecting public surface water supplies is present.

There are no GSI groundwater group water scheme (GWS) or public water supply (PWS) source protection areas within the Site; the closest is 7.5 km to the southeast. It is unlikely any groundwater supply wells are hydrogeologically linked to the main works area of the proposed WSP, as groundwater beneath the Site likely discharges to Lough Ree. Although mains water supply serves the Site and the surrounding area, there may be private wells, at single dwellings and farms, close to the southern area of the Site. Hence, there remains a risk of affecting groundwater well supplies.

Pathways: Groundwater flow paths, site drainage network and surface water.

Receptors: Downgradient water supplies and surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, potential effects are both direct and indirect (surface water and groundwater, respectively), negative, not significant, short-term, and unlikely.

Proposed Mitigation Measures / Impact Assessment: The proposed works (road, cycle, pedestrian upgrades) along the L2020 Local Road, in the southern section of the Site will require only shallow excavations which is not likely to impact groundwater quality or flow.

By following the best practice measures outlined for other potential effects (e.g. accidental spills and leaks, wastewater management) risks to surface water and private groundwater drinking supplies are eliminated.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects will be direct, imperceptible, short-term, and unlikely.

Significance of Effects: For the reasons outlined above, likely significant effects will not occur.

8.5.3.10 WFD Water Body Status

WFD water body status was presented in Section 8.3.10 and a further WFD compliance assessment is presented in Appendix 8-5. The Proposed Development has the potential to affect groundwater and surface water quality.

The duration of the construction stage is approximately 30 months, whereas WFD status is classified by EPA every 6 years. This means that risks of affecting (causing a deterioration of) WFD status in water bodies become more relevant for the longer-term operational stage (Section 8.5.4.3).

Pathways: Runoff, drains, other discharges (e.g. spills and leaks).

Receptors: Groundwater and downgradient surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, potential effects on surface water bodies within and downstream of the Site are direct, negative, not significant, short-term, and unlikely. Without mitigation, potential effects on groundwater bodies are direct, negative, not significant, short-term, and unlikely.

Effects are deemed unlikely due to the short duration of construction in relation to the WFD 6-year status classification and reporting cycle.

Proposed Mitigation Measures / Impact Assessment:

Mitigation by Design: Mitigation measures are necessary and proposed to break potential source-receptor linkages and allow for sediment settling and attenuation. The means and methods of achieving the necessary levels of protection are understood and proposed, largely based on existing guidance (Section 8.1.4) and practical experiences from other comparable sites.

Relevant mitigation measures are all of those described in preceding sections for the construction stage. The building contractor(s) will be legally required to adhere to the CEMP which encompasses the proposed mitigation measures. All works will be supervised, and monitoring will be undertaken as described in Section 8.5.3.12 in order to be able to identify potential effects and take corrective action, as necessary.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects on surface water bodies will be direct, negative, slight, short-term, and unlikely. Following implementation of the proposed mitigation measures, the residual effects on groundwater bodies will be indirect, negative, slight, short-term, and unlikely.

Significance of Effects: For the reasons outlined above, likely significant effects on WFD status of the named river subbasins and groundwater bodies will not occur during the construction stage.

8.5.3.11 Designated Sites

The Site is located adjacent to and partially within three designated sites, in association with Lough Ree:

- Lough Ree Special Area of Conservation (SAC) [000440];
- Lough Ree Special Protection Area (SPA) [004064]; and
- Lough Ree proposed Natural Heritage Area (pNHA) [000440].

Per Section 6.7 of this EIAR, these designated sites are interpreted to be hydraulically linked to, and within the Zone of Influence (ZoI), of the Proposed Development Site given that the Proposed Development Site is located adjacent to (and partially within) these three designated sites.

The following designated sites are not located within the Proposed Development site, however they are located downstream of the Proposed Development site and assessed as within the ecological ZoI:

- River Shannon Callows SAC [000216]
- Middle Shannon Callows SPA [004096]
- River Shannon Callows pNHA [000216]]

The construction works required for the Proposed Development have been assessed above. In the absence of appropriate mitigation measures, such works could result in significant and widespread disruption to the Lough Ree and associated habitats. Potential effects of the Site on each designated site and protected area, which are hydrologically or hydrogeologically linked to the Proposed Development, during construction are presented in Table 8-11.

The mitigation measures presented in Section 8.5.3 and the CEMP will serve to protect and mitigate against the identified, potential effects. For the reasons described in Table 8-11, likely significant effects on the named designated sites/protected areas will not occur during the construction stage.

Table 8-11: Assessment of Effects on Designated Sites/Protected Areas During Construction

Designated Site / Protected Area.	Direct /Indirect Connection to Proposed Development	Description	Assessment of Likely Significant Effects
Lough Ree SAC	**Direct** Proposed Development is located adjacent to and partially within the SAC.	There is a direct pathway between the Site and the habitats within the SAC. The habitats within the SAC are dependent on the hydrological conditions of the SAC. There is potential for water pollution of Lough Ree which is part of the SAC. Hence, there will be potential effects of the Proposed Development on the qualifying interests of the SAC during the construction stage. Any pollution that discharges into the lake will be significantly attenuated by dilution/mixing. Mitigation measures described in Sections 8.5.3.1 through 8.5.3.8 will serve to protect the SAC further from any potential quality or quantity effects.	Without mitigation, potential effects on the SAC are direct, negative, slight, short-term, and unlikely. Following implementation of the proposed mitigation measures, the residual effects on the SAC will be direct, negative, imperceptible, short-term, and unlikely.
Lough Ree SPA	**Direct** Proposed Development is located adjacent to and partially within the SPA.	See SAC description above	Without mitigation, potential effects on the SPA are direct, negative, slight, short-term, and unlikely. Following implementation of the proposed mitigation measures, the residual effects on the SPA will be direct, negative, imperceptible, short-term, and unlikely.
Lough Ree pNHA	**Direct** Proposed Development is located adjacent to and partially within the pNHA.	See SAC description above	

8.5.3.12 Proposed Monitoring

During the construction stage, a field monitoring campaign will be undertaken in Lough Ree. Monitoring will involve visual checks of drains, and streams, and measurements of field water quality parameters (temperature, pH, specific electrical conductivity, alkalinity and turbidity). The field measurements will be taken at locations upstream and downstream of the construction activity. Please refer to Figure 8-2 for the locations of the surface water sampling locations. Frequency of measurement will be judged in the field by the resident/supervising engineer but will be done at least on a weekly basis (potentially more frequently during storm events).

The field measurement campaign will begin two weeks prior to the proposed commencement of works and will cease up to four weeks after the proposed works are completed, unless observations dictate that measurements should continue. Regular inspections of all installed drainage components will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended.

If visible impact occurs, works will be suspended at the discretion of the resident/supervising engineer, in which case the problem will be identified and corrective action taken before recommencing works.

Surface water samples will also be collected to monitor for effects and any shifts in baseline conditions. The sampling locations proposed are the ones presented in Figure 8-2 and included in Appendix 8-2; SW01, SW02, SW03, and SW04.

The samples will be collected on a monthly schedule during construction. Periodic review will determine the need for, or recommended amendments to, the monitoring programme in line with principles of adaptive monitoring (guided by the data review and findings).

The monthly samples will be analysed for general physico-chemical parameters, nutrients, dissolved organic carbon, true colour, and suspended solids. Adaptive monitoring will be practiced, whereby analytes and frequency of monitoring may change based on periodic review of results. All sampling events will be accompanied by field measurements of water temperature, pH, SEC, alkalinity and turbidity.

The broader purpose of the proposed monitoring is to track baseline conditions and how these might evolve under prevailing conditions. The baseline monitoring will begin three months prior to commencement of the construction stage. The data will be periodically reviewed to assess whether changes (trends) to water quality are occurring.

8.5.4 Operational Stage

8.5.4.1 Site Drainage

Water quality risks during the operational stage are much reduced compared to the construction stage. The operational stage of the Proposed Development will result in stormwater interacting with the Site. The stormwater drainage network of the Site will be indirectly discharged to Lough Ree. If not adequately treated, there is potential for indirect impacts on surface water quality.

Pathways: Site stormwater drainage network.

Receptors: Downgradient surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, potential effects are indirect (via site drainage network) negative, slight, permanent, and likely.

Proposed Mitigation Measures / Impact Assessment: With the close proximity of Lough Ree to the Site, the operational stormwater drainage strategy has been developed with water quality as a primary consideration alongside NBS and SuDS hierarchy. The natural hydrological cycle will be emulated as far as reasonably practicable, involving grading of the Site, reducing stormwater runoff entering any conventional drainage systems, and attenuating runoff in proposed SuDs features prior to discharge to Lough Ree.

Where possible, Site catchments will be routed to a nature-based attenuation solution. Select areas of the Proposed Development which cannot be routed in this manner due to the tight levels and falls for gravity outfall to Lough Ree, below ground attenuation measures will not be introduced. All stormwaters will be routed through a hydrocarbon and integrated silt separation interceptor, in line with policy requirements.

The Site stormwater drainage network will be routinely inspected and maintained.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects will be indirect (via site drainage network), negative, imperceptible, permanent, and unlikely.

Significance of Effects: For the reasons outlined above, likely significant effects will not occur.

8.5.4.2 Wastewater Management

The operational stage of the Proposed Development will result in the production of foul water. If not adequately managed, there is potential for impacts on groundwater and surface water quality.

It is anticipated that no upgrade to the surrounding infrastructure is required. Foul water will be collected from the WSP and marina facilities and will connect to the existing on-site pumping station operated by UE. A pre-connection enquiry has been submitted to UE by CIVIC Engineers to confirm network capacity and the receiving Wastewater Treatment Plant.

Pathway: Site foul water network.

Receptor: Groundwater and downgradient surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, potential effects are direct, negative, moderate, permanent, and likely.

Proposed Mitigation Measures / Impact Assessment: All foul water will be discharged to the existing foul water network and will be treated at the receiving Wastewater Treatment Plant. The foul water network will be routinely inspected and maintained.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects will be direct, negative, imperceptible, permanent, and unlikely.

Significance of Effects: For the reasons outlined above, likely significant effects will not occur.

8.5.4.3 WFD Water Body Status

Water quality risks during the operational stage are much reduced compared to the construction stage.

During the operational stage, the stormwater drainage and foul water network, and all necessary mitigation measures are in place to limit the entry of potential pollutants to Lough Ree, especially sediment and suspended and dissolved organic matter. However the operational stage of the Proposed Development has the potential to affect groundwater and surface water quality.

The duration of the operational stage is indefinite, while WFD status is classified by EPA every 6 years. Accordingly, the risks of affecting (causing a deterioration of) WFD status in water bodies becomes more relevant than for the shorter-term construction stage (Section 8.5.3.10).

Pathways: Runoff, drains, other discharges (e.g. spills and leaks).

Receptors: Groundwater and downgradient surface water bodies (Lough Ree).

Pre-Mitigation Potential Effects: Without mitigation, potential effects on surface water bodies downstream of the Site are indirect (via site drainage network), negative, not significant, permanent, and unlikely. Without mitigation, potential effects on groundwater bodies are direct, negative, not significant, permanent, and unlikely.

Proposed Mitigation Measures / Impact Assessment: The Site surface water drainage and foul water network will be routinely inspected and maintained.

Post-Mitigation Residual Effects: Following implementation of the proposed mitigation measures, the residual effects on surface water bodies will be indirect (via site drainage network), negative, imperceptible, permanent, and unlikely. Following implementation of the proposed mitigation measures, the residual effects on groundwater bodies will be indirect, negative, imperceptible, permanent, and unlikely.

Significance of Effects: For the reasons outlined above, likely significant effects on WFD status of the named river subbasins and groundwater bodies will not occur during the construction stage.

8.5.4.4 Designated Sites

Operational activities of the Proposed Development can affect the water quality of Lough Ree. Risks are mainly associated with stormwater network maintenance works, accidental spills of fuel, and foul water network failures.

Potential effects of the Site on each designated site and protected area, which are hydrologically or hydrogeologically linked to the Proposed Development, during the operational stage are presented in Table 8-12. The mitigation measures presented in Section 8.5.4 will serve to protect and mitigate against the identified potential effects.

For the reasons described in Table 8-12, likely significant effects on the named designated sites/protected areas will not occur during the operational stage.

Table 8-12: Assessment of Effects on Designated Sites/Protected Areas During Operation

Designated Site / Protected Area.	Direct /Indirect Connection to Proposed Development	Description	Assessment of Likely Significant Effects
Lough Ree SAC	**Indirect** Proposed Development will be hydraulically linked to the SAC via the Site stormwater network during the operational stage.	There is an indirect pathway between the Site and the habitats within the SAC. The habitats within the SAC are dependent on the hydrological conditions of the SAC. There is potential for water pollution of Lough Ree which is part of the SAC. Hence, there will be potential effects of the Proposed Development on the qualifying interests of the SAC during the construction stage. Any pollution that discharges into the lake will be significantly attenuated by dilution/mixing. Mitigation measures described in Sections 8.5.4.1 through 8.5.4.2 will serve to protect the SAC further from any potential quality or quantity effects.	Without mitigation, potential effects on the SAC are indirect, negative, not significant, permanent, and unlikely. Following implementation of the proposed mitigation measures, the residual effects on the SAC will be indirect, negative, imperceptible, permanent, and unlikely.
Lough Ree SPA	**Indirect** Proposed Development will be hydraulically linked to the SPA via the Site stormwater network during the operational stage.	See SAC description above	Without mitigation, potential effects on the SPA are indirect, negative, not significant, permanent, and unlikely. Following implementation of the proposed mitigation measures, the residual effects on the SPA will be indirect, negative, imperceptible, permanent, and unlikely.
Lough Ree pNHA	**Direct** Proposed Development is located adjacent to and partially within the pNHA.	See SAC description above	

8.5.5 Assessment of Potential Health Effects

Potential health effects are associated with negative impacts on public and private water supplies and potential flooding.

An Article 7 (WFD) Abstraction for Drinking Water river waterbody is located approximately 3 km downstream of the Site. However, any pollution that discharges into the lake will be significantly attenuated by dilution/mixing.

There are no GSI groundwater GWS or PWS source protection areas hydrogeologically linked to the Site. Although mains water supply serves the Site and the surrounding area, there may be private wells, at single dwellings and farms, close to the southern area of the Site. However, the proposed works in the area will require only shallow excavations which is not likely to impact groundwater quality or flow.

The proposed site design and mitigation measures outlined in the previous sections ensures that likely significant effects to the water environment, which in turn could impact human health, will not occur.

The FRA (CIVIC, 2026).) for the Proposed Development concluded that the development does not encroach upon functional floodplain storage, does not obstruct flood conveyance and will not increase flood risk elsewhere.

8.5.6 Potential Cumulative Effects

8.5.6.1 Cumulative Effects - Interactions Between Various Elements of the Proposed Development

The interaction of the various elements of the Proposed Development was considered and assessed in this EIAR with regards to the water environment. The potential for each individual element of the Proposed Development on its own to result in significant effects on water receptors was considered in the impact assessment. The Proposed Development including the interactions between all its elements was also considered and assessed for its potential to result in significant effects on water receptors in the impact assessment presented. The complex interactions between the requirement for site drainage and the requirement to protect Lough Ree, groundwater and other downgradient receptors were considered for the Proposed Development and any impacts avoided through a series of mitigation measures that are fully described. The management and handling of potentially harmful materials across the Proposed Development was assessed with mitigation proposed and described fully.

All interactions between the various elements of the Proposed Development were considered and assessed both individually and cumulatively within this chapter. Where necessary, mitigation was employed to ensure that no cumulative effects will arise as a result of the interaction of the various elements of the Proposed Development with one another.

8.5.6.2 Cumulative Effects In-Combination with Other Projects

The potential cumulative effects of the Proposed Development in combination with the other projects listed in Section 2.6 of Chapter 2 of this EIAR have been considered in respect to hydrology and hydrogeology. These have not been repeated here to reduce the duplication of information within this EIAR. However, they have been fully considered in the assessment with further detail provided below.

A cumulative effect would be on the current discharges to Lough Ree. An existing stormwater network discharges to Lough Ree from the Site. It is not anticipated that additional stormwater infrastructure is required. Due to the incorporation of SuDS, NBS, and permeable surfaces to the drainage design, and the relatively minor change in natural percolation areas to impermeable percolation areas, there is no cumulative effects expected.

There will be no direct discharges of any substance from the Site during the construction stage of the Proposed Development directly to Lough Ree. The hydrological regime will not be altered significantly during the construction stage. Potential emissions from the Site are therefore related to potential uncontrolled releases and so a range of procedures, management plans, and infrastructural mitigation proposals have been identified and described earlier in this chapter and will be implemented to ensure that such uncontrolled releases do not occur. The potential for residual impacts on surface water and groundwater receptors is considered to be slight and not significant, respectively, and so the potential for cumulative effects associated with these receptors is limited.

During the operational stage, discharges from the Proposed Development will be as per pre-development rates and water quality will be controlled. Again, the water quality controls at the Proposed Development site will ensure no likely significant cumulative effects will occur during the operational stage. Mandated water quality controls at the other project sites will further reduce the potential for likely, significant cumulative effects.

Wastewater effluent arising from the operational stage of the Proposed Development will be pumped for treatment to a municipal wastewater treatment plant. In the circumstance where UE confirms wastewater arising from the Proposed Development will be treated at the designated wastewater treatment plant, the potential for cumulative effects associated with wastewater discharges does not arise. No significant cumulative effects on the water environment are anticipated during the construction or operational phases in circumstances where the proposed mitigation measures are implemented effectively.

8.5.7 Conclusion

Lough Ree is a lake waterbody within and adjacent to the Proposed Development. As a result, there is potential for impact on the water quality of the lake and downstream receptors.

During each stage of the Proposed Development (construction and operation) a number of activities will take place on the Proposed Development site which will have the potential to affect the hydrological regime or water quality at the Site and surrounding area. These potential impacts generally arise from sediment input from runoff and other pollutants such as hydrocarbons and cement-based compounds, during the construction stage.

Stormwater drainage measures, foul water management, pollution control, and other preventative measures have been incorporated into the Proposed Development design to minimise significant adverse impacts on water quality and downstream receptors. Preventative measures during construction include hydrocarbon and cement-based materials spill management, which are incorporated in the CEMP for the Proposed Development (Appendix 4-2).

The stormwater drainage plan focuses on controlling runoff rates and suspended solids management. Direct discharge of untreated runoff into Lough Ree will not occur during either the construction or operational stage of the project, this is the key water quality control measure for the Proposed Development.

The operational stormwater drainage strategy has been developed with water quality as a primary consideration alongside NBS and SuDS hierarchy. The natural hydrological cycle will be emulated as far as reasonably practicable, involving grading of the Site, reducing stormwater runoff entering any conventional drainage systems, and attenuating runoff in proposed SuDs features prior to discharge to Lough Ree.

During the operational stage there will be no impact on water environment. This will be achieved by avoidance methods and design methods, including the routing of all stormwaters through a hydrocarbon and integrated silt separation interceptor, in line with policy requirements. The Site stormwater drainage network will be routinely inspected and maintained.

No significant impacts on the surface water and groundwater environment, or designated sites will occur due to the proposed redevelopment of the Waterfront and Marina at Hodson Bay, provided the proposed mitigation measures are implemented.

APPENDIX 8-1

DETAILED FLOOD RISK ASSESSMENT

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

CIVIC

Rialtas na hÉireann
Government of Ireland

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Fáilte Ireland

ROSCOMMON
Comhairle Contae Ros Comáin
Roscommon County Council

Waterways Ireland

Hodson Bay

Detailed Flood Risk Assessment Report

JULY 2026

PREPARED FOR

Roscommon County Council



Hodson Bay Waterfront Park Detailed Flood Risk Assessment

Prepared By	Shay Graham
Reviewed By	Aisling Murphy
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1. Introduction

1.1. Scope and Objectives

Roscommon County Council has appointed Civic to prepare a Detailed Flood Risk Assessment (FRA) to support the planning submission for the Hodson Bay Waterfront Park Project. This report has been prepared to assess the flood risk to the site and adjacent lands.

This FRA investigates the potential of flood risk within the development site boundary from all potential sources including watercourses and groundwater. To guarantee the safety, sustainability, and success of the proposed scheme, recommendations for potential mitigation measure will be reviewed as detailed design begins.

A general location map of the Hodson Bay Waterfront Park project area is shown in **Figure 4**, in section 3.1, complete with the red line boundary.

1.2. Assessment Information

To complete this flood risk assessment, the following items were considered:

- Review of publicly available information
- Review of relevant studies in the area
- Review of previous Flood Risk Assessment for 2021 Baysports planning application
- Review of relevant policies

1.3. Exclusions and Limitations

Civic is not responsible for information supplied by third parties. The information in this FRA is accurate at the time of writing.

OPW Flood Maps are indicative only, as they have been produced using a consistent, nationally applied methodology. The flood maps are primarily used to cover coastal, pluvial and fluvial flooding, and they do not take account of overland flow or sewer flooding that maybe present on site.

1.4. Data Sources

This flood risk assessment has been based on the following sources of information:

- OPW Preliminary Flood Risk Assessment (PFRA) maps consulted.
  - Fluvial, Pluvial and Groundwater flooding examined
- Floodinfo.ie Online Mapping
  - Fluvial, Pluvial, and Groundwater flooding, available flood maps and OPW flood records examined
- GSI Online Mapping
  - GSI Subsoils map consulted to identify alluvial deposits on site that may indicate the presence of a watercourse and flood plain
- OPW Flood Risk Management Plan – Upper and Lower Shannon River Basin
  - Review flood risk assessment and modelled flood levels for Upper Shannon River Basin Area
- Shannon Catchment Flood Risk Assessment and Management Study
  - Relevant CFRAM Predictive Flood Maps Reviewed
- Strategic Flood Risk Assessment of the Roscommon County Development Plan 2022-2028
  - Review strategic flood plan for the Roscommon County area
- Roscommon County Development Plan 2022 – 2028
  - Review objective and policies in relation to flood risk management and strategic infrastructure development.
- Site Drawings
  - Site levels reviewed relative to estimated flood mapping/levels

2. Flood Risk Management Guidelines

2.1. Flood Risk Assessment Process

The Guidelines on the Planning System and Flood Risk Management, jointly published by the Department of the Environment, Heritage and Local Government (DoEHLG) and OPW in 2009, provide the national framework for the management of flood risk in relation to the planning and development process in Ireland. The guidelines seek to ensure that flood risk is properly assessed, managed, and integrated into land use planning decisions to minimise future exposure to flooding.

The Guidelines set out a staged approach to Flood Risk Assessment (FRA), comprising three key stages:

- **Stage 1: Flood Risk Identification** – identify whether there may be any flooding or surface water management issues related to a proposed development site that may warrant further investigation at the appropriate lower level plan or planning application levels.
- **Stage 2: Initial Flood Risk Assessment** – confirm sources of flooding that may affect a plan area or proposed development site, appraise the adequacy of existing information, and scope the extent of the risk of flooding, which may involve preparing indicative flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed.
- **Stage 3: Detailed Flood Risk Assessment** – assess flood risk issues in sufficient detail and provide a quantitative appraisal of potential flood risk to a proposed or existing development, its potential impact on flood risk elsewhere, and the effectiveness of any proposed mitigation measures.

The FRA process ensures that decisions regarding land use, development design, and flood mitigation measures are evidence-based and proportionate to the level of risk identified.

2.2. Definition of Flood Risk

The Guidelines define flood risk as a function of three components:

- **Flood Probability (Likelihood):** The statistical chance of a flood occurring within a given period, often expressed as a return period (e.g. 1% Annual Exceedance Probability (AEP) corresponds to a 1 in 100-year event).
- **Flood Consequence (Impact):** The potential adverse outcomes of a flood event, including risks to human health and safety, property damage, economic loss, and environmental degradation.
- **Flood Risk:** The product of flood probability and consequence.

Effective flood risk management involves reducing both the likelihood of flooding and the severity of its potential consequences.

The likelihood of a flood event depends on the characteristics of the water body (source) and the potential routes it may follow (pathways). The consequences of the event are determined by the type and vulnerability of the people and assets affected (receptors). This relationship between the source, pathways and receptors is illustrated in the guidance, which can be seen in Figure 1.

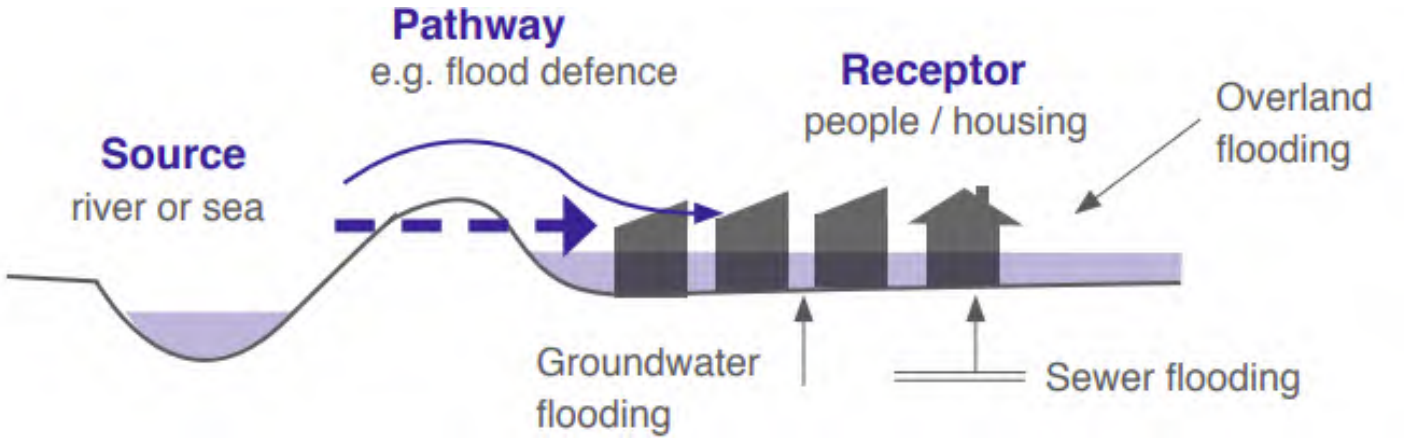


Figure 1: Source-Path-Receptor Model

2.3. Flood Zones

The Guidelines classify lands into three Flood Zones, based on the likelihood of fluvial and tidal flooding:

- **Flood Zone A:** High probability of flooding — lands within the 1% AEP (1 in 100 year) fluvial flood event or 0.5% AEP (1 in 200 year) tidal flood event.
- **Flood Zone B:** Moderate probability of flooding — lands within the 0.1%–1% AEP fluvial event or 0.1%–0.5% AEP tidal event.
- **Flood Zone C:** Low probability of flooding — lands outside the 0.1% AEP flood extents.

Development proposals must consider the relevant Flood Zone classification when assessing site suitability and designing mitigation measures. Figure 2 shows a matrix from the Guidelines which classifies the appropriateness of developments in each flood zone, depending on the vulnerability.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Figure 2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

2.4. Objectives and Principles of the Planning Guidelines

The primary objectives of the Guidelines are:

- To avoid inappropriate development in areas at risk of flooding.
- To substitute less vulnerable land uses in areas where avoidance is not possible.
- To mitigate residual flood risks through design, construction, and operational measures.

The guidelines emphasise a precautionary, evidence-based, and plan-led approach to ensure that flood risk is properly integrated into development planning, while protecting people, property, and the environment from future flood hazards.

The principal actions when considering flood risk management in the planning system are:

1) Flood hazard and potential flood risk from all sources should be identified and considered at the earliest stage in the planning process and as part of an overall hierarchy of national responses coupled to regional appraisal and local and site-specific assessments of flood risk.
2) Development should preferentially be located in areas with little or no flood hazard thereby avoiding or minimising the risk. Development in the context of these Guidelines includes all construction, such as transport and utility infrastructure as well as residential and other buildings.
3) Development should only be permitted in areas at risk of flooding when there are no alternative, reasonable sites available in areas at lower risk that also meet the objectives of proper planning and sustainable development.
4) Where development is necessary in areas at risk of flooding an appropriate land use should be selected.
5) A precautionary approach should be applied, where necessary, to reflect uncertainties in flooding datasets and risk assessment techniques and the ability to predict the future climate and performance of existing flood defences. Development should be designed with careful consideration to possible future changes in flood risk, including the effects of climate change and / or coastal erosion so that future occupants are not subject to unacceptable risks.
6) Decisions on the location of development may be required before development plans have been fully reviewed in accordance with these Guidelines and prior to the availability of appropriate flood risk mapping. In such circumstances a planning authority may choose to:
    a) Vary the development plan to facilitate appropriate development provided that the variation is accompanied by a rigorous assessment of flood risk in accordance with these Guidelines and the application of the Justification Test where necessary;
    b) Assess the proposal in accordance with the approach outlined in chapter 5 (5.27); and/or,
    c) Await the review of the development plan in accordance with these Guidelines, where such as review is imminent.
7) Land required for current and future flood management, e.g. conveyance and storage of flood water and flood protection schemes, should be proactively identified on development plan and LAP maps and safeguarded from development.
8) Flood risk to, and arising from, new development should be managed through location, layout and design incorporating Sustainable Drainage Systems and compensation for any loss of floodplain as a precautionary response to the potential incremental impacts in the catchment.
9) Strategic environmental assessment (SEA) of regional planning guidelines, development plans and local area plans should include flood risk as one of the key environmental criteria against which such plans are assessed where flood risk has been identified. The SEA process provides an opportunity to assess and consider flood risk with respect to other planning and environmental considerations and should be used to show how the sequential approach to managing flood risks has been executed.

2.5. The Sequential Approach and Justification Test

The Sequential Approach is central to the planning process under the Guidelines and seeks to direct new development to areas with the lowest flood risk, applying the following hierarchy:

1. **Avoid** development in areas at risk of flooding where possible.
2. **Substitute** more vulnerable uses with less vulnerable uses where avoidance is not achievable.
3. **Mitigate** the remaining risk by incorporating flood-resilient design and protection measures.

Where development within Flood Zones A or B is unavoidable due to wider sustainable planning considerations, a Justification Test must be satisfied. The Justification Test requires demonstration that:

- **Justification Test for development plans:** The development is consistent with the objectives of proper planning and sustainable development.
- **Justification Test for development management:** The flood risk to the development and surrounding area can be managed to an acceptable level and will not increase flood risk elsewhere.

A successful application of the Justification Test ensures that development proceeds only where robust flood risk management measures are in place.

Figure 3 shows an illustration of the sequential approach principles from the Guidelines.

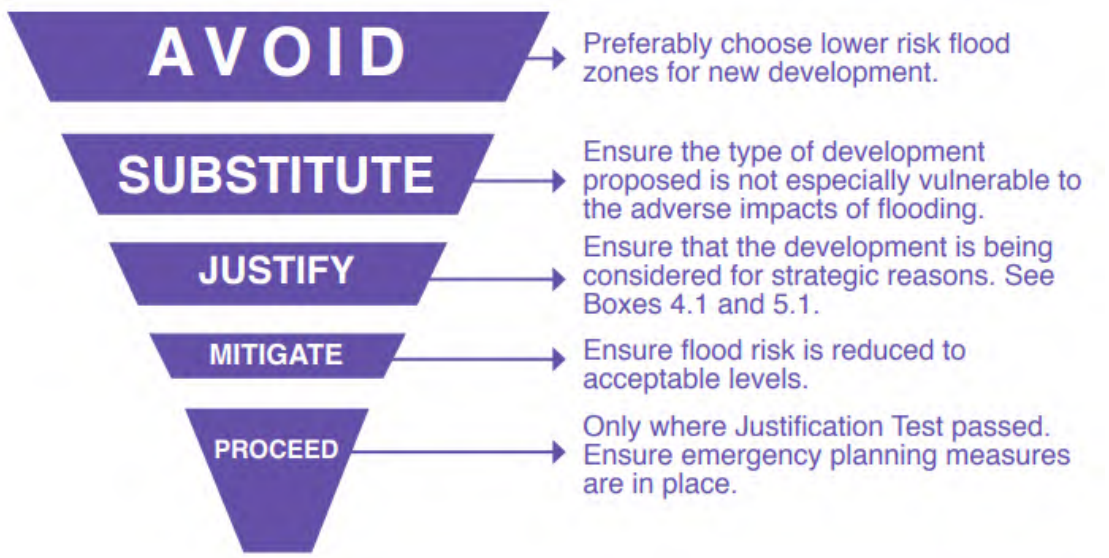


Figure 3: Sequential approach principles in flood risk management

3. Development Site

3.1. Site Location

The site is situated along the waterfront of Hodson Bay, Lough Ree, as well as along the connecting road (L2020) between Hodson Bay and the N61.

The Hodson Bay waterfront is currently utilised by several facilities such as the Hodson Bay Marina and Bay Sports. Hodson Bay Hotel is adjacent to the project area at Hodson Bay. The Hodson Bay Golf Course is located to the West of the northern half of the project area and is access through Athlone Golf Club.

The approximate centre of the site is located at Irish National Grid Reference N 00849 46361.

The project area can be seen in the red line boundary on Figure 4, which illustrates the existing site context, including surrounding features and internal land use.

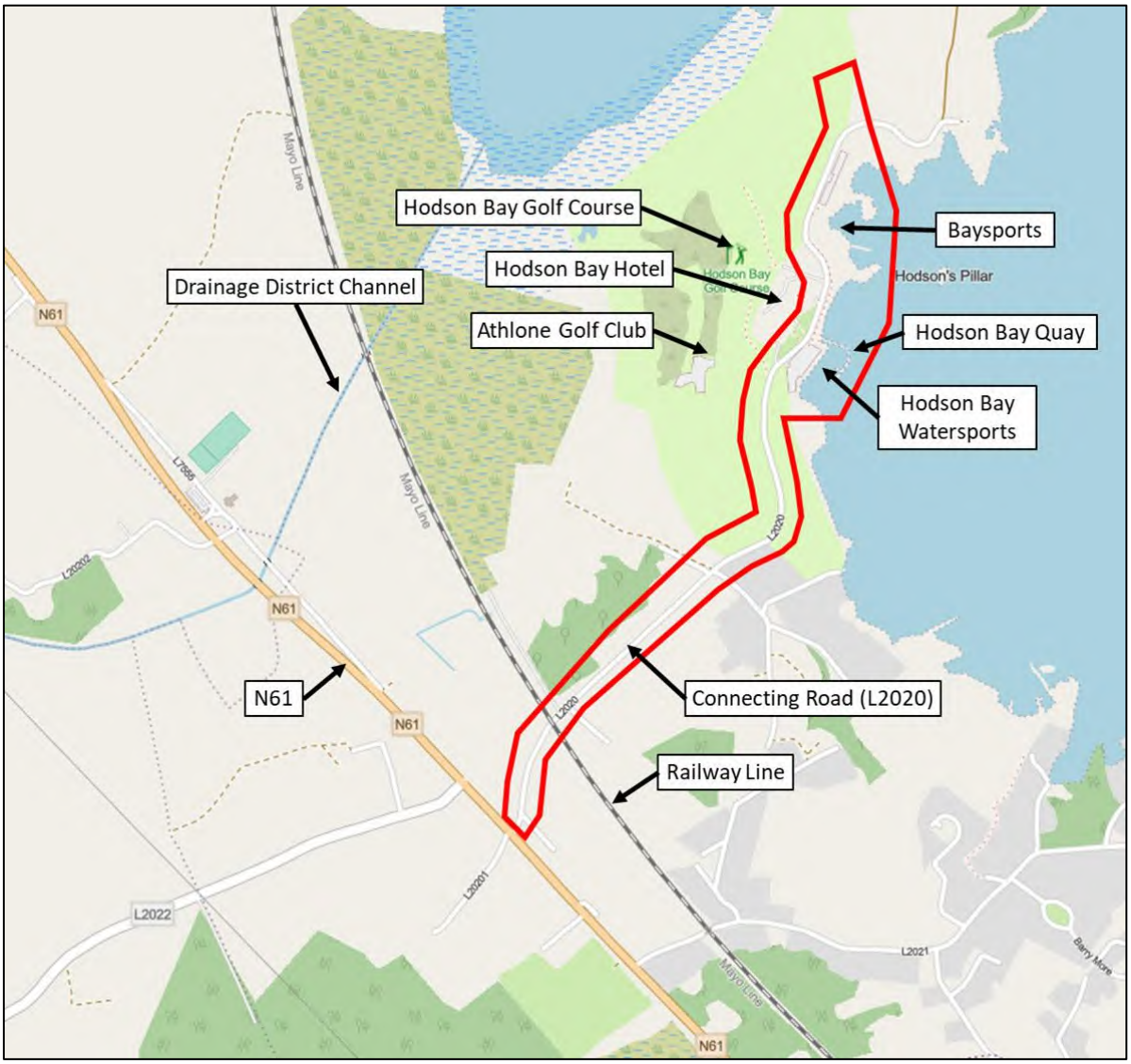


Figure 4: Site Layout

3.2. Topography

A detailed topographical survey of the site was undertaken by TST Engineering in September 2025. The survey indicates that ground levels within the project area at Hodson Bay range from approximately 35.0m OD along the shoreline of Lough Ree to approximately 40.0m OD to the north of the Hodson Bay Hotel. The L2020 road corridor linking Hodson Bay to the N61 rises gradually inland and is relatively uniform in profile, reaching a maximum level of approximately 45.0m OD. South of Hodson Bay, the carriageway increases steadily in elevation from approximately 38.0m OD to 45.0m OD over a distance of circa 350m.

Ground levels adjacent to the Hodson Bay Hotel indicate a finished floor level (FFL) of approximately 38.0m OD. At the existing Baysports building, surrounding ground levels range between approximately 35.9m OD and 36.6m OD, suggesting finished floor levels within this range. The carriageway and promenade area in front of the hotel extending toward Baysports generally lie between 36.5m OD and 37.5m OD, with the promenade itself predominantly at approximately 36.5m OD.The full topographical survey and existing ground level drawings are included in Appendix A.

3.3. Geology, Soils, and Groundwater

A review of mapping from the Geological Survey Ireland (GSI) Spatial Resources indicates that the northern and southern extents of the site are mapped as till derived from limestone, the central area is gravels derived from limestone and a section of the road corridor is identified as cutover raised peat, as shown in **Figure 5**. The gravel deposits are likely to exhibit variable permeability depending on composition, while limestone-derived till is generally less permeable. The presence of peat indicates potentially compressible and water-retentive soils, with a tendency toward shallow groundwater and seasonal saturation.



Figure 5: Quaternary Sediment Type - GSI Maps

The absence of mapped alluvium suggests that the site is not located within a defined fluvial floodplain associated with a river channel. Flood risk in this location is therefore more likely to be associated with lake level exceedance from Lough Ree rather than flooding from a local watercourse.

The bedrock geology across the site comprises visean limestones. The underlying bedrock aquifer is classified as regionally important aquifer - karstified (conduit). The overlying subsoils may locally limit vertical groundwater movement. Groundwater vulnerability mapping classifies the site as having moderate and high vulnerability, indicating that the subsoil provides a reasonable degree of protection to the underlying aquifer in moderate areas.



Figure 6: Bedrock Geology 100k - GSI Maps



Figure 7: Groundwater Vulnerability - GSI Maps

Given the site's proximity to Lough Ree, groundwater levels are likely to be influenced by lake levels, particularly during prolonged high-water conditions. While no specific groundwater flood risk features are identified in the GSI mapping, shallow groundwater and localised ponding may occur in peat or low-lying areas.

3.4. Existing Watercourses

3.4.1. Lough Ree

Lough Ree is a large freshwater lake forming part of the River Shannon system, located in the central midlands of Ireland. The lake extends approximately 29 km in length and up to 11 km in width, covering a surface area of approximately 105 km². Lough Ree is primarily fed by inflows from the River Shannon and numerous smaller tributaries, with its water levels influenced by both upstream discharges and downstream controls at Athlone Weir and Parteen Weir further south. The lake's levels are subject to seasonal variations, with highest water levels typically occurring in late winter and early spring due to increased rainfall and runoff from the extensive catchment area.

At Hodson Bay, flood risk is influenced by several factors including sustained high rainfall, elevated upstream inflows, wind-driven wave action (which can exacerbate localised overtopping), and capacity constraints downstream at Athlone. Historical flood events in the area have been linked to prolonged periods of wet weather combined with high Shannon River system levels.

Historical flood events, such as those experienced during the winters of 2009/2010 and 2015/2016, have demonstrated the potential for prolonged high-water levels on Lough Ree, contributing to flooding of adjacent low-lying lands including parts of Hodson Bay. The Office of Public Works (OPW) monitors and manages water levels within the Shannon system, with ongoing development of flood relief schemes to mitigate flood risk in critical locations, including Athlone and surrounding areas.

Climate change projections indicate potential future increases in extreme rainfall events and rising water levels, which may increase the frequency or severity of flooding in vulnerable low-lying shoreline areas such as parts of Hodson Bay.

Given the proximity of the project area to Lough Ree, consideration must be given to fluvial, pluvial and potential groundwater flooding mechanisms, as well as wave action during extreme weather events. Any development proposals will need to demonstrate appropriate mitigation measures in accordance with relevant flood risk management guidelines.

3.4.2. Additional Watercourses

Outside of Lough Ree there are no established watercourses near the project area. The closest watercourse is a Drainage District Channel to the west of the project area which connects to Lough Ree through Bally Bay, as can be seen in the image from floodinfo.ie in Figure 8.



Figure 8: Defined Watercourses

3.5. Proposed Development

The Hodson Bay Waterfront Project is a multi-disciplinary project aimed at enhancing the Hodson Bay area into a flagship tourism facility. The project's key objectives include improving the visitor experience, developing a continuous promenade, extending the marina, reimagining the water play experience, and creating a sustainable access, parking, and transport strategy.

The project is funded by Roscommon County Council and Waterways Ireland, with support from Failte Ireland under the EU Just Transition Fund.

The primary goals of the Hodson Bay Waterfront Project are to:

- Enhance the visitor experience and increase dwell time.
- Improve physical and visual connectivity with the River Shannon and Lough Ree.
- Enhance the functionality and attractiveness of the waterfront area.
- Improve access arrangements through sustainable transport measures and parking solutions.

The project scope comprises the following key elements:

- **Promenade Development:** Development of a continuous promenade along the shoreline, including a sun deck and marina square with gardens.
- **Marina Development:** Extension and improvement of the existing marina, including new berths, boat servicing facilities, and improved access to the water.
- **Reimagined Water Play Experience:** Redevelopment of the water sports facility, including amenities such as toilets, showers, and a café.
- **Access, Parking & Transport Strategy:** Implementation of a revised access strategy, including a transport mobility hub, active travel hubs, improved pedestrian and cycle access, and a revised parking strategy.

The new water sports facilities and café are proposed to have Finish Floor Levels at 38.0m OD inline with site specific flood risk analysis. Carriageway levels throughout Hodson Bay are proposed to be retained at their existing levels. All new landscaping and infrastructure below 38.0m OD will be designed to be flood resilient in scenarios of extreme flood conditions.

The proposed masterplan layout can be seen in Appendix B.

4. Flood Risk Identification

4.1. General

This chapter identifies and describes the potential sources of flooding that may affect the proposed development site and its surrounding area. The purpose of this assessment is to establish the baseline flood risk context, determine the likelihood and mechanisms of flooding, and inform the need for mitigation, management measures, or further detailed analysis as part of this FRA.

Information is drawn from publicly available flood mapping, historical flood records, and topographical data. The assessment also considers the potential influence of climate change on future flood risk.

The findings of this chapter provide the foundation for subsequent sections of the FRA, including the assessment of flood risk to and from the development, evaluation of vulnerability, and identification of appropriate mitigation and sustainable drainage measures.

4.1. Roscommon County Development Plan

The Roscommon County Council County Development Plan 2022-2028 provides the overarching land-use strategy and planning policy framework for the proper planning and sustainable development of County Roscommon, including provisions related to flood risk management. The Plan has been prepared in accordance with the Planning and Development Act 2000 (as amended) and reflects national policy on flooding, including the requirements of the EU Floods Directive and The Planning System and Flood Risk Management – Guidelines for Planning Authorities (OPW/DECLG, 2009) and Circular PL2/2014.

Relevant policy objectives within the Plan aim to ensure that flood risk considerations are integrated into development decision-making. The Plan requires that flood risk assessments are carried out in accordance with the Guidelines for Planning Authorities for all proposals that impact on lands where flood risk has been identified and that the Sequential Approach be applied in the siting and design of development. It also promotes protection and enhancement of floodplains, turloughs, lakes and wetlands as strategic green infrastructure, recognising their role in storing and conveying floodwater, and supports implementation of actions identified through the national Catchment Flood Risk Assessment and Management Programme. Development that would be subject to an inappropriate risk of flooding or that would exacerbate flood risk elsewhere is not normally permitted.

Within the Plan, development proposals in areas where there is an identified or potential risk of flooding must be accompanied by a detailed site-specific Flood Risk Assessment. Where appropriate, a Justification Test in accordance with the Guidelines must be applied to demonstrate that flood risk can be managed to an acceptable level without increasing risk elsewhere and that there are wider sustainable development grounds for the proposed development.

The County Development Plan also emphasises that all flood risk management activities should consider natural and cultural heritage, protect watercourses and riparian corridors, and contribute to climate change adaptation measures.

The Development Plan Policies regarding Flood Risk are as follows:

- ITC 7.51 – Have regard to the EU Flood Risk Directive, the Flood Risk Regulations (S.I. No. 122 of 2010) and the Guidelines for Planning Authorities on the Planning System and Flood Risk Management and Circular PL2/2014, through the use of the sequential approach and application of the Justification Tests in Development Management.
- ITC 7.52 – Ensure that a flood risk assessment is carried out for development proposals impacting on flood risk areas, in accordance with the Guidelines for Planning Authorities on the Planning System and Flood Risk Management. This assessment shall be appropriate to the scale and nature of risk to the potential development.
- ITC 7.53 – Protect and enhance the county's turloughs, lake/river floodplains and wetlands as strategically important green infrastructure which provides space for storage and conveyance of floodwater and enables flood risk to be more effectively managed, subject to normal planning and environmental criteria.
- TC 7.54 – Ensure that where flood risk management works take place that the natural and cultural heritage, rivers, streams and watercourses are protected and enhanced.
- ITC 7.55 – Support the implementation of recommendations in the CFRAM Programme to ensure that flood risk management policies and infrastructure are progressively implemented.
- ITC 7.56 – Ensure each flood risk management activity is examined to determine actions required to embed and provide for effective climate change adaptation as set out in the OPW Climate Change Sectoral Adaptation Plan for Flood Risk Management applicable at the time.

The Development Plan Policies regarding Tourism are as follows:

- ED 6.22 – Promote tourism as an integral part of County Roscommon's economic profile, supporting urban and rural enterprise, and recognising the key strategic location of the county and access to tourist sites and attractions.
- ED 6.23 – Continue to support the implementation of the Roscommon Tourism Strategy 2017-2020 (and subsequent revisions) in line with national and regional policy, tourism trends and identified challenges, in collaboration with Fáilte Ireland, Waterways Ireland, tourism businesses and communities and other supporting agencies.
- ED 6.24 – Support the preparation and implementation of Regional Tourism Plans in the County Development Plan, to support the continued collaboration with Fáilte Ireland and tourism stakeholders to ensure successful implementation and delivery of these tourism plans.
- ED 6.25 – Promote the development of sustainable tourism as part of our economy, that recognises our landscapes, our cultural heritage and our environment.
- ED 6.26 – Facilitate small scale enterprises, such as renovation of barns, outhouses or other existing structures for short term rental associated with an existing permanent residence or active farm/agri-tourism enterprise. Proposals to reinstate, conserve and/or renovate existing, vacant, derelict or disused buildings for holiday accommodation will also be given favourable consideration subject to normal planning criteria.
- ED 6.27 – Collaborate with relevant state bodies, neighbouring Local Authorities and local communities in delivering a UNESCO accredited, Biosphere for Lough Ree and the Mid- Shannon Wilderness Park.
- ED 6.28 – Encourage walking and cycling as sustainable transport modes and healthy recreational activities by ensuring that a network of safe, well-marked and maintained rights-of-way, walking and cycle routes, and footpaths are provided throughout the county.
- ED 6.29 – Facilitate the creation of a network of cycling/ walking routes (including existing footpaths and walking routes, off road routes, local walks, tourist walks, medium and long distance walking routes) within the county.
- ED 6.30 – Develop linkages between existing and new trails, particularly those with a historic association in adjoining counties, in cooperation with Inland Waterways, Fáilte Ireland and with other relevant stakeholders to provide linkages with trails in adjoining counties in partnership with their Councils.

4.2. Strategic Flood Risk Assessment of the Roscommon County Development Plan

A Strategic Flood Risk Assessment (SFRA) was prepared to inform the Roscommon County Development Plan 2022-2028, consistent with the requirements of the Planning System and Flood Risk Management Guidelines for Planning Authorities and associated Departmental Circulars. The SFRA assesses the likelihood and extent of flood risk across the Plan area and supports the identification of Flood Zones A and B, together with associated risk indicators derived from national-level data, local knowledge and site verification.

The SFRA forms part of the evidence base for the County Development Plan and its core recommendation is to avoid, reduce and/or mitigate flood risk within the flood risk areas identified. The recommendations of the SFRA are integrated into the written policies and objectives of the Plan, reinforcing the application of the Sequential Approach and ensuring that flood risk is a key consideration in land-use zoning and development management decisions.

The SFRA also underpins the Plan's requirement for detailed site-specific Flood Risk Assessments for development proposals within or adjoining flood-risk areas. This ensures that residual risks are fully quantified and that mitigation measures, including consideration of climate change, are appropriately addressed. Development that is likely to increase flood risk elsewhere, obstruct flow paths, impede access to watercourses or compromise flood protection infrastructure is restricted.

Overall, the SFRA ensures that identified flood risk areas are appropriately reflected in the County Development Plan's strategy and that flood risk is managed in a manner consistent with national policy and best practice.

4.3. Shannon Flood Risk (State Agency Co-ordination Working Group)

Water levels within the River Shannon system are influenced by control structures at the outlets of the major lakes and at several locations along the river. However, due to the very shallow gradient of the Shannon and natural hydraulic constraints along its course, water levels cannot be fully controlled during flood events. River and lake levels are primarily determined by the volume and duration of rainfall across the wider catchment.

Levels in Lough Ree are regulated by the Electricity Supply Board (ESB) through sluices at Athlone, with operational assistance from Waterways Ireland. During significant flood events, most flows pass uncontrolled over the adjacent

weir, limiting the effectiveness of operational intervention. As inflows to the lake increase during prolonged rainfall, outflows can only increase as lake levels rise, and a hydraulic balance is eventually reached at elevated levels. Studies have shown that, for large flood events, the initial lake level has negligible influence on the eventual peak level[1].

At Hodson Bay, this indicates that flood risk is primarily driven by catchment-scale hydrological conditions and prolonged high inflows within the Shannon system rather than operational management of sluices.

4.4. Shannon Catchment Flood Risk Assessment and Management Study

The Shannon Catchment Flood Risk Assessment and Management (CFRAM) Study was undertaken by OPW as part of Ireland's implementation of the EU Floods Directive. The study provides detailed hydraulic modelling and predictive flood mapping for the entire Shannon River Basin, including the lakes and main channel of the River Shannon and its major waterbodies such as Lough Ree.

4.4.1. Preliminary Flood Risk Assessment

The Preliminary Flood Risk Assessment (PFRA) was a nationwide, high-level, desk-based screening exercise conducted to identify areas where the risks associated with flooding are potentially significant. As the first step of the EU Floods Directive, it was not a detailed study, but rather a preliminary assessment to identify where more detailed, in-depth analysis was necessary.

The OPW used historical flood data, predictive analysis (including climate change projections), and consultation with local authorities to assess risk from various sources (rivers, sea, groundwater, and infrastructure failure). The PFRA is reviewed on a six-year cycle to account for new information or changed risks.

Under the CFRAM Programme, approximately 300 communities nationally were assessed covering roughly two-thirds of the population and 80% of properties potentially at risk from rivers and sea in Ireland, and flood maps were prepared for those designated as Areas for Further Assessment (AFAs), also referred to as Areas of Potentially Significant Risk (APSFRs). Structural measures were then developed for communities where flood risk was determined to be significant and economically justifiable.

For each AFA, the CFRAM programme involved developing detailed flood maps, assessing risk and developing Flood Risk Management Plans (FRMPs) to manage and reduce the flood risk.

4.4.2. OPW Flood Risk Management Plan – River Basin (25/26) Shannon Upper and Lower

The FRMP for the Shannon Upper & Lower River Basin, prepared by the OPW, sets out the strategy and measures for the long-term, sustainable and cost-effective management of flood risk within the Shannon catchment. The Plan forms part of a national suite of 29 river basin plans and implements Government flood policy (following the 2004 Flood Policy Review Group Report) as well as Ireland's obligations under the EU Floods Directive (2007).

The Plan identifies both non-structural measures (e.g. planning policy, flood forecasting, emergency response, public awareness and preparedness) and structural flood relief schemes for communities identified as being at potentially significant flood risk through the PFRA and subsequently examined in detail under the CFRAM Programme.

Hodson Bay and the surrounding area was not identified as an AFA under the Shannon CFRAM process and therefore, no detailed hydraulic flood modelling was undertaken specifically for Hodson Bay, and no site-specific structural flood relief measures were proposed for Hodson Bay under the FRMP.

This indicates that, at a strategic catchment level, Hodson Bay was not considered to be at potentially significant flood risk relative to larger urban centres within the Shannon basin. However, absence of AFA designation does not imply absence of flood risk. As a lakeshore location influenced by water levels within the River Shannon system, flood risk at Hodson Bay remains primarily associated with lake level exceedance and prolonged high water events. Accordingly, site-specific assessment using available CFRAM flood levels at Hodson Bay and topographic survey data can be used to determine localised risk and appropriate mitigation measures.

4.4.3. CFRAM Predictive Flood Maps

The CFRAM outputs at AFAs include mapped flood extents, depths and levels for a range of AEP events (including 10%, 1% and 0.1% AEP events), together with climate change scenarios. These maps form the primary basis for identifying Flood Zones A and B under the Planning System and Flood Risk Management Guidelines.

In the context of Hodson Bay, the Shannon CFRAM mapping is particularly relevant as flood risk is predominantly associated with lake level exceedance and prolonged high water levels within Lough Ree, rather than confined channel flooding. The CFRAM hydraulic model accounts for the storage and attenuation effects of Lough Ree within the wider

[1] https://esb.ie/news---insights/inside-esb/our-role-on-the-river-shannon

Shannon system and therefore provides the most robust predictive assessment of potential flood levels affecting low-lying shoreline lands at Hodson Bay.

As Hodson Bay is in proximity to AFAs with detailed flood modelling on Lough Ree, and as Lough Ree water levels are the primary indicator of flood risk at Hodson Bay, data can be extrapolated to find predicted flood levels as follows:

- The nearest available CFRAM Map downstream of Hodson Bay is at Athlone, Node Label 07MSH03613, which is 3km south of Hodson Bay. The modelled fluvial flood levels at the node shows a 10% AEP Water Level of 36.37m OD, 1% AEP Water Level of 36.95m OD, and 0.1% AEP Water Level of 37.41m OD.
- The nearest available CFRAM Map upstream of Hodson Bay is at Lanesborough, Node Label 08MSH00355, which is 23km north of Hodson Bay. The modelled fluvial flood levels at the node shows a 10% AEP Water Level of 36.45m OD, 1% AEP Water Level of 37.08m OD, and 0.1% AEP Water Level of 37.61m OD.
- Extrapolating between the two data points at Lanesborough and Athlone, provides a 10% AEP Water Level of 36.37m OD, 1% AEP Water Level of 37.09m OD, and 0.1% AEP Flood Water Level of 37.44m OD at Hodson Bay.

The CFRAM Maps and flood levels for Athlone and Lanesborough described above are shown in Appendix C.

Furthermore, the highest flood water level on record (7th January 2016) was 36.961m OD at Athlone, and 36.993m OD at Hodson Bay, representing a difference of 0.032m OD difference at peak flood levels. Adding this difference to the 0.1% AEP CFRAM modelled flood levels at Athlone (37.41 m OD), also provides a 0.1% AEP Flood Level of 37.44m OD at Hodson Bay.

4.5. OPW Records

All publicly available OPW Flood Maps were reviewed on floodinfo.ie and the results are as follows:

- Only fluvial flooding from Lough Ree was identified to be in the project area. The fluvial flood zones are described in the following sections.
- No OPW Flood Relief Scheme Benefiting Areas shown in project area
- No Arterial Drainage Schemes shown in project area
- No records of Pluvial Flooding shown in project area
- No records of Groundwater Flooding shown in project area

4.5.1. Fluvial Flood Maps

High Probability flood events have approximately a 1-in-a-10 chance of occurring or being exceeded in any given year. This is also referred to as an AEP of 10%. The flood extents for high probability flooding are show in Figure 9.



Figure 9: CFRAM River Flood Extents - High Probability

Medium Probability flood events have approximately a 1-in-a-100 chance of occurring or being exceeded in any given year. This is also referred to as an AEP of 1%. The flood extents for medium probability flooding are show in Figure 10.



Figure 10: CFRAM River Flood Extents - Medium Probability

Low Probability flood events have approximately a 1-in-a-1000 chance of occurring or being exceeded in any given year. This is also referred to as an AEP of 0.1%. The flood extents for low probability flooding are show in Figure 11.



Figure 11: CFRAM River Flood Extents - Low Probability

Historical flood maps have been reviewed and can be seen in Figure 12 below.



Figure 12: CFRAM Historic Flood Maps

4.5.2. OPW Water Level Stations Data

Water level data for the Shannon system has been reviewed using hydrometric records published by the OPW. Of relevance to this assessment are the monitoring stations at Hodson Bay Gauge Station and Athlone Gauge Station, which record lake and river levels within and immediately downstream of Lough Ree. These stations provide long-term observed water level data that assists in understanding historical lake level behaviour, seasonal fluctuations, and peak levels recorded during significant flood events. Review of this empirical data supports verification of predictive flood mapping and provides important context for assessing flood risk at Hodson Bay. The data for Hodson Bay can be seen below in Figure 13.

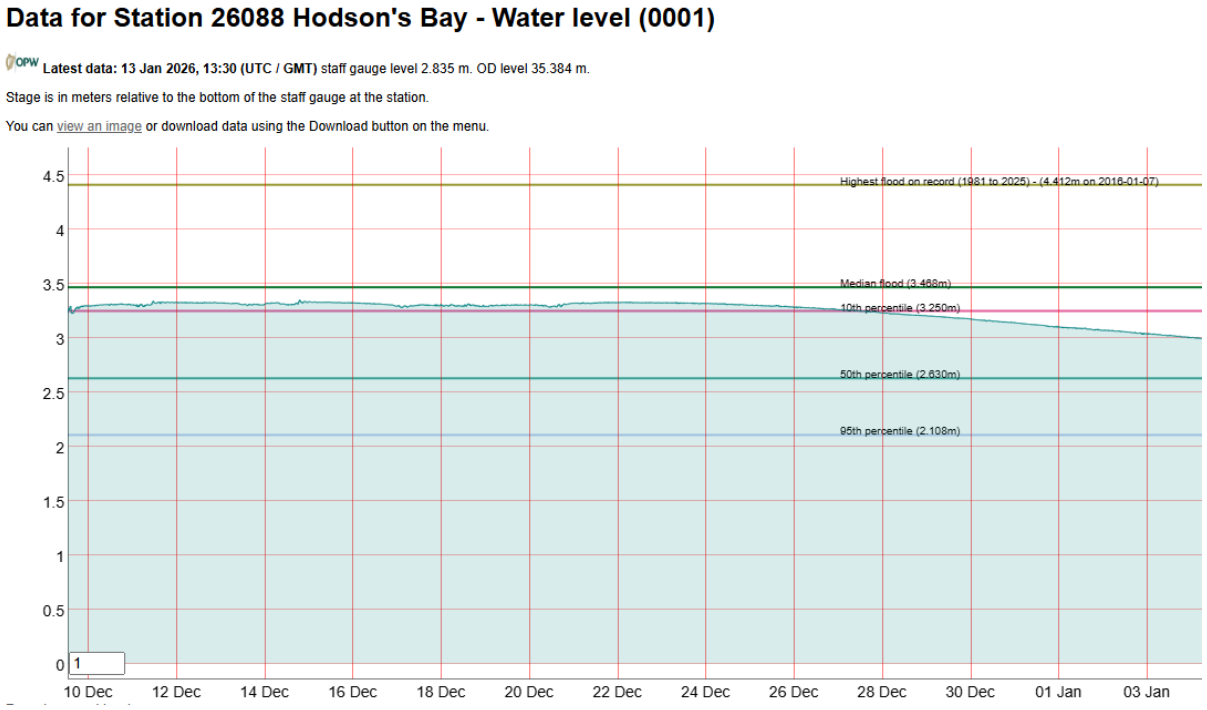


Figure 13: Hodson Bay Water Level Guage Data

Water level analysis has been undertaken using recorded stage data from the OPW gauge at Hodson Bay Gauge Station. Water stage readings at this station are recorded relative to the base of the staff gauge.

The staff gauge zero level corresponds to 35.384m OD, with the bottom of the gauge calculated at 32.549m OD (35.384m – 2.835m). All recorded stage values have therefore been converted to Ordnance Datum (Malin Head) levels using this reference.

Recorded water stage statistics for the period 1981–2024 indicate the following corresponding OD levels:

- 95th percentile water level: 34.657m OD
- 50th percentile water level: 35.179m OD
- 10th percentile water level: 35.799m OD
- Median flood level: 36.017m OD
- Highest recorded flood level (07/01/2016): 36.961m OD

The highest recorded water level of 36.961m OD represents the peak observed lake level during the period of record.

To provide a sensitivity test for potential climate change impacts, an allowance of 30% has been applied to the difference between the highest recorded flood level (36.961m OD) and the median (50th percentile) water level (35.179m OD). The difference between these levels is 1.782m. Applying a 30% increase to this differential results in an additional 0.535m. When added to the highest recorded flood level, this provides an indicative future design flood level of approximately 37.496m OD, which aligns with CFRAM predictive 0.1% AEP Flood Level described in Section 4.4.3. Historic flood levels recorded at Hodson Bay are illustrated in Figure 14.

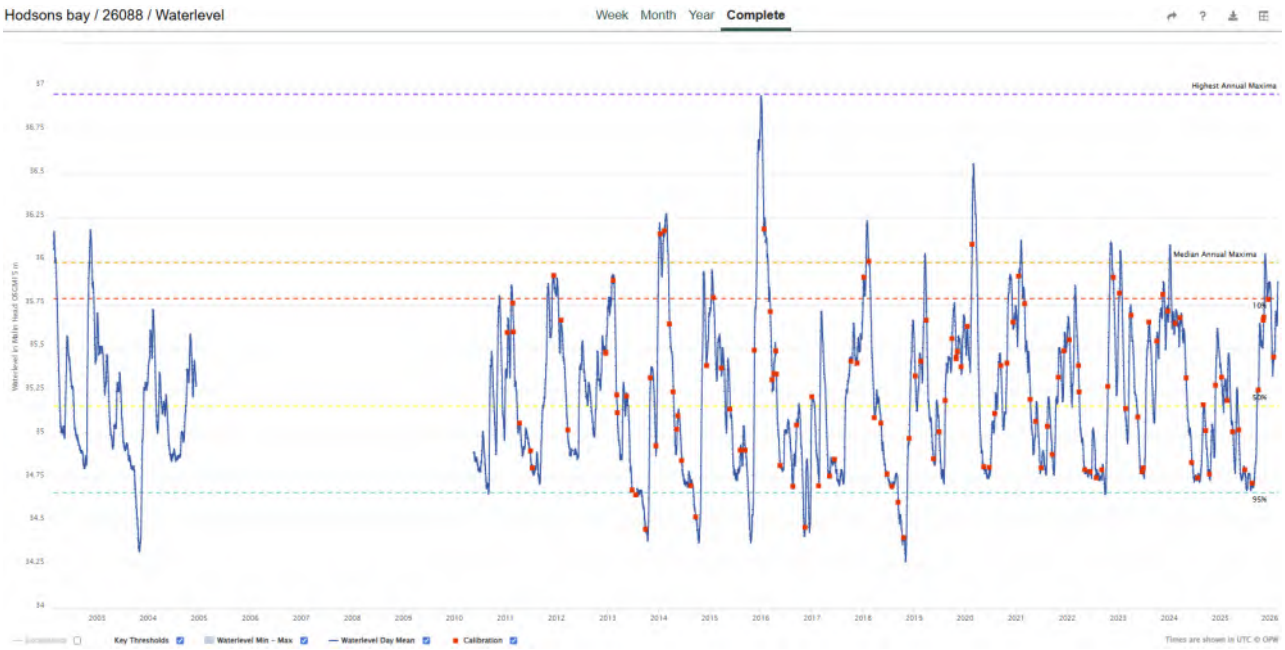


Figure 14: Hodson Bay Historic Water Level Data

4.6. Site Survey and Drawings

A detailed topographical survey of the site was reviewed and compared against the OPW predictive flood mapping (Flood Zones A and B), as presented in Appendix A. The survey data is referenced to Ordnance Datum and provides accurate existing ground levels across the waterfront and adjoining lands.

Comparison of surveyed levels with the mapped flood extents indicates issues with resolution in the OPW flood zone boundaries along the Hodson Bay waterfront. For example, the mapped 0.1% AEP (1 in 1000 year) flood extent intersects ground levels ranging between approximately 36.0m OD and 38.0m OD over around 600m along the shoreline. This variation suggests that the mapped flood edge does not consistently align with a uniform design water level expected with flooding from Lough Ree and reflects the indicative nature of the national-scale mapping.

Notwithstanding these discrepancies, review of the mapping indicates that most of the 0.1% AEP flood extents generally correspond with surveyed contour levels between approximately 37.0m OD and 37.5m OD. This range provides a more consistent indication of extreme lake level exceedance in the vicinity of Hodson Bay.

The analysis confirms that OPW flood mapping is strategic and indicative in nature and should not be relied upon in isolation to determine precise flood levels at a site-specific scale. Accordingly, interpretation of site-specific predictive mapping has been informed by detailed topographic survey data, review of flood level information from adjacent areas, and available historic water level records. This combined approach provides a more robust basis for establishing an appropriate 0.1% AEP design flood level at Hodson Bay.

5. Flood Risk Interventions

5.1. Flood Vulnerability Classification – Watersports/Café Use

In accordance with the OPW Flood Risk Management Guidelines for Planning Authorities (2009), the proposed watersports facility and café use are classified as “Less Vulnerable Developments”, as they are a commercial, non-residential use that does not include overnight accommodation or permanent residential occupancy.

However, it is also acknowledged that the development is publicly accessible, occupied for extended periods, and located directly on the shoreline in an area with a documented history of flooding. As such, while the vulnerability classification is less vulnerable, the consequences of flooding include risks to public safety, operational continuity and emergency access.

5.2. Proposed Finished Floor Levels

The proposed development comprises a publicly accessible café and associated watersports facility located on the shoreline at Hodson Bay adjacent to Lough Ree. Flood risk at this location is primarily associated with prolonged elevated lake levels within the Shannon system during extreme catchment-scale rainfall events.

Review of CFRAM predictive flood mapping for nearby AFAs at Athlone and Lanesborough indicates a modelled 0.1% AEP (1 in 1000-year) flood level of approximately 37.44m OD at Hodson Bay, based on interpolation between nodes and correlation with recorded peak flood levels. The highest recorded flood level at Hodson Bay (7 January 2016) was 36.993m OD, closely aligning with the Athlone peak of 36.961m OD, confirming consistency of lake levels along this reach.

Independent analysis of long-term hydrometric records (1981–2024) at the OPW Hodson Bay gauge station, incorporating a 30% climate change uplift to the historic flood differential, also provides an indicative future extreme 0.1% AEP flood level of approximately 37.496m OD. Therefore, a conservative design flood level of 37.5m OD has been adopted for this assessment.

To provide an appropriate factor of safety, a freeboard allowance of 0.5m has been applied above the design flood level as a mitigation measure. Accordingly, the proposed minimum Finished Floor Level (FFL) is set at 38.0m OD. This approach accords with the precautionary principle set out in the OPW Flood Risk Management Guidelines for Planning Authorities and reflects best practice for development located immediately adjacent to a large inland water body with a long design life.

The proposed floor levels ensure that the building remains resilient to the 0.1% AEP flood event, inclusive of climate change, and provides additional allowance for uncertainty, wave action and residual risk.

6. Justification Test

6.1. Step 1: Strategic Planning Context and Need for the Development

The proposed development comprises a non-residential water sports facility and café located on the Hodson Bay shoreline, within an established lakeside tourism and recreational area. The development supports the strategic objectives of the Roscommon County Development Plan to strengthen tourism, recreation and amenity provision along Lough Ree and within designated lakeside settlements.

The RCC Development Plan promotes the consolidation and enhancement of existing waterfront and amenity areas, particularly where development is directly related to tourism, leisure and recreational activity. The proposed watersports facilities and café are intrinsically linked to the waterfront setting and are intended to serve users of Hodson Bay, including visitors to the marina, public open spaces and lakeside recreational facilities. Due to its functional reliance on direct access to the lake, the development cannot be reasonably relocated to an alternative site away from the shoreline without undermining its intended use and strategic planning purpose.

The Council (under Vol II of the RCC DP) recognise the potential of this area as an important amenity and tourism asset. Therefore, the DP seeks to support the further development of this area to accommodate appropriate forms of additional leisure, tourism and amenity related development, subject to satisfying all environmental considerations and normal siting and development criteria, including in respect of all environmental and flood related policy objectives. This has been considered throughout the design process and in carrying out this Flood Risk Assessment. The proposal therefore accords with Development Plan objectives and policies supporting tourism-related development, waterfront amenity uses and the sustainable economic development of Hodson Bay, while respecting the site’s environmental and physical constraints.

6.2. Step 2: Flood Risk Assessment and Development Management Response

A site-specific Flood Risk Assessment has been undertaken in accordance with:

- The OPW Flood Risk Management Guidelines for Planning Authorities (2009)
- CFRAM predictive flood mapping for the Shannon Catchment
- Historic hydrometric records from the OPW gauge stations at Hodson Bay and Athlone
- Topographical survey data (September 2025)

Flood risk at the site is fluvial in origin and results from elevated water levels within Lough Ree during prolonged rainfall events across the wider Shannon catchment. Due to the large storage capacity and very shallow hydraulic gradient of the Shannon lake system, flooding at Hodson Bay develops gradually as lake levels rise over prolonged periods of sustained catchment rainfall, rather than as a rapid-onset or high-velocity flood event. Consequently, flooding is characterised by slowly rising water levels, providing time for monitoring, response and implementation of management measures where required.

Assessment of CFRAM outputs for nearby Areas for Further Assessment, together with analysis of long-term recorded lake levels, indicates a 0.1% AEP flood level in the order of 37.4m to 37.5m OD at Hodson Bay when climate change allowances are considered. Independent extrapolation of historic peak differentials, including a 30% uplift to account for projected climate change impacts, supports adoption of a conservative design flood level of 37.5m OD. This level exceeds the highest recorded historic flood level at Hodson Bay in January 2016 and aligns with the upper range of CFRAM predictive 0.1% AEP modelling for Lough Ree. The adopted level is therefore considered robust and precautionary, accounting for modelling uncertainty and long-term climatic variability.

In response to the identified risk, the proposed Finished Floor Level has been set at 38.0m OD, providing a conservative freeboard allowance of 0.5m above the adopted design flood level. This freeboard accounts for potential wave action, residual uncertainty and extreme event variability. Flood risk mitigation is achieved through passive design measures, specifically elevation of the structure above predicted extreme flood levels, rather than reliance on engineered flood barriers or mechanical systems.

The proposed watersports facility will involve raising an area of approximately 300 m². In comparison, Lough Ree has a surface area of approximately 105 km² (105,000,000 m²), meaning the raised area represents less than 0.0003% of the lake surface area. Consequently, any displacement of flood storage would be negligible and would not result in a measurable increase in flood levels or flood risk elsewhere. Furthermore, the development does not obstruct established flood flow paths or materially alter the flood storage characteristics of the surrounding floodplain,

It is noted that the existing carriageway and promenade levels, which provide vehicular and pedestrian access to the proposed building, are to be retained as part of the development. Along the waterfront promenade, levels are as low as approximately 36.5m OD, which is below the adopted 0.1% AEP design flood level of 37.5m OD. While this indicates that access routes may become inundated during extreme flood events, this is considered acceptable in the context of a non-residential development. Flooding associated with Lough Ree is characterised by gradual lake level rise over an extended duration, with significant advance warning available through OPW hydrometric monitoring and forecasting systems. The nature of the Shannon system provides substantial lead-in time prior to peak flood levels being reached, thereby allowing for appropriate management responses, temporary closure if required, and safe evacuation. As the building itself is set at 38.0m OD, above the design flood level including freeboard, the residual risk associated with temporary inundation of access routes during extreme events is considered low and manageable.

6.3. Step 3: Flood Risk, Vulnerability and Compliance with County Development Plan Policies

In accordance with the OPW Flood Risk Management Guidelines, the proposed café and watersports facility are classified as Less Vulnerable Development, as the use is commercial in nature and does not include residential accommodation, overnight occupancy or critical infrastructure. While the site is located adjacent to Lough Ree, the vulnerability classification permits such development in areas of flood risk where appropriate mitigation measures are implemented and the Justification Test is satisfied.

The proposal aligns with the flood risk management objectives of the Roscommon County Council County Development Plan 2022–2028, which require avoidance of inappropriate development in flood-prone areas, submission of site-specific Flood Risk Assessments, integration of climate adaptation measures, protection of natural floodplain function, and increase flood risk elsewhere. The assessment demonstrates that flood risk has been comprehensively evaluated using both predictive modelling and empirical hydrometric data, and that a conservative design approach has been adopted. The application of a 0.5m freeboard above the 0.1% AEP design flood level ensures a precautionary margin that reflects both climate change projections and modelling uncertainty.

The development is also functionally water-dependent, requiring direct access to the shoreline to operate as a watersports facility. Relocation away from the lakeside context would undermine its operational purpose and its integration within the established tourism and recreational cluster at Hodson Bay. The mitigation strategy is embedded

within site levels and does not depend on external flood defence infrastructure, ensuring long-term resilience and sustainability over the lifetime of the development. The proposal does not increase flood risk upstream or downstream and does not adversely affect floodplain storage or conveyance.

6.4. Justification Test Verdict

Having regard to the detailed site-specific Flood Risk Assessment and the precautionary design approach adopted, it is concluded that the requirements of the Justification Test have been satisfied. Flood risk at Hodson Bay arises from gradual increases in lake levels within Lough Ree during extreme catchment-wide rainfall events. A conservative 0.1% AEP design flood level of 37.5m OD has been established based on CFRAM modelling and long-term gauge analysis. The proposed Finished Floor Level of 38.0m OD incorporates a 0.5m freeboard allowance and ensures resilience to extreme flood events inclusive of climate change.

The development is classified as Less Vulnerable, is functionally water-dependent, and forms part of an established lakeside tourism and recreation area. Flood risk has been mitigated through passive elevation measures that do not displace significant flood storage or increase risk elsewhere. The proposal complies with national flood risk guidance and the objectives of the Roscommon County Development Plan.

The proposed buildings at Hodson Bay demonstrates full compliance with the flood risk management, climate change adaptation, and tourism/amenity policies of the Roscommon County Development Plan 2022–2028 and the OPW Flood Risk Management Guidelines, as shown in **Table 1**. The development incorporates robust and precautionary flood mitigation measures and is considered appropriate in principle within this lakeside setting

On this basis, the development is considered acceptable in flood risk terms and consistent with the proper planning and sustainable development of the area.

Table 1: Justification Test Policy Compliance

Policy / Objective	Policy Requirement	Proposed Development Response	Compliance
RCDP 2022–2028 – ITC 7.51	Apply the requirements of the Planning System and Flood Risk Management Guidelines through the sequential approach and, where required, the Justification Test.	A site-specific Flood Risk Assessment has been prepared in accordance with the OPW Guidelines. The sequential approach has been applied and appropriate flood mitigation measures incorporated into the design.	Compliant
RCDP 2022–2028 – ITC 7.52	Require Flood Risk Assessments for developments in areas of potential flood risk, proportionate to the scale and nature of the proposal.	A detailed Flood Risk Assessment has been completed using CFRAM mapping, OPW hydrometric data, historic flood records and topographical survey information.	Compliant
RCDP 2022–2028 – ITC 7.53	Protect floodplains, wetlands and natural flood risk management areas from inappropriate development and ensure that flood risk is not increased elsewhere.	The proposed development does not encroach into functional floodplain storage nor obstruct flood conveyance routes associated with Lough Ree. The building is elevated above the adopted 0.1% AEP design flood level of 37.5m OD and will not increase flood risk upstream or downstream.	Compliant
RCDP 2022–2028 – ITC 7.54	Ensure that development proposals in areas of potential flood risk are subject to an appropriate Flood Risk Assessment in accordance with the OPW Flood Risk Management Guidelines.	A detailed site-specific Flood Risk Assessment has been undertaken using CFRAM modelling outputs, long-term OPW hydrometric data for Hodson Bay, historic flood records and topographical survey data.	Compliant
RCDP 2022–2028 – ITC 7.55	Implement the recommendations of the OPW CFRAM Programme and ensure a precautionary approach to flood risk management.	The assessment adopts a precautionary design flood level of 37.5m OD based on CFRAM predictive modelling and historic lake level analysis. A 0.5m freeboard has been applied to establish a minimum Finished Floor Level of 38.0m OD.	Compliant
RCDP 2022–2028 – ITC 7.56	Incorporate climate change adaptation measures into flood risk management and development design.	Climate change has been explicitly addressed through uplift of historic flood differentials and alignment with upper-bound CFRAM outputs, ensuring resilience over the lifetime of the development.	Compliant

Policy / Objective	Policy Requirement	Proposed Development Response	Compliance
RCDP 2022–2028 – Strategic Flood Risk Assessment (SFRA)	Require that flood risk is managed in accordance with the sequential approach and Justification Test, where applicable, and that development is resilient to future flood conditions.	The development satisfies the Justification Test for Less Vulnerable Development. The adopted floor levels exceed the design flood level inclusive of climate change and provide a robust margin of safety.	Compliant
RCDP 2022–2028 – Tourism & Amenity Objectives	Support sustainable tourism and amenity development, particularly where proposals enhance existing recreational assets and waterfront areas.	The proposed café and watersports facility strengthen the established recreational and tourism function of Hodson Bay and are intrinsically linked to the lakeside setting.	Compliant
OPW Flood Risk Management Guidelines for Planning Authorities (2009)	Apply the sequential approach, vulnerability classification, Justification Test and appropriate mitigation where development is proposed in areas of flood risk.	The development is classified as Less Vulnerable. A Justification Test has been completed and mitigation is achieved through passive elevation, adoption of a 38.0m OD Finished Floor Level and provision of 0.5m freeboard above the 0.1% AEP design flood level.	Compliant
National Planning Policy – Climate Adaptation	Ensure development is adaptable and resilient to future climate conditions.	Conservative flood design levels and climate allowances ensure long-term resilience to projected increases in flood risk associated with climate change within the Shannon catchment.	Compliant
Roscommon SFRA – Development Management Standards	Finished floor levels and site layout must be designed to reduce flood risk and ensure resilience.	The minimum Finished Floor Level of 38.0m OD exceeds the adopted design flood level of 37.5m OD and incorporates 0.5m freeboard, ensuring resilience to present-day and future extreme events.	Compliant
Roscommon SFRA – Emergency Access & Safety	Development should ensure safe access, egress and public safety during flood events.	Although sections of the existing promenade carriageway are as low as 36.5m OD and may be temporarily inundated during extreme events, flooding of Lough Ree is gradual with significant advance warning available through OPW monitoring systems. The non-residential nature of the development allows safe operational management and closure procedures.	Compliant
Roscommon SFRA – Long-Term Sustainability	Development should not require future flood defence works or exacerbate flood risk over time.	The mitigation strategy is passive and level-based, avoiding reliance on structural flood defences. The design is inherently flood resilient and does not necessitate future intervention.	Compliant

7. Conclusion

The Flood Risk Assessment confirms that the proposed café and watersports facility at Hodson Bay has been designed in accordance with national and local flood risk management policy. Flood risk at the site arises from elevated lake levels within Lough Ree during extreme, catchment-wide rainfall events. A conservative 0.1% AEP design flood level of 37.5m OD has been adopted based on CFRAM predictive modelling and long-term OPW hydrometric analysis.

The proposed Finished Floor Level of 38.0m OD incorporates a 0.5m freeboard allowance above the design flood level, providing resilience to extreme flood events inclusive of climate change and residual uncertainty. The development does not encroach upon functional floodplain storage, does not obstruct flood conveyance and will not increase flood risk elsewhere. While sections of the retained promenade access may be inundated during extreme events, the gradual nature of lake flooding and the non-residential use of the building ensure that residual risk is low and manageable.

The proposal satisfies the requirements of the OPW Flood Risk Management Guidelines, the Roscommon County Development Plan 2022–2028 and its Strategic Flood Risk Assessment. It is therefore concluded that the development is acceptable in flood risk terms and consistent with the proper planning and sustainable development of the area.

Appendix A – Flood Zones and Topographical Survey

NORTHERN CAR PARK
AND ACCESS ROUTE IN
FLOOD ZONE

WATER SPORTS FACILITY
IN FLOOD ZONE

ACCESS ROAD
AND PROMENADE
IN FLOOD ZONE

FLOOD ZONE A (RED)

FLOOD ZONE B (YELLOW)

MARINA CAR PARK
IN FLOOD ZONE

NO RIVER FLOODING IN
AREA SOUTH OF HODSON
BAY WATERFRONT

Cornaseer

Bearaidh Mhór
Barry More

Lough
Ree
Loch Ri

Pond

Athlone
Golf Club

Clubhouse

Pier Open

Hotel

Closed Well

FILE LOCATION PATH: P:\CIVIC IRELAND\PROJECTS HOT\31022 HODSON BAY\004 BIM\CIVIL\SCIVIL 2D\31022-CIV-XX-XX-D-C-00002&3 - FLOOD EXTENTS.DWG

STANDARD NOTES

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2. THIS DRAWING SHOULD NOT BE SCALED.
3. ALL DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR ON SITE.
4. ALL DISCREPANCIES SHOULD BE REPORTED TO C.A./E.A. PRIOR TO THE COMMENCEMENT OF WORKS.

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SITE BOUNDARY

FLOOD ZONE A - 100 YEAR FLOOD EXTENTS (1% AEP)

FLOOD ZONE B - 1000 YEAR FLOOD EXTENTS (0.1% AEP)

DATE	REV	DESCRIPTION	DRAWN	CHKD
19.02.26	P01	INFORMATION	SG	AM

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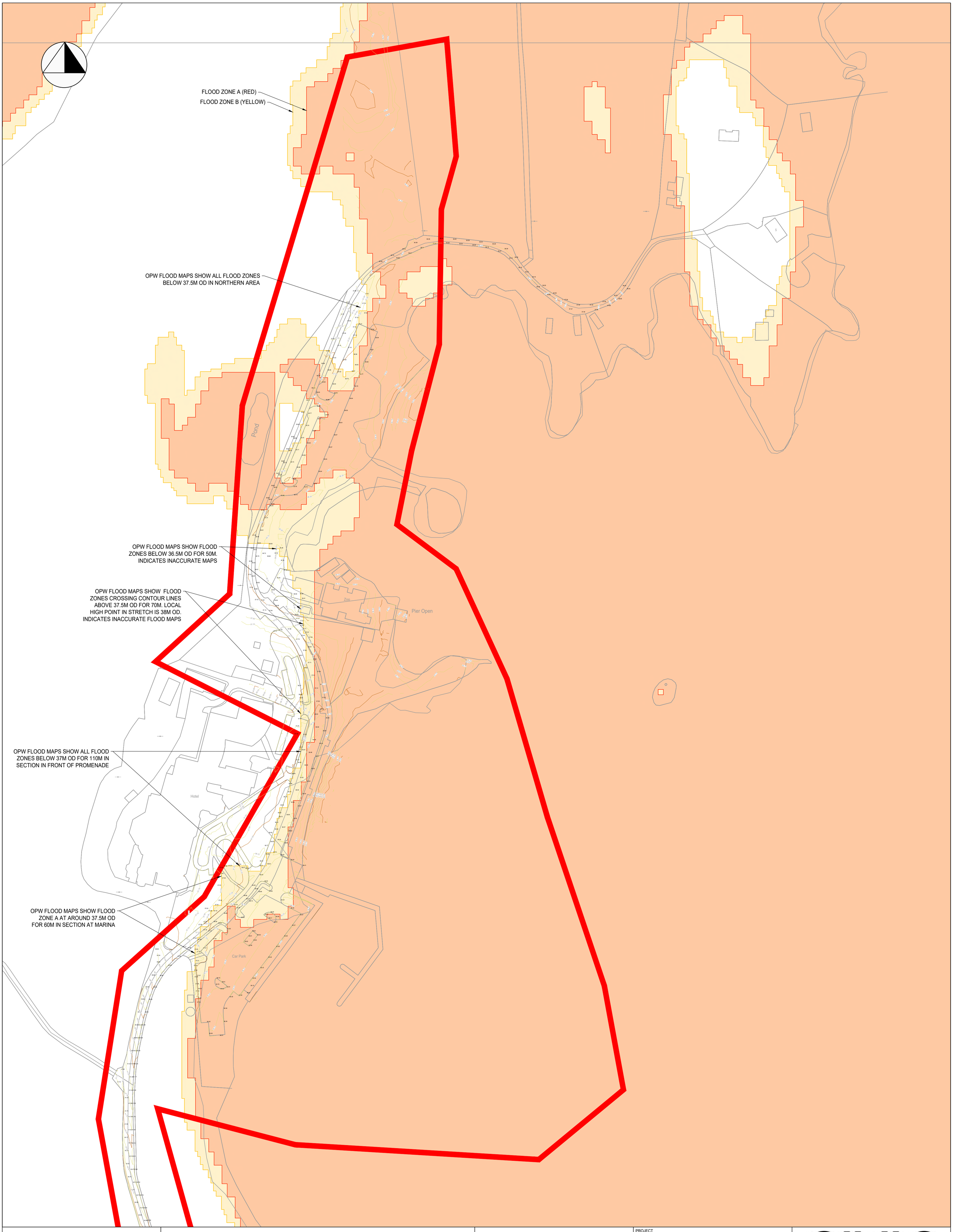
TITLE
RIVER FLOOD EXTENTS PLAN

CIVIC ENGINEERS
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CE PROJECT No.	SCALE @ A1	DATE CREATED	DRAWN	CHECKED
31022	1:2500	FEB' 26	SG	AM

DRAWING STATUS	STATUS CODE
INFORMATION	S2

DRAWING No.	REV
31022-CIV-XX-XX-D-C-00002	P01



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- SITE BOUNDARY
- FLOOD ZONE A - 100 YEAR FLOOD EXTENTS (1% AEP)
- FLOOD ZONE B - 1000 YEAR FLOOD EXTENTS (0.1% AEP)

DATE	REV	DESCRIPTION	DRAWN	CHKD
19.02.26	P01	INFORMATION	SG	AM

PROJECT
HODSON BAY WATERFRONT LEVELS

TITLE
FLOOD EXTENTS PLAN
HODSON BAY FLOOD LEVELS

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DRAWING STATUS	STATUS CODE
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Appendix B – Hodson Bay Waterfront Masterplan



KEYPLAN



Legend

GENERAL

- Project area
- Height points
- Dimensions in meters
- Existing property fence
- Existing pontoon
- Water

PAVING

- **Concrete paving with exposed aggregate** Water Promenade
- **Resin bound paving** Playground, Nature Pathway
- **Permeable soft paving** Playground
- **Self bound gravel** Small plaza
- **Concrete tiles paving** Footpaths
- **Timber decking** Quay promenade
- **Permeable paving** Parking stalls
- **Asphalt** Parking lots and carriageway
- **Pedestrian crossings**
- **Tactile paving** Crossings and steps

SITE FIXTURES

- **Built-in high-quality concrete bench** Water Promenade
- **Double-sided bench** Quay Promenade
- **Bench** Nature area
- **Picnic tables** Nature Area
- **Nature play equipment** Playground
- **Bike stands**
- **Lighting** refer to lighting specialist drawings
- **Custom planter with bench** Baysport courtyard
- **High quality concrete steps** with integrated planters Baysport terrace
- **Fence and gates** Baysport

PLANTING BEDS

- **Shrubs and Perennials** Raingardens
- **Shrubs and Perennials** Public Realm
- **Shrubs and Perennials** Baysport terrace and Courtyard
- **Cut Grass** Open Lawn
- **Ornamental grass** Woodland Understorey Grass
- **Exsiting reedbeds**
- **Exsiting grass**

TREES&SHRUBS

- **Proposed large trees** Height: >10 m Refer to Trees planting plan
- **Proposed medium trees** Height: 6-10 m Refer to Trees planting plan
- **Proposed small trees & multi-stem** Height: 3-6 m Refer to Trees planting plan
- **Proposed Hedge** Height: 1-1.5 m Refer to Trees planting plan
- **Existing trees**

DRAFT

N

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CLIENT
ROSCOMMON CITY COUNCIL

Client address:
IRELAND

LOCATION:
HODSON BAY
WATERSPORT AND PUBLIC REALM

HODSON BAY CO. ROSCOMMON IRELAND

DOCUMENT NAME
LANDSCAPE LAYOUT (GA)

DATE
03-07-26

DOCUMENT CODE	STATUS	VERSION	DRAWN BY
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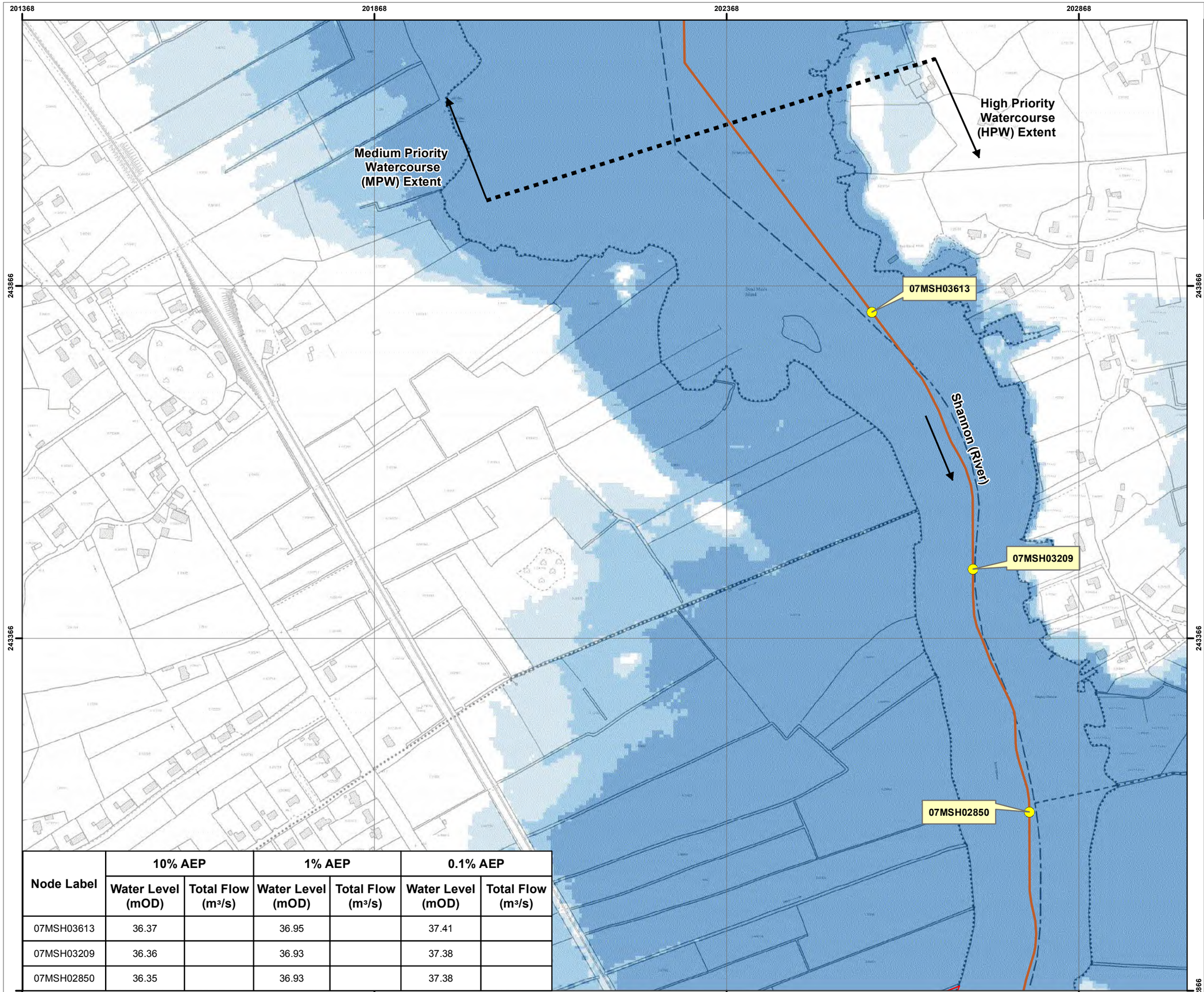
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3511 AH Utrecht
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TEAM / CONSULTANTS
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INOO
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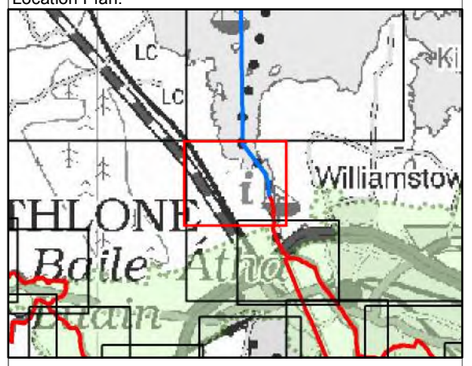
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Appendix C - Athlone and Lanesborough CFRAM Flood Maps



Node Label	10% AEP		1% AEP		0.1% AEP	
	Water Level (mOD)	Total Flow (m^3/s)	Water Level (mOD)	Total Flow (m^3/s)	Water Level (mOD)	Total Flow (m^3/s)
07MSH03613	36.37		36.95		37.41	
07MSH03209	36.36		36.93		37.38	
07MSH02850	36.35		36.93		37.38	

Location Plan:



Legend:

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area

10% AEP Fluvial Flood Extent
(1 in 10 chance in any given year)

1% AEP Fluvial Flood Extent
(1 in 100 chance in any given year)

0.1% AEP Fluvial Flood Extent
(1 in 1000 chance in any given year)

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Co. Meath
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Merrion House
Merrion Road
Dublin 4
D04 R2C5

Project:		SHANNON CFRAM STUDY
Map Type:		EXTENT
Source:		FLUVIAL
Area:		ATHLONE
Scenario:		EXISTING
Drawn by:	EF	Date: JUNE 2016
Checked by:	AC	Date: JUNE 2016
Reviewed by:	MC	Date: JUNE 2016
Approved by:	PS	Date: JUNE 2016
Map Number:		S2526ATN_EXFCD_F1_03
Sheet: 3 of 25		Revision: 0
Map Scale: 1: 5000		Plot Scale: 1:1 @ A3

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200392 200892 201392 201892

269987 269487

High Priority Watercourse (HPW) Extent

Medium Priority Watercourse (MPW) Extent

CLOONBONY

AGUE

08MSH01137

Derrylougbannow

01DRR00155

01DRR00433

Shannon (River)

08MSH00355

Upstream Model Limit

LANESBOROUGH

Node Label	10% AEP		1% AEP		0.1% AEP	
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08MSH00355	36.45		37.08		37.61	
01DRR00433	37.07		37.43		37.54	
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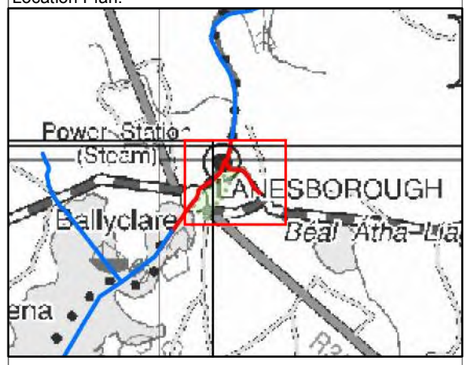
200392 200892 201392 201892

269987 269487

0 50 100 200 300 400 500 Meters

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Location Plan:



Legend:

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area

10% AEP Fluvial Flood Extent
(1 in 10 chance in any given year)

1% AEP Fluvial Flood Extent
(1 in 100 chance in any given year)

0.1% AEP Fluvial Flood Extent
(1 in 1000 chance in any given year)

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Project:		SHANNON CFRAM STUDY
Map Type:		EXTENT
Source:		FLUVIAL
Area:		LANESBOROUGH
Scenario:		EXISTING
Drawn by:	EF	Date: JUNE 2016
Checked by:	AC	Date: JUNE 2016
Reviewed by:	MC	Date: JUNE 2016
Approved by:	PS	Date: JUNE 2016
Map Number:		S2526LAH_EXFCD_F1_01
Sheet: 1 of 7		Revision: 0
Map Scale: 1: 5000		Plot Scale: 1:1 @ A3

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APPENDIX 8-2

SURFACE WATER QUALITY FIELD PARAMETERS

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

Hodson Bay - Surface Water Field Hydrochemistry Results

Site Location ITM X ITM Y	SW01 600774 746263	SW02 600884 746339	SW03 600843 746385	SW04 600916 746755
Round 1: 18/11/2025				
Temperature (C)	8.8	9.1	9.2	8.8
Dissolved Oxygen (%)	77.2	76.1	77.3	77.9
Dissolved Oxygen (mgl)	8.94	8.77	8.86	9.01
Conductivity (µscm)	329	328	341	319
pH	7.9	8.03	7.92	7.94
ORP (mV)	139	144	115	145
ORP (SHE)	348	353	323	354
Round 2: 27/01/2026				
Temperature (C)	5.4	4.9	5.2	5.6
Dissolved Oxygen (%)	83.6	90.3	90.8	92.2
Dissolved Oxygen (mgl)	10.6	11.5	11.5	11.6
Conductivity (µscm)	339	337	328	331
pH	7.93	7.9	7.99	8.06
ORP (mV)	103	173	124	105
ORP (SHE)	315	385	336	316
Round 3: 07/04/2026				
Temperature (C)	10	9.5	9.5	10.3
Dissolved Oxygen (%)	87.1	89.5	90.3	104
Dissolved Oxygen (mgl)	9.8	10.3	10.3	11.6
Conductivity (µscm)	378	370	562	366
pH	7.89	8	7.75	8.19
ORP (mV)	125	115	216	103
ORP (SHE)	333	323	424	311
Round 4: 11/05/2026				
Temperature (C)	14.4	13.2	14.6	15
Dissolved Oxygen (%)	80.7	89.3	145	95.6
Dissolved Oxygen (mgl)	8.24	9.35	14.7	em
Conductivity (µscm)	396	356	692	380
pH	7.69	8.12	8.42	7.3
ORP (mV)	122	117	136	146
ORP (SHE)	326	322	340	350

em = erroneous measurement

APPENDIX 8-3

SCREENED LABORATORY SURFACE WATER QUALITY RESULTS

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

Notes	
nt	not tested
nc	no criteria
*	LODs with x2 and x3 dilution

Test	Units	DWS	Minimum (results above detection limit)	Mean	Maximum	No. of Samples	No. of DWS Exceedances	LOD	Sample ID	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04
									Round	Round 1	Round 1	Round 1	Round 1	Round 2	Round 2	Round 2	Round 2	Round 3	Round 3	Round 3	Round 3	Round 4	Round 4	Round 4	Round 4
									Sample Type	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
									Sampled Date	18/11/2025	18/11/2025	18/11/2025	18/11/2025	27/01/2026	27/01/2026	27/01/2026	27/01/2026	07/04/2026	07/04/2026	07/04/2026	07/04/2026	11/05/2026	11/05/2026	11/05/2026	11/05/2026
Physicochemical																									
pH	pH units	> 6.5 and < 9.5	7.9	8.2	8.5	16	0	<0.01		**8.1**	**8.07**	**8.14**	**7.94**	**8.09**	**8.42**	**8.14**	**7.91**	**8.14**	**8.21**	**8.2**	**8.29**	**8.14**	**8.3**	**8.49**	**7.92**
Electrical Conductivity @25C	µS/cm	2500	327	362	421	16	0	<2		**331**	**327**	**332**	**331**	**364**	**376**	**349**	**356**	**375**	**360**	**362**	**363**	**392**	**369**	**421**	**389**
Total Suspended Solids	mg/l	nc	15	30	49	16	0	<10		<10	<10	<10	<10	**28**	**15**	**31**	**26**	<10	<10	<10	<10	<10	<10	<10	**49**
Turbidity	NTU	nc	1.8	8.6	21	16	0	<0.1		**2.8**	**4.3**	**3.5**	**4.6**	**17.9**	**8.9**	**21.3**	**21**	**4.1**	**6.2**	**2.8**	**9.6**	**1.8**	**8.2**	**3.7**	**17.4**
BOD (Settled)	mg/l	nc	0	-	0	16	0	<1, <2, <3*		<3	<3	<3	<3	<3	<3	<3	<2	<2	<2	<2	<3	<2	<2	<2	<3
COD (Settled)	mg/l	nc	22	31	43	16	0	<7		**39**	**37**	**34**	**36**	**35**	**43**	**31**	**30**	**28**	**27**	**29**	**31**	**23**	**22**	**24**	**31**
Total Organic Carbon	mg/l	nc	8.0	11	13	16	0	<2		**12**	**13**	**12**	**13**	**11**	**11**	**12**	**11**	**9**	**9**	**10**	**10**	**8**	**9**	**9**	**11**
Dissolved Organic Carbon	mg/l	nc	9.0	11	12	16	0	<2		**12**	**12**	**12**	**12**	**9**	**12**	**10**	**12**	**10**	**10**	**10**	**10**	**9**	**9**	**9**	**11**
Total Alkalinity as CaCO3	mg/l	nc	134	161	198	16	0	<1		**136**	**136**	**140**	**134**	**154**	**156**	**152**	**158**	**180**	**156**	**184**	**160**	**188**	**168**	**176**	**198**
Nutrients																									
Ortho Phosphate as P	mg/l	nc	0.03	0.04	0.05	16	0	<0.03		**0.03**	<0.03	<0.03	<0.03	<0.03	<0.03	**0.05**	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Nitrate as N	mg/l	50	0.24	0.58	0.89	16	0	<0.05		**0.39**	**0.41**	**0.39**	**0.36**	**0.66**	**0.73**	**0.72**	**0.69**	**0.74**	**0.86**	**0.89**	**0.68**	**0.24**	**0.66**	**0.57**	**0.32**
Nitrite as N	mg/l	0.5	0.007	0.009	0.01	16	0	<0.006		**0.009**	**0.009**	**0.009**	**0.008**	<0.006	<0.006	<0.006	<0.006	**0.007**	**0.011**	**0.01**	**0.007**	<0.006	<0.006	<0.006	<0.006
Ammoniacal Nitrogen as N	mg/l	0.5	0.03	0.04	0.05	16	0	<0.03		**0.05**	**0.05**	**0.05**	**0.04**	**0.03**	**0.03**	**0.03**	**0.03**	<0.03	**0.04**	<0.03	<0.03	<0.03	<0.03	<0.03	**0.04**
Total Oxidised Nitrogen as N	mg/l	50.5	0.20	0.59	0.90	16	0	<0.2		**0.4**	**0.4**	**0.4**	**0.4**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.9**	**0.9**	**0.7**	**0.2**	**0.7**	**0.6**	**0.3**
Total Nitrogen	mg/l	nc	1.3	1.8	2.4	16	0	<0.5		**1.6**	**1.3**	**1.5**	**1.4**	**2.1**	**1.9**	**1.9**	**2.2**	**1.7**	**1.9**	**1.8**	**1.7**	**1.5**	**1.6**	**1.8**	**2.4**
Ions, Anions and Inorganics																									
Chloride	mg/l	250	13	16	34	16	0	<0.3		**15.3**	**15.4**	**16.3**	**15.4**	**15.2**	**14.8**	**15.2**	**14.5**	**14.3**	**13.5**	**14.1**	**13.4**	**14**	**15.8**	**33.6**	**13.4**
Total Cyanide	mg/l	0.05	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Fluoride	mg/l	1.5	1.9	1.9	1.9	16	1	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	1.9	<0.3	<0.3	<0.3
Sulphate as SO4	mg/l	250	8.1	11	14	16	0	<0.5		**13.6**	**13.6**	**13.4**	**13.4**	**11.8**	**11.9**	**11.5**	**11.4**	**10.8**	**10.9**	**11**	**10.4**	**10**	**10**	**10**	**8.1**
Sulphide	µg/l	nc	0	-	0	16	0	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metals																									
Dissolved Arsenic	µg/l	10	3.1	3.4	3.6	16	0	<2.5		**3.1**	**3.6**	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Dissolved Barium	µg/l	nc	34	37	41	16	0	<3		**39**	**39**	**39**	**39**	**34**	**35**	**34**	**34**	**35**	**37**	**38**	**37**	**39**	**34**	**35**	**41**
Dissolved Beryllium	µg/l	nc	0	-	0	16	0	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Boron	µg/l	1500	19	22	27	16	0	<12		**27**	**19**	**21**	**22**	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
Dissolved Cadmium	µg/l	5	0	-	0	16	0	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Calcium	mg/l	nc	52	60	70	16	0	<0.2		**52.4**	**51.8**	**52.2**	**52.1**	**58.8**	**59.3**	**56.1**	**57.2**	**63.9**	**63.8**	**63.5**	**63.1**	**69.8**	**63.5**	**65.6**	**70.3**
Total Dissolved Chromium	µg/l	25	0	-	0	16	0	<1.5		<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Dissolved Copper	µg/l	40	0	-	0	16	0	<7		<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Dissolved Lead	µg/l	5	0	-	0	16	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dissolved Magnesium	mg/l	nc	3.8	4.1	4.5	16	0	<0.1		**4.1**	**4.1**	**4.1**	**4.1**	**4**	**4**	**3.8**	**3.9**	**4.3**	**4.3**	**4.2**	**4.2**	**4.5**	**4.2**	**4.3**	**4.2**
Dissolved Mercury	µg/l	1	0	-	0	16	0	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dissolved Nickel	µg/l	20	0	-	0	16	0	<2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Dissolved Potassium	mg/l	nc	1.6	2.0	2.3	16	0	<0.1		**2.3**	**2.2**	**2.2**	**2.3**	**2**	**2**	**2**	**1.9**	**1.8**	**1.9**	**1.9**	**1.8**	**1.9**	**1.9**	**1.9**	**1.6**
Dissolved Selenium	µg/l	20	0	-	0	16	0	<3		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Dissolved Sodium	mg/l	200	7.7	9.1	19	16	0	<0.1		**8.8**	**8.6**	**9**	**8.7**	**8.4**	**8.3**	**8.4**	**8**	**8**	**7.8**	**8**	**7.7**	**9.2**	**9.8**	**19**	**8.6**
Dissolved Vanadium	µg/l	nc	0	-	0	16	0	<1.5		<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Dissolved Zinc	µg/l	300	3.0	6.1	22	16	0	<3		<3	<3	**3**	**3**	<3	**4**	**22**	**4**	<3	**4**	<3	**3**	<3	<3	<3	<3
Coliforms																									
Faecal Coliforms Filtration	cfu/100ml	0	0	23	>100	16	15	0		11	15	22	30	81	17	50	32	4	2	**0**	3	5	1	2	>100
Total Coliforms (Filtration)	cfu/100ml	0	1.0	29	>100	16	16	0		12	8	20	25	>100	29	67	56	6	10	19	14	3	1	1	>100
VOCs																									
Benzene	µg/l	1	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
Ethylbenzene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
Toluene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
m/p-Xylene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
o-Xylene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
MTBE	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
Pesticides																									
Aldrin	µg/l	0.03	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Azinphos methyl	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-TDE	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-DDE	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-DDT	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Diazinon	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Dichlorvos	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Dieldrin	µg/l	0.03	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Disulfoton	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endosulphan I	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endosulphan II	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endosulphan sulphate	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endrin	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Ethion	µg/l	0.1	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt

Notes	
nt	not tested
nc	no criteria
*	LODs with x2 and x3 dilution

Test	Units	DWS	Minimum (results above detection limit)	Mean	Maximum	No. of Samples	No. of DWS Exceedances	LOD	Sample ID	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04
									Round	Round 1	Round 1	Round 1	Round 1	Round 2	Round 2	Round 2	Round 2	Round 3	Round 3	Round 3	Round 3	Round 4	Round 4	Round 4	Round 4
									Sample Type	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
									Sampled Date	18/11/2025	18/11/2025	18/11/2025	18/11/2025	27/01/2026	27/01/2026	27/01/2026	27/01/2026	07/04/2026	07/04/2026	07/04/2026	07/04/2026	11/05/2026	11/05/2026	11/05/2026	11/05/2026
Fenitrothion	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Alpha-HCH (BHC)	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Beta-HCH (BHC)	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Delta-HCH (BHC)	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Gamma-HCH (BHC)	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Heptachlor	µg/l	0.03	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Heptachlor Epoxide	µg/l	0.03	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Malathion	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
o,p'-Methoxychlor	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-Methoxychlor	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Mevinphos	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Methyl Parathion	µg/l	0.1	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
TPH CWG																									
>C5-C6	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C6-C8	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C8-C10	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C10-C12	µg/l	nc	0	-	0	8	0	<5	<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
>C12-C16	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C16-C21	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C21-C35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
Total aliphatics C5-35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C5-EC7	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC7-EC8	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC8-EC10	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC10-EC12	µg/l	nc	0	-	0	8	0	<5	<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
>EC12-EC16	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC16-EC21	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC21-EC35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
Total aromatics C5-35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
Total aliphatics and aromatics(C5-35)	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt

Notes	
nt	not tested
nc	no criteria
*	LODs with x2 and x3 dilution

Test	Units	MAC-EQS	Minimum (results above detection limit)	Mean	Maximum	No. of Samples	No. of MAC-EQS Exceedances	LOD	Sample ID	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04
									Round	Round 1	Round 1	Round 1	Round 1	Round 2	Round 2	Round 2	Round 2	Round 3	Round 3	Round 3	Round 3	Round 4	Round 4	Round 4	Round 4
									Sample Type	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
									Sampled Date	18/11/2025	18/11/2025	18/11/2025	18/11/2025	27/01/2026	27/01/2026	27/01/2026	27/01/2026	07/04/2026	07/04/2026	07/04/2026	07/04/2026	11/05/2026	11/05/2026	11/05/2026	11/05/2026
Physicochemical																									
pH	pH units	4.5 < pH < 9.0	7.9	8.2	8.5	16	0	<0.01		**8.1**	**8.07**	**8.14**	**7.94**	**8.09**	**8.42**	**8.14**	**7.91**	**8.14**	**8.21**	**8.2**	**8.29**	**8.14**	**8.3**	**8.49**	**7.92**
Electrical Conductivity @25C	µS/cm	nc	327	362	421	16	0	<2		**331**	**327**	**332**	**331**	**364**	**376**	**349**	**356**	**375**	**360**	**362**	**363**	**392**	**369**	**421**	**389**
Total Suspended Solids	mg/l	nc	15	30	49	16	0	<10		<10	<10	<10	<10	**28**	**15**	**31**	**26**	<10	<10	<10	<10	<10	<10	<10	**49**
Turbidity	NTU	nc	1.8	8.6	21	16	0	<0.1		**2.8**	**4.3**	**3.5**	**4.6**	**17.9**	**8.9**	**21.3**	**21**	**4.1**	**6.2**	**2.8**	**9.6**	**1.8**	**8.2**	**3.7**	**17.4**
BOD (Settled)	mg/l	1.5	0	-	0	16	0	<1, <2, <3*		<3	<3	<3	<3	<3	<3	<3	<2	<2	<2	<2	<3	<2	<2	<2	<3
COD (Settled)	mg/l	nc	22	31	43	16	0	<7		**39**	**37**	**34**	**36**	**35**	**43**	**31**	**30**	**28**	**27**	**29**	**31**	**23**	**22**	**24**	**31**
Total Organic Carbon	mg/l	nc	8.0	11	13	16	0	<2		**12**	**13**	**12**	**13**	**11**	**11**	**12**	**11**	**9**	**9**	**10**	**10**	**8**	**9**	**9**	**11**
Dissolved Organic Carbon	mg/l	nc	9.0	11	12	16	0	<2		**12**	**12**	**12**	**12**	**9**	**12**	**10**	**12**	**10**	**10**	**10**	**10**	**9**	**9**	**9**	**11**
Total Alkalinity as CaCO3	mg/l	nc	134	161	198	16	0	<1		**136**	**136**	**140**	**134**	**154**	**156**	**152**	**158**	**180**	**156**	**184**	**160**	**188**	**168**	**176**	**198**
Nutrients																									
Ortho Phosphate as P	mg/l	0.075	0.03	0.04	0.05	16	0	<0.03		**0.03**	<0.03	<0.03	<0.03	<0.03	<0.03	**0.05**	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Nitrate as N	mg/l	nc	0.24	0.58	0.89	16	0	<0.05		**0.39**	**0.41**	**0.39**	**0.36**	**0.66**	**0.73**	**0.72**	**0.69**	**0.74**	**0.86**	**0.89**	**0.68**	**0.24**	**0.66**	**0.57**	**0.32**
Nitrite as N	mg/l	nc	0.007	0.009	0.01	16	0	<0.006		**0.009**	**0.009**	**0.009**	**0.008**	<0.006	<0.006	<0.006	<0.006	**0.007**	**0.011**	**0.01**	**0.007**	<0.006	<0.006	<0.006	<0.006
Ammoniacal Nitrogen as N	mg/l	0.14	0.03	0.04	0.05	16	0	<0.03		**0.05**	**0.05**	**0.05**	**0.04**	**0.03**	**0.03**	**0.03**	**0.03**	<0.03	**0.04**	<0.03	<0.03	<0.03	<0.03	<0.03	**0.04**
Total Oxidised Nitrogen as N	mg/l	nc	0.20	0.59	0.90	16	0	<0.2		**0.4**	**0.4**	**0.4**	**0.4**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.9**	**0.9**	**0.7**	**0.2**	**0.7**	**0.6**	**0.3**
Total Nitrogen	mg/l	nc	1.3	1.8	2.4	16	0	<0.5		**1.6**	**1.3**	**1.5**	**1.4**	**2.1**	**1.9**	**1.9**	**2.2**	**1.7**	**1.9**	**1.8**	**1.7**	**1.5**	**1.6**	**1.8**	**2.4**
Ions, Anions and Inorganics																									
Chloride	mg/l	nc	13	16	34	16	0	<0.3		**15.3**	**15.4**	**16.3**	**15.4**	**15.2**	**14.8**	**15.2**	**14.5**	**14.3**	**13.5**	**14.1**	**13.4**	**14**	**15.8**	**33.6**	**13.4**
Total Cyanide	mg/l	10	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Fluoride	mg/l	0.5	1.9	1.9	1.9	16	1	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	1.9	<0.3	<0.3	<0.3
Sulphate as SO4	mg/l	nc	8.1	11	14	16	0	<0.5		**13.6**	**13.6**	**13.4**	**13.4**	**11.8**	**11.9**	**11.5**	**11.4**	**10.8**	**10.9**	**11**	**10.4**	**10**	**10**	**10**	**8.1**
Sulphide	µg/l	nc	0	-	0	16	0	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metals																									
Dissolved Arsenic	µg/l	25	3.1	3.4	3.6	16	0	<2.5		**3.1**	**3.6**	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Dissolved Barium	µg/l	nc	34	37	41	16	0	<3		**39**	**39**	**39**	**39**	**34**	**35**	**34**	**34**	**35**	**37**	**38**	**37**	**39**	**34**	**35**	**41**
Dissolved Beryllium	µg/l	nc	0	-	0	16	0	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Boron	µg/l	nc	19	22	27	16	0	<12		**27**	**19**	**21**	**22**	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
Dissolved Cadmium	µg/l	0.45	0	-	0	16	0	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Calcium	mg/l	nc	52	60	70	16	0	<0.2		**52.4**	**51.8**	**52.2**	**52.1**	**58.8**	**59.3**	**56.1**	**57.2**	**63.9**	**63.8**	**63.5**	**63.1**	**69.8**	**63.5**	**65.6**	**70.3**
Total Dissolved Chromium	µg/l	32	0	-	0	16	0	<1.5		<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Dissolved Copper	µg/l	40	0	-	0	16	0	<7		<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Dissolved Lead	µg/l	14	0	-	0	16	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dissolved Magnesium	mg/l	nc	3.8	4.1	4.5	16	0	<0.1		**4.1**	**4.1**	**4.1**	**4.1**	**4**	**4**	**3.8**	**3.9**	**4.3**	**4.3**	**4.2**	**4.2**	**4.5**	**4.2**	**4.3**	**4.2**
Dissolved Mercury	µg/l	0.07	0	-	0	16	0	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dissolved Nickel	µg/l	34	0	-	0	16	0	<2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Dissolved Potassium	mg/l	nc	1.6	2.0	2.3	16	0	<0.1		**2.3**	**2.2**	**2.2**	**2.3**	**2**	**2**	**2**	**1.9**	**1.8**	**1.9**	**1.9**	**1.8**	**1.9**	**1.9**	**1.9**	**1.6**
Dissolved Selenium	µg/l	nc	0	-	0	16	0	<3		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Dissolved Sodium	mg/l	nc	7.7	9.1	19	16	0	<0.1		**8.8**	**8.6**	**9**	**8.7**	**8.4**	**8.3**	**8.4**	**8**	**8**	**7.8**	**8**	**7.7**	**9.2**	**9.8**	**19**	**8.6**
Dissolved Vanadium	µg/l	nc	0	-	0	16	0	<1.5		<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Dissolved Zinc	µg/l	300	3.0	6.1	22	16	0	<3		<3	<3	**3**	**3**	<3	**4**	**22**	**4**	<3	**4**	<3	**3**	<3	<3	<3	<3
Coliforms																									
Faecal Coliforms Filtration	cfu/100ml	nc	1	23	>100	16	0	0		**11**	**15**	**22**	**30**	**81**	**17**	**50**	**32**	**4**	**2**	**0**	**3**	**5**	**1**	**2**	**>100**
Total Coliforms (Filtration)	cfu/100ml	nc	1	29	>100	16	0	0		**12**	**8**	**20**	**25**	**>100**	**29**	**67**	**56**	**6**	**10**	**19**	**14**	**3**	**1**	**1**	**>100**
VOCs																									
Benzene	µg/l	50	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
Ethylbenzene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
Toluene	µg/l	10	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
m/p-Xylene	µg/l	10	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
o-Xylene	µg/l	10	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
MTBE	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
Pesticides																									
Aldrin	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Azinphos methyl	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-TDE	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-DDE	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-DDT	µg/l	0.01	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Diazinon	µg/l	0.02	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Dichlorvos	µg/l	0.0007	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Dieldrin	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Disulfoton	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endosulphan I	µg/l	0.001	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endosulphan II	µg/l	0.001	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endosulphan sulphate	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endrin	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Ethion	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt

Notes	
nt	not tested
nc	no criteria
*	LODs with x2 and x3 dilution

Test	Units	MAC-EQS	Minimum (results above detection limit)	Mean	Maximum	No. of Samples	No. of MAC-EQS Exceedances	LOD	Sample ID	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04
									Round	Round 1	Round 1	Round 1	Round 1	Round 2	Round 2	Round 2	Round 2	Round 3	Round 3	Round 3	Round 3	Round 4	Round 4	Round 4	Round 4
									Sample Type	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
									Sampled Date	18/11/2025	18/11/2025	18/11/2025	18/11/2025	27/01/2026	27/01/2026	27/01/2026	27/01/2026	07/04/2026	07/04/2026	07/04/2026	07/04/2026	11/05/2026	11/05/2026	11/05/2026	11/05/2026
Fenitrothion	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Alpha-HCH (BHC)	µg/l	0.04	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Beta-HCH (BHC)	µg/l	0.04	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Delta-HCH (BHC)	µg/l	0.04	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Gamma-HCH (BHC)	µg/l	0.04	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Heptachlor	µg/l	0.0003	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Heptachlor Epoxide	µg/l	0.0003	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Malathion	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
o,p'-Methoxychlor	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-Methoxychlor	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Mevinphos	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Methyl Parathion	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
TPH CWG																									
>C5-C6	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C6-C8	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C8-C10	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C10-C12	µg/l	nc	0	-	0	8	0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
>C12-C16	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C16-C21	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C21-C35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
Total aliphatics C5-35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C5-EC7	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC7-EC8	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC8-EC10	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC10-EC12	µg/l	nc	0	-	0	8	0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
>EC12-EC16	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC16-EC21	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC21-EC35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
Total aromatics C5-35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
Total aliphatics and aromatics(C5-35)	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt

Notes	
nc	no criteria
naac	na annual average criteria
ana	average not appropriate, <3 detections across sampling period
*	LODs with x2 and x3 dilution

Test	Units	AA-EQS	Minimum (results above detection limit)	Mean	Maximum	No. of Samples	No. of AA-EQS Exceedances	LOD	Sample ID	SW01	SW02	SW03	SW04
									Round	AA	AA	AA	AA
									Sample Type	SW	SW	SW	SW
									Sampled Date	Various	Various	Various	Various
Physicochemical													
pH	pH units	4.5< pH < 9.0	7.9	8.2	8.5	16	0	<0.01		**8.1**	**8.3**	**8.2**	**8.0**
Electrical Conductivity @25C	µS/cm	nc	327	362	421	16	0	<2		naac	naac	naac	naac
Total Suspended Solids	mg/l	nc	15	30	49	16	0	<10		naac	naac	naac	naac
Turbidity	NTU	nc	1.8	8.6	21	16	0	<0.1		naac	naac	naac	naac
BOD (Settled)	mg/l	1.5	0	-	0	16	0	<1, <2, <3*		ana	ana	ana	ana
COD (Settled)	mg/l	nc	22	31	43	16	0	<7		naac	naac	naac	naac
Total Organic Carbon	mg/l	nc	8.0	11	13	16	0	<2		naac	naac	naac	naac
Dissolved Organic Carbon	mg/l	nc	9.0	11	12	16	0	<2		naac	naac	naac	naac
Total Alkalinity as CaCO3	mg/l	nc	134	161	198	16	0	<1		naac	naac	naac	naac
Nutrients													
Ortho Phosphate as P	mg/l	0.035	0.03	0.04	0.05	16	0	<0.03		ana	ana	ana	ana
Nitrate as N	mg/l	nc	0.24	0.58	0.89	16	0	<0.05		naac	naac	naac	naac
Nitrite as N	mg/l	nc	0.007	0.009	0.01	16	0	<0.006		naac	naac	naac	naac
Ammoniacal Nitrogen as N	mg/l	0.065	0.02	0.03	0.05	16	0	<0.03		ana	**0.03**	ana	**0.03**
Total Oxidised Nitrogen as N	mg/l	nc	0.20	0.59	0.90	16	0	<0.2		naac	naac	naac	naac
Total Nitrogen	mg/l	nc	1.3	1.8	2.4	16	0	<0.5		naac	naac	naac	naac
Ions, Anions and Inorganics													
Chloride	mg/l	nc	13	16	34	16	0	<0.3		naac	naac	naac	naac
Total Cyanide	mg/l	10	0	-	0	8	0	<0.01		ana	ana	ana	ana
Fluoride	mg/l	0.5	1.9	1.9	1.9	16	0	<0.3		ana	ana	ana	ana
Sulphate as SO4	mg/l	nc	8.1	11	14	16	0	<0.5		naac	naac	naac	naac
Sulphide	µg/l	nc	0	-	0	16	0	<10		naac	naac	naac	naac
Metals													
Dissolved Arsenic	µg/l	25	3.1	3.4	3.6	16	0	<2.5		ana	ana	ana	ana
Dissolved Barium	µg/l	nc	34	37	41	16	0	<3		naac	naac	naac	naac
Dissolved Beryllium	µg/l	nc	0	-	0	16	0	<0.5		naac	naac	naac	naac
Dissolved Boron	µg/l	nc	19	22	27	16	0	<12		naac	naac	naac	naac
Dissolved Cadmium	µg/l	0.008	0	-	0	16	0	<0.5		ana	ana	ana	ana
Dissolved Calcium	mg/l	nc	52	60	70	16	0	<0.2		naac	naac	naac	naac
Total Dissolved Chromium	µg/l	3.4	0	-	0	16	0	<1.5		ana	ana	ana	ana
Dissolved Copper	µg/l	40	0	-	0	16	0	<7		ana	ana	ana	ana
Dissolved Lead	µg/l	1.2	0	-	0	16	0	<5		ana	ana	ana	ana
Dissolved Magnesium	mg/l	nc	3.8	4.1	4.5	16	0	<0.1		naac	naac	naac	naac
Dissolved Mercury	µg/l	0.05	0	-	0	16	0	<1		ana	ana	ana	ana
Dissolved Nickel	µg/l	4	0	-	0	16	0	<2		ana	ana	ana	ana
Dissolved Potassium	mg/l	nc	1.6	2.0	2.3	16	0	<0.1		naac	naac	naac	naac
Dissolved Selenium	µg/l	nc	0	-	0	16	0	<3		naac	naac	naac	naac
Dissolved Sodium	mg/l	nc	7.7	9.1	19	16	0	<0.1		naac	naac	naac	naac
Dissolved Vanadium	µg/l	nc	0	-	0	16	0	<1.5		naac	naac	naac	naac
Dissolved Zinc	µg/l	300	1.5	5.6	22	16	0	<3		ana	ana	ana	**2.9**
Coliforms													
Faecal Coliforms Filtration	cfu/100ml	nc	1	23	>100	0	0	0		naac	naac	naac	naac
Total Coliforms (Filtration)	cfu/100ml	nc	1	29	>100	0	0	0		naac	naac	naac	naac
VOCs													
Benzene	µg/l	10	0	-	0	8	0	<5		ana	ana	ana	ana
Ethylbenzene	µg/l	nc	0	-	0	8	0	<5		naac	naac	naac	naac
Toluene	µg/l	10	0	-	0	8	0	<5		ana	ana	ana	ana
m/p-Xylene	µg/l	10	0	-	0	8	0	<5		ana	ana	ana	ana
o-Xylene	µg/l	10	0	-	0	8	0	<5		ana	ana	ana	ana
MTBE	µg/l	nc	0	-	0	8	0	<5		naac	naac	naac	naac
Pesticides													
Aldrin	µg/l	nc	0	-	0	8	0	<0.01		naac	naac	naac	naac
Azinphos methyl	µg/l	nc	0	-	0	8	0	<0.01		naac	naac	naac	naac
p,p'-TDE	µg/l	nc	0	-	0	8	0	<0.01		naac	naac	naac	naac
p,p'-DDE	µg/l	nc	0	-	0	8	0	<0.01		naac	naac	naac	naac
p,p'-DDT	µg/l	0.01	0	-	0	8	0	<0.01		ana	ana	ana	ana
Diazinon	µg/l	0.01	0	-	0	8	0	<0.01		ana	ana	ana	ana
Dichlorvos	µg/l	0.0006	0	-	0	8	0	<0.01		ana	ana	ana	ana
Dieldrin	µg/l	nc	0	-	0	8	0	<0.01		naac	naac	naac	naac
Disulfoton	µg/l	nc	0	-	0	8	0	<0.01		naac	naac	naac	naac
Endosulphan I	µg/l	0.005	0	-	0	8	0	<0.01		ana	ana	ana	ana
Endosulphan II	µg/l	0.005	0	-	0	8	0	<0.01		ana	ana	ana	ana
Endosulphan sulphate	µg/l	nc	0	-	0	8	0	<0.01		naac	naac	naac	naac
Endrin	µg/l	nc	0	-	0	8	0	<0.01		naac	naac	naac	naac
Ethion	µg/l	nc	0	-	0	8	0	<0.01		naac	naac	naac	naac

Notes	
nc	no criteria
naac	na annual average criteria
ana	average not appropriate, <3 detections across sampling period
*	LODs with x2 and x3 dilution

Test	Units	AA-EQS	Minimum (results above detection limit)	Mean	Maximum	No. of Samples	No. of AA-EQS Exceedances	LOD	Sample ID: SW01	Sample ID: SW02	Sample ID: SW03	Sample ID: SW04
								Round	AA	AA	AA	AA
								Sample Type	SW	SW	SW	SW
								Sampled Date	Various	Various	Various	Various
Fenitrothion	µg/l	nc	0	-	0	8	0	<0.01	naac	naac	naac	naac
Alpha-HCH (BHC)	µg/l	0.02	0	-	0	8	0	<0.01	ana	ana	ana	ana
Beta-HCH (BHC)	µg/l	0.02	0	-	0	8	0	<0.01	ana	ana	ana	ana
Delta-HCH (BHC)	µg/l	0.02	0	-	0	8	0	<0.01	ana	ana	ana	ana
Gamma-HCH (BHC)	µg/l	0.02	0	-	0	8	0	<0.01	ana	ana	ana	ana
Heptachlor	µg/l	0.0000002	0	-	0	8	0	<0.01	ana	ana	ana	ana
Heptachlor Epoxide	µg/l	0.0000002	0	-	0	8	0	<0.01	ana	ana	ana	ana
Malathion	µg/l	nc	0	-	0	8	0	<0.01	naac	naac	naac	naac
o,p'-Methoxychlor	µg/l	nc	0	-	0	8	0	<0.01	naac	naac	naac	naac
p,p'-Methoxychlor	µg/l	nc	0	-	0	8	0	<0.01	naac	naac	naac	naac
Mevinphos	µg/l	nc	0	-	0	8	0	<0.01	naac	naac	naac	naac
Methyl Parathion	µg/l	nc	0	-	0	8	0	<0.01	naac	naac	naac	naac
TPH CWG												
>C5-C6	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>C6-C8	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>C8-C10	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>C10-C12	µg/l	nc	0	-	0	8	0	<5	naac	naac	naac	naac
>C12-C16	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>C16-C21	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>C21-C35	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
Total aliphatics C5-35	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>C5-EC7	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>EC7-EC8	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>EC8-EC10	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>EC10-EC12	µg/l	nc	0	-	0	8	0	<5	naac	naac	naac	naac
>EC12-EC16	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>EC16-EC21	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
>EC21-EC35	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
Total aromatics C5-35	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac
Total aliphatics and aromatics(C5-35)	µg/l	nc	0	-	0	8	0	<10	naac	naac	naac	naac

Notes	
nt	not tested
nc	no criteria
*	LODs with x2 and x3 dilution

Test	Units	SALM. & CYPR.	Minimum (results above detection limit)	Mean	Maximum	No. of Samples	No. of SALM. & CYPR. Exceedances	LOD	Sample ID	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04
									Round	Round 1	Round 1	Round 1	Round 1	Round 2	Round 2	Round 2	Round 2	Round 3	Round 3	Round 3	Round 3	Round 4	Round 4	Round 4	Round 4
									Sample Type	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
									Sampled Date	18/11/2025	18/11/2025	18/11/2025	18/11/2025	27/01/2026	27/01/2026	27/01/2026	27/01/2026	07/04/2026	07/04/2026	07/04/2026	07/04/2026	11/05/2026	11/05/2026	11/05/2026	11/05/2026
Physicochemical																									
pH	pH units	6.0 < pH < 9.0	7.9	8.2	8.5	16	0	<0.01		**8.1**	**8.07**	**8.14**	**7.94**	**8.09**	**8.42**	**8.14**	**7.91**	**8.14**	**8.21**	**8.2**	**8.29**	**8.14**	**8.3**	**8.49**	**7.92**
Electrical Conductivity @25C	µS/cm	nc	327	362	421	16	0	<2		**331**	**327**	**332**	**331**	**364**	**376**	**349**	**356**	**375**	**360**	**362**	**363**	**392**	**369**	**421**	**389**
Total Suspended Solids	mg/l	25	15	30	49	16	4	<10		<10	<10	<10	<10	28	**15**	31	26	<10	<10	<10	<10	<10	<10	<10	49
Turbidity	NTU	nc	1.8	8.6	21	16	0	<0.1		**2.8**	**4.3**	**3.5**	**4.6**	**17.9**	**8.9**	**21.3**	**21**	**4.1**	**6.2**	**2.8**	**9.6**	**1.8**	**8.2**	**3.7**	**17.4**
BOD (Settled)	mg/l	3	0	-	0	16	0	<1, <2, <3*		<3	<3	<3	<3	<3	<3	<3	<2	<2	<2	<2	<3	<2	<2	<2	<3
COD (Settled)	mg/l	nc	22	31	43	16	0	<7		**39**	**37**	**34**	**36**	**35**	**43**	**31**	**30**	**28**	**27**	**29**	**31**	**23**	**22**	**24**	**31**
Total Organic Carbon	mg/l	nc	8.0	11	13	16	0	<2		**12**	**13**	**12**	**13**	**11**	**11**	**12**	**11**	**9**	**9**	**10**	**10**	**8**	**9**	**9**	**11**
Dissolved Organic Carbon	mg/l	nc	9.0	11	12	16	0	<2		**12**	**12**	**12**	**12**	**9**	**12**	**10**	**12**	**10**	**10**	**10**	**10**	**9**	**9**	**9**	**11**
Total Alkalinity as CaCO3	mg/l	nc	134	161	198	16	0	<1		**136**	**136**	**140**	**134**	**154**	**156**	**152**	**158**	**180**	**156**	**184**	**160**	**188**	**168**	**176**	**198**
Nutrients																									
Ortho Phosphate as P	mg/l	nc	0.03	0.04	0.05	16	0	<0.03		**0.03**	<0.03	<0.03	<0.03	<0.03	<0.03	**0.05**	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Nitrate as N	mg/l	nc	0.24	0.58	0.89	16	0	<0.05		**0.39**	**0.41**	**0.39**	**0.36**	**0.66**	**0.73**	**0.72**	**0.69**	**0.74**	**0.86**	**0.89**	**0.68**	**0.24**	**0.66**	**0.57**	**0.32**
Nitrite as N	mg/l	0.01	0.007	0.009	0.01	16	1	<0.006		**0.009**	**0.009**	**0.009**	**0.008**	<0.006	<0.006	<0.006	<0.006	**0.007**	0.011	**0.01**	**0.007**	<0.006	<0.006	<0.006	<0.006
Ammoniacal Nitrogen as N	mg/l	0.005	0.03	0.04	0.05	16	10	<0.03		0.05	0.05	0.05	0.04	0.03	0.03	0.03	0.03	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	0.04
Total Oxidised Nitrogen as N	mg/l	nc	0.20	0.59	0.90	16	0	<0.2		**0.4**	**0.4**	**0.4**	**0.4**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.9**	**0.9**	**0.7**	**0.2**	**0.7**	**0.6**	**0.3**
Total Nitrogen	mg/l	nc	1.3	1.8	2.4	16	0	<0.5		**1.6**	**1.3**	**1.5**	**1.4**	**2.1**	**1.9**	**1.9**	**2.2**	**1.7**	**1.9**	**1.8**	**1.7**	**1.5**	**1.6**	**1.8**	**2.4**
Ions, Anions and Inorganics																									
Chloride	mg/l	nc	13	16	34	16	0	<0.3		**15.3**	**15.4**	**16.3**	**15.4**	**15.2**	**14.8**	**15.2**	**14.5**	**14.3**	**13.5**	**14.1**	**13.4**	**14**	**15.8**	**33.6**	**13.4**
Total Cyanide	mg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Fluoride	mg/l	nc	1.9	1.9	1.9	16	0	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	**1.9**	<0.3	<0.3	<0.3
Sulphate as SO4	mg/l	nc	8.1	11	14	16	0	<0.5		**13.6**	**13.6**	**13.4**	**13.4**	**11.8**	**11.9**	**11.5**	**11.4**	**10.8**	**10.9**	**11**	**10.4**	**10**	**10**	**10**	**8.1**
Sulphide	µg/l	nc	0	-	0	16	0	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metals																									
Dissolved Arsenic	µg/l	nc	3.1	3.4	3.6	16	0	<2.5		**3.1**	**3.6**	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Dissolved Barium	µg/l	nc	34	37	41	16	0	<3		**39**	**39**	**39**	**39**	**34**	**35**	**34**	**34**	**35**	**37**	**38**	**37**	**39**	**34**	**35**	**41**
Dissolved Beryllium	µg/l	nc	0	-	0	16	0	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Boron	µg/l	nc	19	22	27	16	0	<12		**27**	**19**	**21**	**22**	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
Dissolved Cadmium	µg/l	nc	0	-	0	16	0	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Calcium	mg/l	nc	52	60	70	16	0	<0.2		**52.4**	**51.8**	**52.2**	**52.1**	**58.8**	**59.3**	**56.1**	**57.2**	**63.9**	**63.8**	**63.5**	**63.1**	**69.8**	**63.5**	**65.6**	**70.3**
Total Dissolved Chromium	µg/l	nc	0	-	0	16	0	<1.5		<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Dissolved Copper	µg/l	40	0	-	0	16	0	<7		<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Dissolved Lead	µg/l	nc	0	-	0	16	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dissolved Magnesium	mg/l	nc	3.8	4.1	4.5	16	0	<0.1		**4.1**	**4.1**	**4.1**	**4.1**	**4**	**4**	**3.8**	**3.9**	**4.3**	**4.3**	**4.2**	**4.2**	**4.5**	**4.2**	**4.3**	**4.2**
Dissolved Mercury	µg/l	nc	0	-	0	16	0	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dissolved Nickel	µg/l	nc	0	-	0	16	0	<2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Dissolved Potassium	mg/l	nc	1.6	2.0	2.3	16	0	<0.1		**2.3**	**2.2**	**2.2**	**2.3**	**2**	**2**	**2**	**1.9**	**1.8**	**1.9**	**1.9**	**1.8**	**1.9**	**1.9**	**1.9**	**1.6**
Dissolved Selenium	µg/l	nc	0	-	0	16	0	<3		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Dissolved Sodium	mg/l	nc	7.7	9.1	19	16	0	<0.1		**8.8**	**8.6**	**9**	**8.7**	**8.4**	**8.3**	**8.4**	**8**	**8**	**7.8**	**8**	**7.7**	**9.2**	**9.8**	**19**	**8.6**
Dissolved Vanadium	µg/l	nc	0	-	0	16	0	<1.5		<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Dissolved Zinc	µg/l	300	3.0	6.1	22	16	0	<3		<3	<3	**3**	**3**	<3	**4**	**22**	**4**	<3	**4**	<3	**3**	<3	<3	<3	<3
Coliforms																									
Faecal Coliforms Filtration	cfu/100ml	nc	1	23	>100	16	0	0		**11**	**15**	**22**	**30**	**81**	**17**	**50**	**32**	**4**	**2**	**0**	**3**	**5**	**1**	**2**	**>100**
Total Coliforms (Filtration)	cfu/100ml	nc	1	29	>100	16	0	0		**12**	**8**	**20**	**25**	**>100**	**29**	**67**	**56**	**6**	**10**	**19**	**14**	**3**	**1**	**1**	**>100**
VOCs																									
Benzene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
Ethylbenzene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
Toluene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
m/p-Xylene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
o-Xylene	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
MTBE	µg/l	nc	0	-	0	8	0	<5		<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
Pesticides																									
Aldrin	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Azinphos methyl	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-TDE	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-DDE	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-DDT	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Diazinon	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Dichlorvos	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Dieldrin	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Disulfoton	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endosulphan I	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endosulphan II	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endosulphan sulphate	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Endrin	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Ethion	µg/l	nc	0	-	0	8	0	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt

Notes	
nt	not tested
nc	no criteria
*	LODs with x2 and x3 dilution

Test	Units	SALM. & CYPR.	Minimum (results above detection limit)	Mean	Maximum	No. of Samples	No. of SALM. & CYPR. Exceedances	LOD	Sample ID	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04	SW01	SW02	SW03	SW04
									Round	Round 1	Round 1	Round 1	Round 1	Round 2	Round 2	Round 2	Round 2	Round 3	Round 3	Round 3	Round 3	Round 4	Round 4	Round 4	Round 4
									Sample Type	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
									Sampled Date	18/11/2025	18/11/2025	18/11/2025	18/11/2025	27/01/2026	27/01/2026	27/01/2026	27/01/2026	07/04/2026	07/04/2026	07/04/2026	07/04/2026	11/05/2026	11/05/2026	11/05/2026	11/05/2026
Fenitrothion	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Alpha-HCH (BHC)	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Beta-HCH (BHC)	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Delta-HCH (BHC)	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Gamma-HCH (BHC)	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Heptachlor	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Heptachlor Epoxide	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Malathion	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
o,p'-Methoxychlor	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
p,p'-Methoxychlor	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Mevinphos	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
Methyl Parathion	µg/l	nc	0	-	0	8	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nt	nt	nt	nt	nt	nt	nt	nt
TPH CWG																									
>C5-C6	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C6-C8	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C8-C10	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C10-C12	µg/l	nc	0	-	0	8	0	<5	<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
>C12-C16	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C16-C21	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C21-C35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
Total aliphatics C5-35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>C5-EC7	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC7-EC8	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC8-EC10	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC10-EC12	µg/l	nc	0	-	0	8	0	<5	<5	<5	<5	<5	<5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt
>EC12-EC16	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC16-EC21	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
>EC21-EC35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
Total aromatics C5-35	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt
Total aliphatics and aromatics(C5-35)	µg/l	nc	0	-	0	8	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	nt	nt	nt	nt	nt	nt	nt	nt

APPENDIX 8-4

WATER QUALITY LABORATORY REPORTS

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

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Ireland

Attention :	Colin Fitzgerald
Date :	2nd December, 2025
Your reference :	241220-F
Our reference :	Test Report 25/19348 Batch 1
Location :	Hodson Bay
Date samples received :	20th November, 2025
Status :	Final Report
Issue :	202512021145

Four samples were received for analysis on 20th November, 2025 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 13.322 kg of CO2

Scope 1&2&3 emissions - 31.482 kg of CO2

Authorised By:

Phil Sommerton BSc
Senior Technical Account Manager

Please include all sections of this report if it is reproduced

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald
EMT Job No: 25/19348

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

EMT Sample No.	1-10	11-20	21-30	31-40							LOD/LOR	Units	Method No.
Sample ID	SW01	SW02	SW03	SW04									
Depth													
COC No / misc													
Containers	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G									
Sample Date	18/11/2025 11:00	18/11/2025 11:20	18/11/2025 11:40	18/11/2025 12:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	20/11/2025	20/11/2025	20/11/2025	20/11/2025									
Dissolved Arsenic #	3.1	3.6	<2.5	<2.5							<2.5	ug/l	TM30/PM14
Dissolved Barium #	39	39	39	39							<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Boron	27	19	21	22							<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Calcium #	52.4	51.8	52.2	52.1							<0.2	mg/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7	<7	<7							<7	ug/l	TM30/PM14
Dissolved Lead #	<5	<5	<5	<5							<5	ug/l	TM30/PM14
Dissolved Magnesium #	4.1	4.1	4.1	4.1							<0.1	mg/l	TM30/PM14
Dissolved Mercury #	<1	<1	<1	<1							<1	ug/l	TM30/PM14
Dissolved Nickel #	<2	<2	<2	<2							<2	ug/l	TM30/PM14
Dissolved Potassium #	2.3	2.2	2.2	2.3							<0.1	mg/l	TM30/PM14
Dissolved Selenium #	<3	<3	<3	<3							<3	ug/l	TM30/PM14
Dissolved Sodium #	8.8	8.6	9.0	8.7							<0.1	mg/l	TM30/PM14
Dissolved Vanadium #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Zinc #	<3	<3	3	3							<3	ug/l	TM30/PM14
Pesticides													
Organochlorine Pesticides													
Aldrin	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Alpha-HCH (BHC)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Beta-HCH (BHC)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Delta-HCH (BHC)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Dieldrin	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Endosulphan I	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Endosulphan II	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Endosulphan sulphate	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Endrin	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Gamma-HCH (BHC)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Heptachlor	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Heptachlor Epoxide	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
o,p'-Methoxychlor	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
p,p'-DDE	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
p,p'-DDT	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
p,p'-Methoxychlor	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
p,p'-TDE	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30

Please see attached notes for all abbreviations and acronyms

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald
EMT Job No: 25/19348

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	1-10	11-20	21-30	31-40							LOD/LOR	Units	Method No.
Sample ID	SW01	SW02	SW03	SW04									
Depth													
COC No / misc													
Containers	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G									
Sample Date	18/11/2025 11:00	18/11/2025 11:20	18/11/2025 11:40	18/11/2025 12:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	20/11/2025	20/11/2025	20/11/2025	20/11/2025									
Pesticides													
Organophosphorus Pesticides													
Azinphos methyl	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Diazinon	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Dichlorvos	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Disulfoton	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Ethion	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Ethyl Parathion (Parathion)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Fenitrothion	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Malathion	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Methyl Parathion	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Mevinphos	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
MTBE #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
Benzene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
Toluene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
o-Xylene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5							<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<10	<10	<10	<10							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5							<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	<10	<10	<10							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Fluoride	<0.3	<0.3	<0.3	<0.3							<0.3	mg/l	TM173/PM0
Sulphate as SO4 #	13.6	13.6	13.4	13.4							<0.5	mg/l	TM38/PM0

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald
EMT Job No: 25/19348

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, HN=$HN0_3$

EMT Sample No.	1-10	11-20	21-30	31-40							LOD/LOR	Units	Method No.
Sample ID	SW01	SW02	SW03	SW04									
Depth													
COC No / misc													
Containers	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G									
Sample Date	18/11/2025 11:00	18/11/2025 11:20	18/11/2025 11:40	18/11/2025 12:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	20/11/2025	20/11/2025	20/11/2025	20/11/2025									
Chloride #	15.3	15.4	16.3	15.4							<0.3	mg/l	TM38/PM0
Nitrate as N #	0.39	0.41	0.39	0.36							<0.05	mg/l	TM38/PM0
Nitrite as N #	0.009	0.009	0.009	0.008							<0.006	mg/l	TM38/PM0
Ortho Phosphate as P #	0.03	<0.03	<0.03	<0.03							<0.03	mg/l	TM38/PM0
Total Oxidised Nitrogen as N #	0.4	0.4	0.4	0.4							<0.2	mg/l	TM38/PM0
Total Cyanide #	<0.01	<0.01	<0.01	<0.01							<0.01	mg/l	TM89/PM0
Ammoniacal Nitrogen as N #	0.05	0.05	0.05	0.04							<0.03	mg/l	TM38/PM0
Total Alkalinity as CaCO3 #	136	136	140	134							<1	mg/l	TM75/PM0
Sulphide	<10	<10	<10	<10							<10	ug/l	TM107/PM0
BOD (Settled) #	<3 AA	<3 AA	<3 AA	<3 AA							<1	mg/l	TM58/PM0
COD (Settled) #	39	37	34	36							<7	mg/l	TM57/PM0
Dissolved Organic Carbon #	12	12	12	12							<2	mg/l	TM60/PM0
Electrical Conductivity @25C #	331	327	332	331							<2	uS/cm	TM76/PM0
pH #	8.10	8.07	8.14	7.94							<0.01	pH units	TM73/PM0
Total Organic Carbon #	12	13	12	13							<2	mg/l	TM60/PM0
Total Nitrogen	1.6	1.3	1.5	1.4							<0.5	mg/l	TM38/TM125/PM0
Total Suspended Solids #	<10	<10	<10	<10							<10	mg/l	TM37/PM0
Turbidity	2.8	4.3	3.5	4.6							<0.1	NTU	TM34/PM0

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Notification of Deviating Samples

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 25/19348						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.
It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

Please include all sections of this report if it is reproduced

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 25/19348

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).
Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitively, with a matrix specific limit of detection. Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x3 Dilution

EMT Job No: 25/19348

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM34	Turbidity by 2100P Turbidity Meter. complies with EPA 180.1 1993	PM0	No preparation is required.				
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM37	Modified methods - TSS: USEPA 160.2 (1985), EN872:2005 and APHA SMEWW 2540D:1999 22nd Edition; VSS: USEPA 1684 (Jan 2001), USEPA 160.4 (1971) and SMEWW 2540E:1999 22nd Edition. Gravimetric determination of Total Suspended Solids (TSS) and Volatile Suspended Solids (VSS). Sample is filtered through a 1.5um pore size glass fibre filter and the resulting residue is dried and weighed at 105°C for TSS and 550°C for VSS.	PM0	No preparation is required.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.	Yes			
TM38/TM125	Total Nitogen/Organic Nitrogen by calculation	PM0	No preparation is required.				
TM57	Modified US EPA Method 410.4. (Rev. 2.0 1993) Comparable with ISO 15705:2002. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometerically.	PM0	No preparation is required.	Yes			

EMT Job No: 25/19348

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM58	APHA SMEWW 5210B:1999 22nd Edition. Comparible with ISO 5815:1989. Measurement of Biochemical Oxygen Demand. When cBOD (Carbonaceous BOD) is requested a nitrification inhibitor is added which prevents the oxidation of reduced forms of nitrogen, such as am	PM0	No preparation is required.	Yes			
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM75	Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM0	No preparation is required.				
TM149	Determination of Pesticides by Large Volume Injection on GC Triple Quad MS, based upon USEPA method 8270D v5:2014	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.				

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McCarthy Keville & O'Sullivan Ltd
2nd Floor
H91VW84
Tuam Road
Galway
Ireland

Attention :	Colin Fitzgerald
Date :	10th February, 2026
Your reference :	241220-F
Our reference :	Test Report 26/1342 Batch 1
Location :	Hodson Bay
Date samples received :	29th January, 2026
Status :	Final Report
Issue :	202602101216

Four samples were received for analysis on 29th January, 2026 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 13.901 kg of CO2

Scope 1&2&3 emissions - 32.851 kg of CO2

Authorised By:

Phil Sommerton BSc
Senior Technical Account Manager

Please include all sections of this report if it is reproduced

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald
EMT Job No: 26/1342

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

EMT Sample No.	1-11	12-22	23-33	34-44							LOD/LOR	Units	Method No.
Sample ID	SW01	SW02	SW03	SW04									
Depth													
COC No / misc													
Containers	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G									
Sample Date	27/01/2026 13:10	27/01/2026 12:10	27/01/2026 12:30	27/01/2026 13:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	29/01/2026	29/01/2026	29/01/2026	29/01/2026									
Dissolved Arsenic #	<2.5	<2.5	<2.5	<2.5							<2.5	ug/l	TM30/PM14
Dissolved Barium #	34	35	34	34							<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Boron	<12	<12	<12	<12							<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Calcium #	58.8	59.3	56.1	57.2							<0.2	mg/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7	<7	<7							<7	ug/l	TM30/PM14
Dissolved Lead #	<5	<5	<5	<5							<5	ug/l	TM30/PM14
Dissolved Magnesium #	4.0	4.0	3.8	3.9							<0.1	mg/l	TM30/PM14
Dissolved Mercury #	<1	<1	<1	<1							<1	ug/l	TM30/PM14
Dissolved Nickel #	<2	<2	<2	<2							<2	ug/l	TM30/PM14
Dissolved Potassium #	2.0	2.0	2.0	1.9							<0.1	mg/l	TM30/PM14
Dissolved Selenium #	<3	<3	<3	<3							<3	ug/l	TM30/PM14
Dissolved Sodium #	8.4	8.3	8.4	8.0							<0.1	mg/l	TM30/PM14
Dissolved Vanadium #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Zinc #	<3	4	22	4							<3	ug/l	TM30/PM14
Pesticides													
Organochlorine Pesticides													
Aldrin	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Alpha-HCH (BHC)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Beta-HCH (BHC)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Delta-HCH (BHC)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Dieldrin	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Endosulphan I	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Endosulphan II	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Endosulphan sulphate	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Endrin	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Gamma-HCH (BHC)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Heptachlor	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Heptachlor Epoxide	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
o,p'-Methoxychlor	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
p,p'-DDE	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
p,p'-DDT	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
p,p'-Methoxychlor	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
p,p'-TDE	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30

Please see attached notes for all abbreviations and acronyms

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald
EMT Job No: 26/1342

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-11	12-22	23-33	34-44							LOD/LOR	Units	Method No.
Sample ID	SW01	SW02	SW03	SW04									
Depth													
COC No / misc													
Containers	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G									
Sample Date	27/01/2026 13:10	27/01/2026 12:10	27/01/2026 12:30	27/01/2026 13:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	29/01/2026	29/01/2026	29/01/2026	29/01/2026									
Pesticides													
Organophosphorus Pesticides													
Azinphos methyl	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Diazinon	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Dichlorvos	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Disulfoton	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Ethion	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Ethyl Parathion (Parathion)	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Fenitrothion	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Malathion	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Methyl Parathion	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
Mevinphos	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM149/PM30
MTBE #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
Benzene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
Toluene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
o-Xylene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5							<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<10	<10	<10	<10							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5							<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	<10	<10	<10							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Fluoride	<0.3	<0.3	<0.3	<0.3							<0.3	mg/l	TM173/PM0
Sulphate as SO4 #	11.8	11.9	11.5	11.4							<0.5	mg/l	TM38/PM0

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald
EMT Job No: 26/1342

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	1-11	12-22	23-33	34-44							LOD/LOR	Units	Method No.
Sample ID	SW01	SW02	SW03	SW04									
Depth													
COC No / misc													
Containers	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G									
Sample Date	27/01/2026 13:10	27/01/2026 12:10	27/01/2026 12:30	27/01/2026 13:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	29/01/2026	29/01/2026	29/01/2026	29/01/2026									
Chloride #	15.2	14.8	15.2	14.5							<0.3	mg/l	TM38/PM0
Nitrate as N #	0.66	0.73	0.72	0.69							<0.05	mg/l	TM38/PM0
Nitrite as N #	<0.006	<0.006	<0.006	<0.006							<0.006	mg/l	TM38/PM0
Ortho Phosphate as P #	<0.03	<0.03	0.05	<0.03							<0.03	mg/l	TM38/PM0
Total Oxidised Nitrogen as N #	0.7	0.7	0.7	0.7							<0.2	mg/l	TM38/PM0
Total Cyanide #	<0.01	<0.01	<0.01	<0.01							<0.01	mg/l	TM89/PM0
Ammoniacal Nitrogen as N #	0.03	0.03	0.03	0.03							<0.03	mg/l	TM38/PM0
Total Alkalinity as CaCO3 #	154	156	152	158							<1	mg/l	TM75/PM0
Sulphide	<10	<10	<10	<10							<10	ug/l	TM107/PM0
BOD (Settled) #	$<3_{AB}$	$<3_{AB}$	$<3_{AB}$	$<2_{AA}$							<1	mg/l	TM58/PM0
COD (Settled) #	35	43	31	30							<7	mg/l	TM57/PM0
Dissolved Organic Carbon #	9	12	10	12							<2	mg/l	TM60/PM0
Electrical Conductivity @25C #	364	376	349	356							<2	uS/cm	TM76/PM0
pH #	8.09	8.42	8.14	7.91							<0.01	pH units	TM73/PM0
Total Organic Carbon #	11	11	12	11							<2	mg/l	TM60/PM0
Total Nitrogen	2.1	1.9	1.9	2.2							<0.5	mg/l	TM38/TM125/PM0
Total Suspended Solids #	28	15	31	26							<10	mg/l	TM37/PM0
Turbidity	17.9	8.9	21.3	21.0							<0.1	NTU	TM34/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 26/1342						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.
It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

Please include all sections of this report if it is reproduced

EMT Job No.: 26/1342

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).
Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitively, with a matrix specific limit of detection. Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x2 Dilution
AB	x3 Dilution

EMT Job No: 26/1342

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM34	Turbidity by 2100P Turbidity Meter. complies with EPA 180.1 1993	PM0	No preparation is required.				
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM37	Modified methods - TSS: USEPA 160.2 (1985), EN872:2005 and APHA SMEWW 2540D:1999 22nd Edition; VSS: USEPA 1684 (Jan 2001), USEPA 160.4 (1971) and SMEWW 2540E:1999 22nd Edition. Gravimetric determination of Total Suspended Solids (TSS) and Volatile Suspended Solids (VSS). Sample is filtered through a 1.5um pore size glass fibre filter and the resulting residue is dried and weighed at 105°C for TSS and 550°C for VSS.	PM0	No preparation is required.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.	Yes			
TM38/TM125	Total Nitogen/Organic Nitrogen by calculation	PM0	No preparation is required.				
TM57	Modified US EPA Method 410.4. (Rev. 2.0 1993) Comparable with ISO 15705:2002. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometerically.	PM0	No preparation is required.	Yes			

EMT Job No: 26/1342

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM58	APHA SMEWW 5210B:1999 22nd Edition. Comparible with ISO 5815:1989. Measurement of Biochemical Oxygen Demand. When cBOD (Carbonaceous BOD) is requested a nitrification inhibitor is added which prevents the oxidation of reduced forms of nitrogen, such as am	PM0	No preparation is required.	Yes			
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM75	Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM0	No preparation is required.				
TM149	Determination of Pesticides by Large Volume Injection on GC Triple Quad MS, based upon USEPA method 8270D v5:2014	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.				

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McCarthy Keville & O'Sullivan Ltd
2nd Floor
H91VW84
Tuam Road
Galway
Ireland

Attention :	Bébhinn Anders
Date :	20th April, 2026
Your reference :	291220-F
Our reference :	Test Report 26/5392 Batch 1
Location :	Hodson Bay
Date samples received :	9th April, 2026
Status :	Final Report
Issue :	202604201354

Four samples were received for analysis on 9th April, 2026 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 8.688 kg of CO2

Scope 1&2&3 emissions - 20.532 kg of CO2

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 291220-F
Location: Hodson Bay
Contact: Béibhinn Anders
EMT Job No: 26/5392

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

EMT Sample No.	1-11	12-22	23-33	34-44							LOD/LOR	Units	Method No.
Sample ID	SW01	SW02	SW03	SW04									
Depth													
COC No / misc													
Containers	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G	V H HN N Z P BOD G									
Sample Date	07/04/2026	07/04/2026	07/04/2026	07/04/2026									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	09/04/2026	09/04/2026	09/04/2026	09/04/2026									
Dissolved Arsenic	<2.5	<2.5	<2.5	<2.5							<2.5	ug/l	TM30/PM14
Dissolved Barium	35	37	38	37							<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Boron	<12	<12	<12	<12							<12	ug/l	TM30/PM14
Dissolved Cadmium	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Calcium	63.9	63.8	63.5	63.1							<0.2	mg/l	TM30/PM14
Total Dissolved Chromium	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Copper	<7	<7	<7	<7							<7	ug/l	TM30/PM14
Dissolved Lead	<5	<5	<5	<5							<5	ug/l	TM30/PM14
Dissolved Magnesium	4.3	4.3	4.2	4.2							<0.1	mg/l	TM30/PM14
Dissolved Mercury	<1	<1	<1	<1							<1	ug/l	TM30/PM14
Dissolved Nickel	<2	<2	<2	<2							<2	ug/l	TM30/PM14
Dissolved Potassium	1.8	1.9	1.9	1.8							<0.1	mg/l	TM30/PM14
Dissolved Selenium	<3	<3	<3	<3							<3	ug/l	TM30/PM14
Dissolved Sodium	8.0	7.8	8.0	7.7							<0.1	mg/l	TM30/PM14
Dissolved Vanadium	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Zinc	<3	4	<3	3							<3	ug/l	TM30/PM14
Fluoride	<0.3	<0.3	<0.3	<0.3							<0.3	mg/l	TM173/PM0
Sulphate as SO4	10.8	10.9	11.0	10.4							<0.5	mg/l	TM38/PM0
Chloride	14.3	13.5	14.1	13.4							<0.3	mg/l	TM38/PM0
Nitrate as N	0.74	0.86	0.89	0.68							<0.05	mg/l	TM38/PM0
Nitrite as N	0.007	0.011	0.010	0.007							<0.006	mg/l	TM38/PM0
Ortho Phosphate as P	<0.03	<0.03	<0.03	<0.03							<0.03	mg/l	TM38/PM0
Total Oxidised Nitrogen as N	0.7	0.9	0.9	0.7							<0.2	mg/l	TM38/PM0
Ammoniacal Nitrogen as N	<0.03	0.04	<0.03	<0.03							<0.03	mg/l	TM38/PM0
Total Alkalinity as CaCO3	180	156	184	160							<1	mg/l	TM75/PM0
Sulphide	<10	<10	<10	<10							<10	ug/l	TM107/PM0
BOD (Settled)	<2 AA	<2 AA	<2 AA	<3 AB							<1	mg/l	TM58/PM0
COD (Settled)	28	27	29	31							<7	mg/l	TM57/PM0
Dissolved Organic Carbon	10	10	10	10							<2	mg/l	TM60/PM0
Electrical Conductivity @25C	375	360	362	363							<2	uS/cm	TM76/PM0
pH	8.14	8.21	8.20	8.29							<0.01	pH units	TM73/PM0
Total Organic Carbon	9	9	10	10							<2	mg/l	TM60/PM0
Total Nitrogen	1.7	1.9	1.8	1.7							<0.5	mg/l	TM38/TM125/PM0
Total Suspended Solids	<10	<10	<10	<10							<10	mg/l	TM37/PM0
Turbidity	4.1	6.2	2.8	9.6							<0.1	NTU	TM34/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 291220-F
Location: Hodson Bay
Contact: Béhinn Anders

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 26/5392						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.
It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

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NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 26/5392

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).
Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitively, with a matrix specific limit of detection. Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x2 Dilution
AB	x3 Dilution

EMT Job No: 26/5392

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM34	Turbidity by 2100P Turbidity Meter. complies with EPA 180.1 1993	PM0	No preparation is required.				
TM37	Modified methods - TSS: USEPA 160.2 (1985), EN872:2005 and APHA SMEWW 2540D:1999 22nd Edition; VSS: USEPA 1684 (Jan 2001), USEPA 160.4 (1971) and SMEWW 2540E:1999 22nd Edition. Gravimetric determination of Total Suspended Solids (TSS) and Volatile Suspended Solids (VSS). Sample is filtered through a 1.5um pore size glass fibre filter and the resulting residue is dried and weighed at 105°C for TSS and 550°C for VSS.	PM0	No preparation is required.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.				
TM38/TM125	Total Nitogen/Organic Nitrogen by calculation	PM0	No preparation is required.				
TM57	Modified US EPA Method 410.4. (Rev. 2.0 1993) Comparable with ISO 15705:2002. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometerically.	PM0	No preparation is required.				
TM58	APHA SMEWW 5210B:1999 22nd Edition. Comparible with ISO 5815:1989. Measurement of Biochemical Oxygen Demand. When cBOD (Carbonaceous BOD) is requested a nitrification inhibitor is added which prevents the oxidation of reduced forms of nitrogen, such as am	PM0	No preparation is required.				
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.				
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.				
TM75	Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.				

EMT Job No: 26/5392

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.				
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM0	No preparation is required.				
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.				

Element Materials Technology
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Zone 3
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Deeside
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McCarthy Keville & O'Sullivan Ltd
2nd Floor
H91VW84
Tuam Road
Galway
Ireland

Attention :	Colin Fitzgerald
Date :	27th May, 2026
Your reference :	241220-F
Our reference :	Test Report 26/7251 Batch 1
Location :	Hodson Bay
Date samples received :	12th May, 2026
Status :	Final Report
Issue :	202605271018

Four samples were received for analysis on 12th May, 2026 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 8.688 kg of CO2

Scope 1&2&3 emissions - 20.532 kg of CO2

Authorised By:

Phil Sommerton BSc
Senior Technical Account Manager

Please include all sections of this report if it is reproduced

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald
EMT Job No: 26/7251

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

EMT Sample No.	1-7	8-14	15-21	22-28							LOD/LOR	Units	Method No.
Sample ID	SW01	SW02	SW03	SW04									
Depth													
COC No / misc													
Containers	V H HN Z P BOD G	V H HN Z P BOD G	V H HN Z P BOD G	V H HN Z P BOD G									
Sample Date	11/05/2026 12:00	11/05/2026 12:30	11/05/2026 13:00	11/05/2026 13:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	12/05/2026	12/05/2026	12/05/2026	12/05/2026									
Dissolved Arsenic #	<2.5	<2.5	<2.5	<2.5							<2.5	ug/l	TM30/PM14
Dissolved Barium #	39	34	35	41							<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Boron	<12	<12	<12	<12							<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Calcium #	69.8	63.5	65.6	70.3							<0.2	mg/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7	<7	<7							<7	ug/l	TM30/PM14
Dissolved Lead #	<5	<5	<5	<5							<5	ug/l	TM30/PM14
Dissolved Magnesium #	4.5	4.2	4.3	4.2							<0.1	mg/l	TM30/PM14
Dissolved Mercury #	<1	<1	<1	<1							<1	ug/l	TM30/PM14
Dissolved Nickel #	<2	<2	<2	<2							<2	ug/l	TM30/PM14
Dissolved Potassium #	1.9	1.9	1.9	1.6							<0.1	mg/l	TM30/PM14
Dissolved Selenium #	<3	<3	<3	<3							<3	ug/l	TM30/PM14
Dissolved Sodium #	9.2	9.8	19.0	8.6							<0.1	mg/l	TM30/PM14
Dissolved Vanadium #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Zinc #	<3	<3	<3	<3							<3	ug/l	TM30/PM14
Fluoride	1.9	<0.3	<0.3	<0.3							<0.3	mg/l	TM173/PM0
Sulphate as SO4 #	10.0	10.0	10.0	8.1							<0.5	mg/l	TM38/PM0
Chloride #	14.0	15.8	33.6	13.4							<0.3	mg/l	TM38/PM0
Nitrate as N #	0.24	0.66	0.57	0.32							<0.05	mg/l	TM38/PM0
Nitrite as N #	<0.006	<0.006	<0.006	<0.006							<0.006	mg/l	TM38/PM0
Ortho Phosphate as P #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/l	TM38/PM0
Total Oxidised Nitrogen as N #	0.2	0.7	0.6	0.3							<0.2	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	<0.03	<0.03	<0.03	0.04							<0.03	mg/l	TM38/PM0
Total Alkalinity as CaCO3 #	188	168	176	198							<1	mg/l	TM75/PM0
Sulphide	<10	<10	<10	<10							<10	ug/l	TM107/PM0
BOD (Settled) #	<2 AA	<2 AA	<2 AA	<3 AB							<1	mg/l	TM58/PM0
COD (Settled) #	23	22	24	31							<7	mg/l	TM57/PM0
Dissolved Organic Carbon #	9	9	9	11							<2	mg/l	TM60/PM0
Electrical Conductivity @25C #	392	369	421	389							<2	uS/cm	TM76/PM0
pH #	8.14	8.30	8.49	7.92							<0.01	pH units	TM73/PM0
Total Organic Carbon #	8	9	9	11							<2	mg/l	TM60/PM0
Total Nitrogen	1.5	1.6	1.8	2.4							<0.5	mg/l	TM38/TM125/PM0
Total Suspended Solids #	<10	<10	<10	49							<10	mg/l	TM37/PM0
Turbidity	1.8	8.2	3.7	17.4							<0.1	NTU	TM34/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: McCarthy Keville & O'Sullivan Ltd
Reference: 241220-F
Location: Hodson Bay
Contact: Colin Fitzgerald

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 26/7251						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.
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NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 26/7251

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% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

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Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

Date

The dates of the performance of laboratory activity are available on request.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).
Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitively, with a matrix specific limit of detection. Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x2 Dilution
AB	x3 Dilution

EMT Job No: 26/7251

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM34	Turbidity by 2100P Turbidity Meter. complies with EPA 180.1 1993	PM0	No preparation is required.				
TM37	Modified methods - TSS: USEPA 160.2 (1985), EN872:2005 and APHA SMEWW 2540D:1999 22nd Edition; VSS: USEPA 1684 (Jan 2001), USEPA 160.4 (1971) and SMEWW 2540E:1999 22nd Edition. Gravimetric determination of Total Suspended Solids (TSS) and Volatile Suspended Solids (VSS). Sample is filtered through a 1.5um pore size glass fibre filter and the resulting residue is dried and weighed at 105°C for TSS and 550°C for VSS	PM0	No preparation is required.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.	Yes			
TM38/TM125	Total Nitogen/Organic Nitrogen by calculation	PM0	No preparation is required.				
TM57	Modified US EPA Method 410.4. (Rev. 2.0 1993) Comparable with ISO 15705:2002. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometerically.	PM0	No preparation is required.	Yes			
TM58	APHA SMEWW 5210B:1999 22nd Edition. Comparible with ISO 5815:1989. Measurement of Biochemical Oxygen Demand. When cBOD (Carbonaceous BOD) is requested a nitrification inhibitor is added which prevents the oxidation of reduced forms of nitrogen, such as am	PM0	No preparation is required.	Yes			
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

EMT Job No: 26/7251

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM75	Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM0	No preparation is required.				
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.				

APPENDIX 8-5

WFD COMPLIANCE REPORT

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

WFD Compliance Report

Hodson Bay Waterfront Park, Co. Roscommon

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1. INTRODUCTION

This Water Framework Directive (WFD) Compliance Assessment was completed as part of the planning application for the Proposed Development.

The Proposed Development comprises the redevelopment of an existing Waterfront and Marina at Hodson Bay, Lough Ree, as outlined in Chapter 4 of the Environmental Impact Assessment Report (EIAR).

1.1 Purpose of Assessment

The purpose of the assessment is to determine whether the Proposed Development could compromise the achievement of WFD environmental objectives or cause a deterioration in the status of any surface water or groundwater body hydraulically connected to the Proposed Development. The assessment supplements Chapter 8 of the EIAR (Hydrology and Hydrogeology), submitted as part of the planning application.

1.2 Statement of Authority

This section of the EIAR has been prepared by Anna Bannon and reviewed by Monika Kabza, employees of MKO.

Anna Bannon has a BSc in Geology from the University College Dublin. Anna joined MKO in September 2025 as a Graduate Geoscientist and has been involved in environmental assessment, geological interpretation, and baseline data review for infrastructure and environmental projects.

Monika Kabza is a hydrogeologist with over 16 years of experience in hydrogeology, geology, environmental assessment and water resources management. Monika holds MSc in Groundwater Engineering from the AGH University of Science and Technology Krakow, Poland and is a registered professional geologist (EurGeol, PGeo). She has worked on projects for Uisce Éireann, Geological Survey Ireland, National Federation of Group Water Schemes, Dublin Airport, and private industry. Her experience includes the preparation of WFD assessments, Hydrology and Hydrogeology and Land, Soils, and Geology chapters for Environmental Impact Assessment Reports (EIARs), including major infrastructure projects, as well as wind and solar farms development.

1.3 Water Framework Directive

The European Union (EU) Water Framework Directive (2000/60/EC) establishes a comprehensive framework for the protection and management of inland surface waters, transitional waters, coastal waters and groundwater across the EU. The WFD was transposed into Irish law by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), as amended.

The principal objectives of the WFD are to prevent deterioration in the status of all water bodies and to protect, enhance and restore aquatic ecosystems, with the aim of achieving at least Good Ecological Status (or Good Ecological Potential for heavily modified water bodies), Good Chemical Status for surface waters, and Good Quantitative and Chemical Status for groundwater, unless specific exemptions apply under Article 4 of the Directive.

In Ireland, EPA is responsible for monitoring and classifying the status of water bodies and providing the evidence base for River Basin Management Plans (RBMPs). Environmental objectives are assigned to individual water bodies through the RBMP process and define the status that should be achieved within each planning cycle.

To support the achievement of these objectives, Programmes of Measures (PoMs) are implemented to protect and improve the water environment. These comprise Basic Measures, which are statutory and enforceable

(e.g. the Sustainable Use of Pesticides regulations), and Supplementary Measures, which are generally non-statutory and voluntary (e.g. pilot schemes, awareness campaigns).

As part of its WFD implementation process, the EPA undertakes a risk assessment to identify water bodies that are either 'At Risk' or 'Not At Risk' of failing to achieve their WFD environmental objectives. For water bodies classified as 'At Risk', the EPA identifies the 'significant pressures' responsible for the risk of failing to achieve or maintain the required status. These identified pressures inform the development of targeted Programmes of Measures within the relevant subcatchment to support the achievement of WFD environmental objectives.

Ireland is currently implementing the third RBMP cycle (2022-2027) through the Water Action Plan 2024, which sets out the measures required to achieve the environmental objectives of the WFD. The latest EPA water body classification currently covers the assessment period 2019-2024.

Water body status is formally assessed and reported by the EPA as part of the RBMP cycle. However, the WFD 'no deterioration' principle applies at all times. Accordingly, this assessment considers whether the Proposed Development could result in either temporary or permanent adverse effects that may cause deterioration in the status of any water body or compromise the achievement of its environmental objectives during construction or operation.

The WFD also requires that protected areas associated with the aquatic environment achieve their relevant environmental requirements and conservation objectives. These include:

- Natura 2000 sites comprising Special Areas of Conservation (SACs), and Special Protection Areas (SPA);
- Drinking water protected areas;
- Bathing waters;
- Shellfish waters;
- Salmonid waters; and
- Nutrient Sensitive Areas.

The environmental requirements for these protected areas are established through relevant legislation and guidance issued by the competent authorities, including the National Parks and Wildlife Service (NPWS) and other statutory bodies.

2. WATER BODY IDENTIFICATION

This section identifies the surface water and groundwater bodies that may be potentially affected by the Proposed Development. The identification of relevant water bodies is based on a review of the hydrological and hydrogeological setting of the site, including surface water drainage pathways, groundwater flow patterns and hydraulic connectivity within the surrounding catchment.

2.1 Surface Water Bodies

The Proposed Development is located within Upper Shannon Catchment (26E) and the Shannon [Upper]_SC_090 sub-catchment. The majority of the Proposed Development is situated within the SHANNON (Upper)_110 sub-basin, with a small section of the southern access road located within the BALLYBAY_010 sub-basin.

The principal receiving surface water body is Lough Ree (WFD code: IE_SH_26_750a), which bounds the northern section of the Proposed Development.

The closest river waterbody is an unnamed stream west of the site, temporarily designated by EPA as TEMP_26N58 (IE_SH_26S021660). This stream forms part of the Shannon (Upper)_110 river water body. It flows northwards for approximately 0.8 kilometres (km) before discharging to Lough Ree and is hydraulically upstream of the Proposed Development. As there is no hydraulic pathway by which the Proposed Development could affect this upstream waterbody, it is not considered further in this WFD Compliance Assessment.

Lough Ree forms part of the River Shannon system. The continuation of the River Shannon (Upper) is mapped by the EPA approximately 3.6 km southeast of the Site, where it drains Lough Ree towards Athlone.

2.1.1 Surface Water Body Status Classification

Based on the EPA's most recent classification period (2019-2024), the Lough Ree is classified as having 'Moderate' ecological status (high confidence) and therefore does not achieve the WFD environmental objective of 'Good' ecological status.

The overall Moderate ecological status is primarily driven by Moderate classification for macrophytes (other aquatic flora), hydromorphological conditions, supporting chemistry conditions, including dissolved oxygen and total phosphorus. Other quality elements, including phytoplankton, thermal conditions, pH, and nitrogen conditions, are classified as High.

2.1.2 Surface Water Body Risk Assessment

Based on the latest available WFD risk assessment for the period 2022–2027[1], the Lough Ree is 'Not At Risk' of failing to achieve its environmental objective.

[1] https://gis.epa.ie/EPAMaps/

600,000

604,000

748,000

744,000

SHANNON (Upper)_110

SHANNON (Upper)_110

SHANNON (Upper)_110

SHANNON (Upper)_110

BALLYBAY_010

CROSS (ROSCOMMON)_020

CROSS (ROSCOMMON)_020

SHANNON (Upper)_120

SHANNON (Upper)_120

Shannon [Upper]

COOSAN

Ree (Lough)

Lough Ree

Carrowmurragh

Barrymore

Curraghmore

Barrybeg

Williamstown

Cloongowna

Belcourt

Coosan Point Road

Bog Road

N61

96 m

67 m

83 m

57 m

68 m

62 m

47 m

48 m

54 m

50 m

56 m

60 m

0 1 2 km

Map Legend

- EIAR Site Boundary
- WFD River Waterbodies
- WFD Lake Waterbodies

WFD River Sub Basins

- BALLYBAY_010
- CROSS (ROSCOMMON)_020
- CROSS (ROSCOMMON)_030
- SHANNON (Upper)_110
- SHANNON (Upper)_120

WFD SubCatchments (inset)

- Shannon[Lower]_SC_010
- Shannon[Upper]_SC_090
- Shannon[Upper]_SC_100

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

SITE LOCATION - NOT TO SCALE

Drawing Title: WFD Management Units

Project Title: Hodson Bay EIAR

Project No.	Drawing No.	Scale
241220	2-1	1:25,000
Drawn By	Checked By	Date
BOC	CF	16/07/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

600,000

604,000

748,000

744,000

N61

SHANNON (Upper)_110

SHANNON (Upper)_110

96 m

67 m

Carrowmurragh

42 m

Ree

83 m

SHANNON (Upper)_110

46 m

N61

57 m

BALLYBAY_010

SHANNON (Upper)_110

47 m

54 m

68 m

Barrymore

Belcourt

48 m

Curraghmore

62 m

Coosan Point Road

CROSS (ROSCOMMON)_020

CROSS (ROSCOMMON)_020

Williamstown

SHANNON (Upper)_120

SHANNON (Upper)_120

SHANNON (Upper)_110

Bog Road

50 m

Barrybeg

56 m

58 m

Coosan Road

0 1 2 km

68 m

Cloongowna

60 m

R362

600,000

604,000

Map Legend

- EIAR Site Boundary

WFD River Waterbodies

- Good
- Moderate
- Poor

WFD Lake Waterbodies

- Moderate

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

N

SITE LOCATION - NOT TO SCALE

Drawing Title
Waterbody WFD Status 2019-2024

Project Title
Hodson Bay EIAR

Project No.	Drawing No.	Scale
241220	2-2	1:25,000
Drawn By	Checked By	Date
BOC	CF	16/07/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

600,000

604,000

748,000

744,000

SHANNON (Upper)_110

SHANNON (Upper)_110

SHANNON (Upper)_110

SHANNON (Upper)_110

BALLYBAY_010

CROSS (ROSCOMMON)_020

SHANNON (Upper)_120

SHANNON (Upper)_120

SHANNON (Upper)_120

SHANNON (Upper)_110

N61

N61

N61

R362

Carrowmurragh

Ree

Athlone Golf Club

Barrymore

Belcourt

Curraghmore

Barrybeg

Williamstown

Coosan

Coosan Point Road

Coosan Road

Cloongowna

96 m

67 m

83 m

57 m

45 m

68 m

62 m

58 m

68 m

60 m

42 m

46 m

47 m

50 m

48 m

54 m

56 m

0 1 2 km

Legend

EIAR Site Boundary

WFD River Waterbodies

At Risk

Review

WFD Lake Waterbodies

Not at risk

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

N

SITE LOCATION - NOT TO SCALE

Drawing Title
WFD Risk Assessment
3rd Cycle

Project Title
Hodson Bay
EIAR

Project No.	Drawing No.	Scale
241220	2-3	1:25,000
Drawn By	Checked By	Date
BOC	BA	16/07/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

2.2 Groundwater Bodies

As presented in Chapter 8 of the EIAR, the groundwater body that underlies the Proposed Development is Funshinagh (IE_SH_G_091).

2.2.1 Groundwater Body Status Classification

Based on the latest WFD classification period (2019-2024), the Funshinagh groundwater body is classified as having 'Good' status by the EPA, indicating that it meets the WFD environmental objectives for both quantitative and chemical status.

2.2.2 Groundwater Body Risk Assessment

The Funshinagh groundwater body is classified as 'Not At Risk' of failing to achieve the WFD status objectives by 2027.

3. WFD COMPLIANCE ASSESSMENT

This section assesses whether the Proposed Development has the potential to cause deterioration in the status of surface water or groundwater, or to impede the achievement of WFD objectives for any connected water bodies.

3.1 Risk Factors - Surface Water

The principal risks to surface water associated with the Proposed Development arise primarily during the construction phase and are related to the temporary disturbance of the existing water environment during the redevelopment of the waterfront and marina, including the construction of the new breakwater, jetty extensions, shoreline promenade, pavilion building and associated infrastructure.

The main potential risk factors include:

- Mobilisation of sediments and increased turbidity arising from site clearance, excavation, earthworks and construction activities within and adjacent to Lough Ree;
- Increased suspended solids associated with excavation dewatering, construction runoff and rainfall on exposed ground;
- Temporary disturbance of the lake bed and nearshore aquatic habitats during marina redevelopment, breakwater improvements and jetty construction;
- Accidental releases of fuels, oils, concrete, cementitious materials or other hazardous substances associated with construction plant, equipment, and material handling;
- Inappropriate collection, storage or disposal of construction wastewater and wash water; and
- Accidental spills or leakages from plant and machinery.

During the operational phase, the principal surface water risks are limited to:

- Contaminated surface water runoff from hardstanding areas;
- Accidental fuel or oil spillages associated with marina activities; and
- Foul wastewater generated by the proposed pavilion and marina facilities.

The principal receiving surface water body is Ree (Lough), which is currently classified as having ‘Moderate’ ecological status under the WFD and ‘Not At Risk’ of failing to achieve its environmental objective. As the Proposed Development includes works adjacent to and within Lough Ree, particular consideration has been given to the potential for the Proposed Development to affect water quality, hydromorphological conditions and the ecological status of the receiving waterbody.

3.2 Risk of Affecting Surface Water Body Status

The principal risks to WFD status relate to the temporary mobilisation of sediments, suspended solids and other contaminants during construction activities, together with the potential for localised disturbance of the lake bed, shoreline and nearshore aquatic habitats during the redevelopment of the marina, construction of the breakwater extension, jetty installation and other lakeside infrastructure works. Without appropriate mitigation, these activities could adversely affect water quality, hydromorphological conditions and ecological receptors within the receiving Ree (Lough) water body.

The Proposed Development has been designed to minimise impacts on the receiving water environment. Construction activities within and adjacent to Lough Ree will be undertaken using best

practice construction methods, while the extent and duration of in-water works have been minimised through the project design. The drainage strategy has also been developed to manage surface water runoff using Sustainable Drainage Systems (SuDS) and nature-based drainage measures, thereby reducing the potential for sediment and pollutant transport to Lough Ree.

The identified risks will be managed by implementing the mitigation measures described in Section 4, together with those incorporated into the Proposed Development.

Subject to the implementation of these measures, the construction of the Proposed Development is not expected to cause deterioration in the status of the Ree (Lough) water body or prevent the achievement of its WFD environmental objectives.

During operation, surface water runoff will be managed through the proposed SuDS network prior to discharge to Lough Ree. Foul wastewater generated by the proposed pavilion and marina facilities will be collected and conveyed to the existing Uisce Éireann foul sewer network for treatment at the Wastewater Treatment Plant. Consequently, the operational phase of the Proposed Development is not expected to adversely affect the ecological status or environmental objectives of the receiving water body.

Accordingly, the Proposed Development is not expected to result in deterioration in the status of any connected surface water body or compromise the achievement of the applicable WFD environmental objectives.

3.3 Risk Factors – Groundwater

The principal risks to groundwater associated with the Proposed Development arise primarily during the construction phase and are related to temporary ground disturbance, shallow excavations and the potential for accidental contamination associated with construction activities.

The main potential risk factors include:

- Temporary and localised disturbance of shallow groundwater flow paths associated with excavation works and foundation construction;
- Infiltration of sediment-laden surface water or contaminated construction runoff to the underlying groundwater where appropriate controls are not implemented;
- Accidental spillages of fuels, oils, concrete washout, cementitious materials or other hazardous substances associated with construction plant, equipment and material handling; and
- Temporary deterioration in groundwater quality resulting from inappropriate storage or handling of construction materials, fuels or wastes.

The groundwater beneath the Proposed Development forms part of the Funshinagh groundwater body, which is classified as having ‘Good’ status under the WFD and ‘Not At Risk’ of failing to achieve its environmental objective. The site is underlain by a Regionally Important Karstified Aquifer (Rkc) with Moderate to High groundwater vulnerability, indicating that groundwater may be susceptible to contamination from activities at the ground surface if appropriate pollution prevention measures are not implemented.

3.4 Risk of Affecting Groundwater Body Status

Under the WFD, groundwater bodies are classified based on both quantitative and chemical status, with the overall status determined by the least favourable of the two assessments. The environmental objective is to achieve and maintain ‘Good’ groundwater status while preventing deterioration in groundwater quality or quantity (WFD 2000/60/EC; DHLGH, 2024).

The Proposed Development does not include groundwater abstraction, permanent dewatering or any activities that would result in significant long-term changes to groundwater levels, groundwater recharge or regional groundwater flow. Construction activities will involve only localised and temporary excavations associated with the Water Sports Pavilion building, marina infrastructure and associated services, and are not expected to affect groundwater quantity at the groundwater body scale.

Potential impacts on groundwater chemical status are limited to temporary construction phase risks, including accidental spillages of fuels, oils, concrete washout or other hazardous substances, infiltration of contaminated construction runoff, and disturbance of shallow groundwater pathways. These risks will be managed through the implementation of pollution prevention measures, appropriate storage and handling of hazardous materials, spill response procedures, sediment and runoff control measures, and the Construction Environmental Management Plan (CEMP).

The Funshinagh groundwater body underlying the Proposed Development is currently classified as having 'Good' status and is identified by the EPA as 'Not At Risk' of failing to achieve its WFD environmental objective. Although the Site is underlain by a Regionally Important Karstified Aquifer with Moderate to High groundwater vulnerability, the scale and nature of the Proposed Development are not expected to introduce significant additional pressures on groundwater quality or quantity.

Groundwater beneath the site flows towards Lough Ree. Consequently, the proposed pollution prevention and drainage measures will also minimise the potential for indirect effects on the receiving surface water environment.

Accordingly, subject to the implementation of the proposed mitigation measures, the Proposed Development is not expected to cause deterioration in the status of the Funshinagh groundwater body or compromise the achievement of its WFD environmental objective.

4. MITIGATION TO PREVENT STATUS DETERIORATION

The objective of the proposed mitigation measures is to protect surface water and groundwater quality during the construction and operation of the Proposed Development, prevent deterioration in the status of the receiving water bodies, and ensure that the Proposed Development does not compromise the achievement of the applicable WFD environmental objectives (WFD 2000/60/EC; DHLGH, 2024).

The mitigation strategy combines embedded design measures with construction and operational controls to avoid or minimise potential adverse effects on surface water quality, groundwater quality, hydromorphological conditions and aquatic habitats. The Proposed Development has been designed to minimise disturbance to Lough Ree through the incorporation of SuDS), pollution prevention measures, appropriate wastewater management, and best practice construction methods for works undertaken within and adjacent to the lake.

Mitigation measures will be implemented throughout the construction and operational phases of the Proposed Development and are summarised in Sections 4.1 and 4.2. Collectively, these measures are intended to break potential source–pathway–receptor linkages, minimise the risk of sediment and contaminant mobilisation, protect surface water and groundwater quality, and ensure compliance with the WFD no deterioration principle.

4.1 Construction Phase

The construction methodology adopts a multiple-barrier approach to protect the surface water and groundwater, consistent with the principles set out in Chapter 8 and the CEMP.

The principal mitigation measures include:

- Minimising the extent and duration of exposed ground;
- Implementing erosion and sediment control measures;
- Managing sediment-laden surface water runoff through temporary drainage and treatment systems;
- Pollution prevention measures; and
- Routine inspection and maintenance of all environmental protection measures throughout the construction period.

Particular consideration has been given to works undertaken within and adjacent to Lough Ree, including the marina redevelopment, breakwater extension, and jetty construction, to minimise potential impacts on the receiving water environment.

Collectively, these measures provide multiple barriers to pollutant migration, minimise the potential for sediment transport and contaminant mobilisation, and protect surface water and groundwater quality throughout the construction phase.

The proposed construction-phase mitigation measures are summarised in Table 4-1. Many of these measures will remain in place following construction and will continue to provide water quality protection during the operational phase of the Proposed Development.

Table 4-1 Summary of Proposed Mitigation Measures During Construction Phase

Mitigation Type	Description
Avoidance Controls	• Minimising exposed soils and working areas; • 50m setback from Lough Ree, where practicable;

Mitigation Type	Description
	› Temporary interceptor drains and bunds; › Diversion drains; › Cofferdam installation; › Cessation of works during heavy rainfall.
Source Controls	› Covering/dampening of stockpiles; › Temporary covering of exposed work areas; › Dust suppression; › Sealed earth bund adjacent to alluvial woodland; › Controlled refuelling; › Bunded fuel and chemical storage; › Controlled concrete handling and washout management; › Low-impact piling methods; › Careful positioning of construction plant; › Environmental supervision / CEMP.
In-line Controls	› Sediment control (silt fences, straw bales, sand and oyster bags, and filter fabrics); › Sediment settlement control (weirs, baffles and check dams); › Flow limiters; › Sump pumping; › Flume pipes; › Floating silt curtain.
Treatment Controls	› Sediment traps; › Silt bags; › Sedimats/vegetation filters; › Attenuation ponds; › Perimeter swales; › Hydrocarbon interceptors.
Discharge & Receiving Water Controls	› Controlled discharge using level spreaders; › Floating silt curtain inspected and retained until baseline suspended solids are achieved; › Water-tight shuttering and formwork; › Retention of geomembranes and sandbags;

4.2 Operational Phase

Following completion of construction, the Proposed Development will comprise a permanent marina and waterfront development, including the redeveloped marina facilities, breakwater extension, jetties, Water Sports Pavilion, public realm improvements, drainage infrastructure and associated landscaping.

During operation, the principal measures for the protection of surface water and groundwater will comprise the permanent stormwater drainage strategy, which has been designed in accordance with the SuDS hierarchy and incorporates nature-based solutions (NBS) where practicable. The drainage strategy seeks to replicate the natural hydrological regime by reducing runoff volumes, promoting attenuation and improving water quality prior to discharge to Lough Ree. Where site constraints prevent the use of nature-based attenuation features, below-ground attenuation will be provided. All stormwater will pass through hydrocarbon and integrated silt separation interceptors prior to discharge.

Foul wastewater generated by the Proposed Development will be collected from the Water Sports Pavilion and marina facilities and discharged to the existing on-site pumping station operated by Uisce Éireann before being conveyed to the existing foul sewer network for treatment at the receiving Wastewater Treatment Plant. No untreated foul wastewater will be discharged to the receiving environment.

The stormwater and foul drainage infrastructure, including attenuation features and treatment devices, will be subject to routine inspection and maintenance to ensure their continued operational performance.

4.3 Monitoring

A construction phase monitoring programme will be implemented in accordance with the commitments set out in Chapter 8 to verify the effectiveness of the proposed mitigation measures and demonstrate compliance with the WFD no deterioration principle.

The monitoring programme will comprise routine inspection of temporary drainage infrastructure, erosion and sediment control measures, cofferdams, settlement features and discharge locations, together with surface water quality monitoring within Lough Ree. Monitoring will include field measurements and laboratory analysis of water quality parameters at upstream and downstream monitoring locations established for the Proposed Development.

Monitoring will commence prior to the start of construction, continue throughout the construction phase, and extend following completion of the works, in accordance with the programme described in Chapter 8. The monitoring programme will adopt an adaptive approach, allowing the frequency and scope of monitoring to be modified where required based on site conditions or monitoring results.

Where monitoring identifies deterioration in water quality or indicates that mitigation measures are not performing as intended, corrective actions will be implemented immediately, including suspension of works where necessary, until the issue has been resolved.

The monitoring programme will verify that the proposed mitigation measures remain effective throughout construction and that the Proposed Development does not result in deterioration of the Ree (Lough) (IE_SH_26_750a) surface water body or prevent the achievement of the applicable WFD environmental objectives.

4.4 General Environmental Management Measures

In addition to the project-specific mitigation measures described above, a range of general environmental management measures will be implemented throughout the construction phase and, where relevant, during the operational phase to minimise the risk of accidental pollution and ensure compliance with the WFD environmental objectives (WFD 2000/60/EC; DHLGH, 2024).

4.4.1 Fuel and Chemical Management

- Fuels, oils and other potentially polluting substances will be stored, handled and used in accordance with the CEMP and relevant best practice guidance;
- Refuelling and maintenance of plant and machinery will be undertaken using appropriate pollution prevention measures, with spill response equipment available at all active work areas; and
- Any accidental spillages will be contained and cleaned up immediately in accordance with the emergency response procedures set out in the CEMP.

4.4.2 Wastewater and Concrete Management

- Construction wastewater, welfare wastewater and concrete-related waters will be managed in accordance with the CEMP and will not be discharged untreated to Lough Ree, surface water drains or groundwater; and
- Ready-mixed concrete and pre-cast elements will be used where practicable to minimise on-site concrete handling.

4.4.3 In-Water Construction Management

- In-water works will be undertaken using best practice construction methods to minimise sediment disturbance and turbidity, with duration and extent of such works minimised, where practicable; and
- Temporary works within Lough Ree will be removed following completion of construction, and disturbed areas will be reinstated, where required.

4.4.4 General Environmental Management

- All construction personnel will receive appropriate environmental awareness training prior to commencing works;
- Pollution prevention measures, erosion and sediment controls, and drainage infrastructure will be routinely inspected and maintained throughout construction; and
- Construction activities will be undertaken in accordance with the CEMP and relevant guidance documents, including the Inland Fisheries Ireland guidance for the protection of the aquatic environment during construction works.

Collectively, these measures, together with the project-specific mitigation measures presented in Sections 4.1 and 4.2 and their implementation through the CEMP, including the proposed mitigation and monitoring programmes, will minimise the risk of accidental pollution, protect surface water and groundwater quality, and ensure that the Proposed Development will not cause deterioration in the status of any connected WFD water body or prevent the achievement of the applicable WFD environmental objectives.

4.5 Residual Effects After Implementing Mitigation Measures

Following implementation of the proposed mitigation measures, no significant impacts on the surface water or groundwater environment are anticipated. The identified risks to surface water and groundwater quality, hydromorphological conditions and aquatic habitats will be effectively managed through the application of embedded design measures, pollution prevention procedures, construction management controls, SuDS, and the routine inspection and maintenance of the proposed drainage and wastewater infrastructure.

Accordingly, the Proposed Development is not expected to cause deterioration in the status of Ree (Lough) or the Funshinagh groundwater body**,** nor is it expected to compromise the achievement of their applicable Water Framework Directive environmental objectives.

During the operational phase, the continued operation and maintenance of the proposed drainage infrastructure, hydrocarbon interceptors, foul drainage network and associated pollution prevention measures will ensure that the Proposed Development does not introduce significant additional pressures on the receiving water environment.

On this basis, the Proposed Development is considered to comply with the requirements of the Water Framework Directive (2000/60/EC) and is not expected to prevent the achievement of, or contribute to deterioration in, the status objectives of any hydrologically connected surface water or groundwater body.

5. DESIGNATED SITES AND PROTECTED AREAS

A review was undertaken of designated sites and protected areas located within the potential zone of influence of the Proposed Development. The designated sites identified in proximity to the Proposed Development are summarised in Table 5-1.

Table 5-1 Summary of Designated Sites and Potential to be Impacted by the Proposed Development

Designated Site and distance from Proposed Development	Likely Zone of Influence Determination
Special Areas of Conservation (SAC)	
Lough Ree SAC [000440] **Distance**: 0 km	A section of the Site is located within the boundaries of Lough Ree SAC. There is potential for direct effects on the designated site. Some aspects of the works will take place within Lough Ree itself and on directly adjacent shores. There is the potential for significant negative effects on surface water quality, primarily through sediment mobilisation, transport, and resuspension, which increase turbidity and, in turn, have indirect negative effects on ecosystems, flora, and fauna. In the absence of mitigation, there is potential for negative impacts on this SAC through deterioration in surface water quality during construction. **Hence, further assessment is required.**
Special Protection Area (SPA)	
Lough Ree SPA [004064] **Distance**: 0 km	See SAC description above.
Proposed Natural Heritage Area (pNHA)	
Lough Ree pNHA [000440] **Distance**: 0 km	See SAC description above.

The qualifying interests and conservation objectives of the identified protected areas were considered in the context of the hydrological and hydrogeological pathways associated with the Proposed Development. As the Proposed Development comprises the redevelopment of the existing marina, construction of new jetties and boardwalks, extension of the existing breakwater, public realm improvements, landscaping, and associated drainage infrastructure, the only credible pathways for indirect effects are limited to:

- Temporary increases in suspended sediment concentrations and turbidity resulting from shoreline and in-water construction activities;
- Accidental releases of fuels, oils, concrete, or other potentially polluting substances during construction;
- Temporary localised deterioration in surface water quality associated with sediment-laden surface water runoff and dewatering activities, where required;
- Temporary disturbance of lakebed sediments during construction of the breakwater extension, jetties and associated in-water infrastructure; and
- Temporary disturbance associated with in-water construction activities.

These potential pathways will be effectively managed through the implementation of the embedded mitigation measures and additional pollution prevention measures described in Section 4. Following implementation of these measures, no significant adverse effects on surface water quality, groundwater quality or hydromorphological conditions are predicted.

Accordingly, the Proposed Development is not expected to cause deterioration in the ecological or chemical status of Ree (Lough) (IE_SH_26_750a) or the Funshinagh groundwater body (IE_SH_G_091), nor to adversely affect the water-dependent qualifying interests or conservation objectives of the protected areas considered within this assessment.

6. SUMMARY

This WFD Compliance Assessment has evaluated the potential for the Proposed Development to affect the status of hydrologically connected surface water and groundwater bodies or to prevent the achievement of the applicable WFD environmental objectives established under the Water Framework Directive (2000/60/EC) and the Water Action Plan for Ireland 2024.

The assessment identified Ree (Lough) (IE_SH_26_750a) as the receiving surface water body and the underlying Funshinagh groundwater body (IE_SH_G_091) as the relevant groundwater body. Ree (Lough) is currently classified as having 'Moderate' ecological status and is identified by the EPA as 'Not At Risk' of failing to achieve its environmental objectives. The Funshinagh groundwater body is currently classified as having 'Good' groundwater status and is also identified as 'Not At Risk'.

The assessment concludes that, subject to the implementation of the mitigation measures, best practice construction methods and environmental management procedures described in the EIAR, the Proposed Development is not expected to cause deterioration in the status of any hydrologically connected surface water or groundwater body or compromise the achievement of the applicable WFD environmental objectives.

During operation, the Proposed Development incorporates SuDS, nature-based drainage measures, attenuation storage and hydrocarbon treatment systems to maintain the existing hydrological regime and protect water quality. Foul wastewater generated by the development will be discharged to the existing Uisce Éireann foul sewer network for treatment. Consequently, no significant adverse effects on the receiving water environment are predicted, and the Proposed Development is considered to be compliant with the requirements of the Water Framework Directive (2000/60/EC).

7. REFERENCES

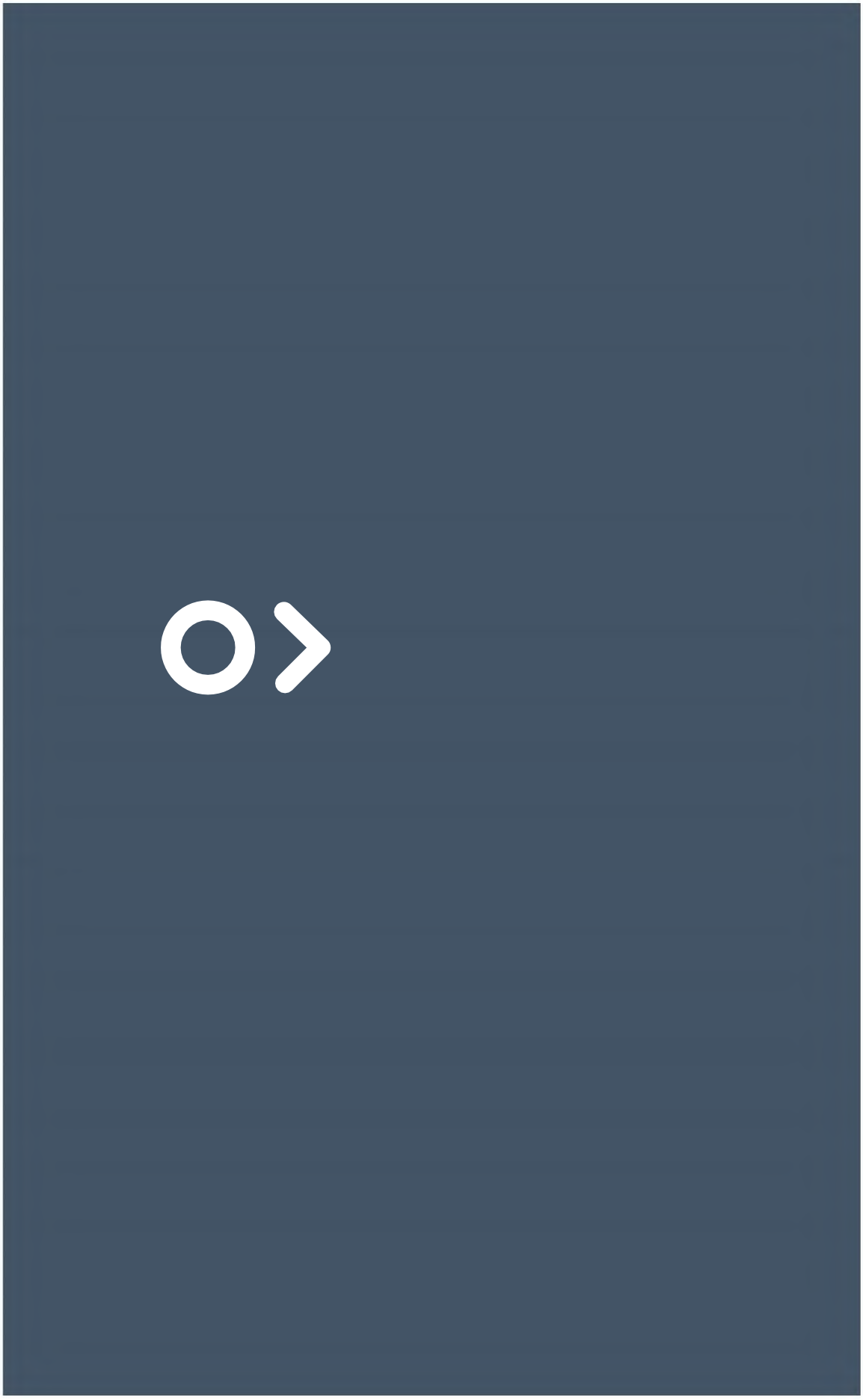
Department of Housing, Local Government and Heritage (2024). Water Action Plan 2024: River Basin Management Plan 2022 – 2027. Accessible from: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/policy-information/river-basin-management-plan-2022-2027/

EPA, GSI, NPWS, online databases were reviewed to assess catchment status, surface and groundwater classification chemistry data, and designated sites.

Environmental Protection Agency (2024). Cycle 3. HA 26E Upper Shannon (Lough Ree) Catchment Report.

European Parliament and Council, 2000. Directive 2000/60/EC Establishing a Framework for Community Action in the Field of Water Policy (Water Framework Directive). Official Journal of the European Communities, L327/1.

European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), as amended.



APPENDIX 7:
PLANS AND PROJECTS

The Hodson Bay Waterfront Park Project is co-funded by the Government of Ireland and the European Union through the EU Just Transition Fund

PLANS AND PROJECTS

1.1 Review of other projects

The online planning system for Longford, Roscommon and Westmeath County Councils, as well as An Coimisiún Pleanála (ACP) website, were consulted on 24/06/2026. There were a number of minor applications related to single house residential developments and agricultural sheds, as well as applications for retention, change of use, conversion boundary alteration and provision of rooftop solar panels in the surrounding area. Several cases for demand of vacant site levy and applications for inclusions of land on the Residential Zone Land Tax Map were also identified within the Cumulative assessment buffer.

Two urban wastewater treatment were identified within the hydrological buffer; Hodson Bay and Environs, with an Agglomeration PE of 500 to 1,000, and Ballyleague and Environs, with an Agglomeration PE of 1,001 to 2,000. Lough Ree Distillery was also identified, outside of the hydrological buffer, but within the boundary of Lough Ree SAC and SPA.

The cumulative assessment focused on other projects with hydrological connectivity to the Proposed Development Site, or those other projects located in the vicinity of the Proposed Development Site footprint. The following planning applications were considered, using the information available in planning application documents and where applicable and available, Appropriate Assessment Screening Reports (AASR) or Natura Impact Statements (NIS):

- Permission for the development at the 13.1 Ha site known as 'Lough Ree Power (LRP) Station' located in Lanesborough (Lanesboro), in the townlands of Aghamore and Lanesborough, Eircode N37E180; in County Longford. The development will consist of the demolition of the existing LRP station (as approved under Longford County Council reg.ref 01/115', An Board Pleanala Ref. PL14.125540 and all subsequent permissions);and the development and operation of electricity grid services - namely a battery energy storage system (BESS) and a Synchronous Condenser (Sync Con). The proposed development comprises two distinct phases of activity - the initial demolition and site reinstatement (Phase 1); following by construction and operation of the new BESS and Sync Con (phase 2). Phase 1 comprises the demolition of existing site structures (with a total footprint of c. 11.195sq.m. and a total gross floor area of c. 20,000 sq.m) including the former LRP station (boiler house, turbine house, bag filter house and associated 80 m high stack); the intermediate peat storage building and associated fuel management system; and ancillary buildings including, electrical building, tippler building and associated control room and office, the screening building, lorry uploading building, water treatment plant building, offices building, laboratory building, workshop and maintenance buildings, oil pumphouse, electrics rooms, railway/locomotive service building, cooling water pump house and sewage/foul water treatment facility. All buildings and structures (including storage tanks and vessels) will be demolished to ground level, with below ground voids filled. Existing hard standing surfac3es (e.g. building ground floor concrete slabs, tarmacadam surfaces, concrete footpaths and road kerbs) will remain in site; and the site will be reinstated and secured with boundary gates and fences, etc. Associated with the demolition activity there will be on-site crushing of material using mobile machinery for the purposed of disposal and/or material re-use. Phase 2 comprises the proposed development of the BESS, Sync Con; and all associated development (Longford County Council Planning Ref.: 2275)[1]
- Permission for the construction of 20 no. wind turbines (Overall ground to blade tip height of 180m); Spoil storage areas; Meteorological mast;110kV onsite substation;Underground cabling;Connection Works to Athlone 110kV substation; New site access(s); Upgrade Works;

[1] https://www.eplanning.ie/LongfordCC/AppFileRefDetails/2275/0

Associated works in Cronin, Skyvalley and adjoining townlands, W of Athlone, Co. Roscommon. (ACP-313750-22)[2]

- Permission for amendments to permitted application WMCC reg Ref. 14/7103/ ABP Ref. PL25.244826 for the removal of 38 no. permitted units and the construction of 70 no. residential units in lands at Cornamaddy, Athlone, Co. Westmeath (Westmeath County Council Planning Ref.: 22/577)[3]
- Permission for 177 no. new residential dwellings at Cornamaddy, Athlone, Co. Westmeath (Westmeath County Council Planning Ref.: 23/60074)[4]
- Permission for excavation of current site for which the provision of 172 2-storey residential dwellings which will consist of 152 3bed units and 20 4bed units, and 160 apartments/duplex units consisting on 23 1bed units, 99 2bed units and 25 3bed units with residential communal open space areas in Ballkeeran and Cornamaddy, Athlone, Co. Westmeath (Westmeath County Council Planning Ref.: 23/60074)
- Permission for construction and operation of a 110kV electricity substation, approximately 7.5km of underground electricity line, and ancillary infrastructure to connect the permitted Seven Hills Wind Farm to the national electricity network[5]
- Permission for landside and waterside inflatable installations and multi-use facility at Barrymore Townland, Hodson Bay, Kiltoom, Athlone, Co. Roscommon. An NIS was submitted with this planning application[6], with granted permission with revised conditions on 11/04/2024 (ACP Case Ref:. PL20.315842)
- Permission for the refurbishment of the existing Cloon to Lanesboro 110 kV Overhead Line which is approximately 65 kilometres long, with granted permission with revised conditions on 19/03/2019[7] (ACP Case Ref:. PL20.302597)
- Permission for the construction of 20 no. turbines and all associated works at Cronin, Skyvalley and adjoining townlands, West of Athlone, Co. Roscommon (ACP Case Ref:. PA20.313750)[8]
- Permission for the development of 426 no. residential units (237 no. houses, 189 no. apartments) creche and associated site works at Cornamagh, Clonbrusk and Coosan, Athlone, Co. Westmeath (ACP Case Ref:. TA25M.307508)[9]
- Permission for the demolition of Lough Ree Power Station (previously approved under ABP ref. PL14.125540), and construction and operation of electricity grid services consisting of a battery storage system (BESS) and a synchronous condenser at Aughamore and Lanesborough, Co. Longford (ACP Case Ref:. PL14.315485)[10]
- Permission for the development of a 110kV single-bay air insulated substation (Cuilleen), 110kV underground grid connection and all associated works at Monksland, Athlone, County Roscommon (ACP Case Ref:. VA20.317588)[11]
- Permission to (1) demolish existing milking parlour and storage shed building; (2) construct agricultural shed to incorporate milking parlour area, dairy, plant room, ancillary storage, drafting/cow dispersal area and external underground slatted washings storage tank; (3) complete all ancillary site works and associated site structures (ACP Case Ref.: PL14.317773)[12]
- Permission for 500 seat outdoor community amphitheatre at Former Council Depot at Commons North Lime Quarry, Lanesborough, Co. Longford (ACP Case Ref.: JP14.318314)

[2] 313750 | An Coimisiún Pleanála
[3] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/22577/0
[4] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/2360374/0
[5] https://www.pleanala.ie/en-ie/case/321238
[6] 315842 | An Coimisiún Pleanála
[7] 302597 | An Coimisiún Pleanála
[8] 313750 | An Coimisiún Pleanála
[9] 307508 | An Coimisiún Pleanála
[10] 315485 | An Coimisiún Pleanála
[11] 317588 | An Coimisiún Pleanála
[12] 317773 | An Coimisiún Pleanála

- Permission for amendments to permitted application. Construction of 70 residential units and all associated site works. The planning application is accompanied by an Environmental Impact Assessment Report and Natura Impact Statement (ACP Case Ref.: PL25M.318510)[13]
- Permission for a large scale residential development: 10 year permission for 332 residential units along with provision of a creche, car parking, electric vehicle charge points bicycle and bin storage facilities, link road, footpath, open space areas, residential communal open space areas and site development works in lands at Ballykeeran and Cornmaddy Townlands, Athlone, Co. Westmeath. Natura Impact Statement and Environmental Impact Assessment Report submitted to planning authority (ACP Case Ref.: LH25M.318736)[14]
- Permission for a large-scale residential development: Construction of 177 residential units including all associated development works. This development will form part of a larger phase of permitted and proposed development at Cornamaddy, Athlone, Co. Westmeath. This planning application is accompanied by an Environmental Impact Assessment Report and Natura Impact Statement (ACP Case Ref.: LH25M.319902)[15]
- Permission for Substitute Consent pursuant to section 177E of the Planning and Development Act 2000 (as amended) for the re-fencing of lands, widening of existing entrance gate, commencement of re-surfacing of existing driveway and repairs to harbour (ACP Case Ref.: SU14.320491)[16]
- Permission for 110kV Electricity Substation, approximately 7.5km of Underground Electricity Line & All Associated Works, located at Moyvannan, Feamore, Lisbaun, Carrownolan, Carrowncloghan, Carrowkeeny, Ardmullan, Curraghboy, Gortnasythe, Derryglad, Eskerbaun & Brideswell, Co. Roscommon. Approved with conditions (18/07/2025, ACP Case Ref.: VA20.321238)[17]
- Permission for construction of a 110kV substation and connection to the national grid. Mihanboy, Taduff East, Monksland, and other townlands, County Roscommon. Approved with conditions (20/11/2025, ACP Case Ref.: VA20.322045)[18]
- Permission for extension of duration for demolition of existing dwelling and the construction of a new two-storey dwelling and all associated site works (ACP Case Ref.: PL25M.322063)[19]
- Permission for Permission for: (1) The construction of the following - a) 1 no. single storey finished goods storage shed extension (411m²), b) 1 no. single storey industrial shed extension for the manufacture of finished goods (124m²), c) and 1 no. Electrical Substation (14m²); (2) Change of use of no. 1 shed for use as an industrial building for the manufacture of finished goods (292m²) and (3) all ancillary and site works associated with the above. Irish Pallet Systems, Ballyclare Td., Lanesborough, Co. Roscommon (ACP Case Ref.: PL20.323540)[20]
- Permission for development comprising of 94 no dwelling units at Lissywollen, Westmeath (ACP Case Ref.: JP25M.323932)[21]
- Permission to: (1) Demolish existing petrol filling station, including existing shop and ancillary buildings, filling pumps, forecourt canopy, existing car wash and associated areas, existing garage & vehicle servicing buildings, existing dwelling house and associated outbuildings; (2) Decommission and remove from site existing waste water treatment system and associated areas and existing underground fuel storage tanks; (3) Construct new petroleum filling station comprising a new single storey building, including a convenience shop and ancillary areas, off licence area, deli, seated café area, outdoor seated area, food stores, staff amenities, public amenities, manager office, staff accommodation, service rooms, plant rooms, ATM, solid fuel store, bin storage building, general signage, new forecourt canopy and fuel dispensing pumps, underground fuel storage tanks and vents, new surface water soakaways, installation of new

[13] 318510 | An Coimisiún Pleanála
[14] 318736 | An Coimisiún Pleanála
[15] 319902 | An Coimisiún Pleanála
[16] 320491 | An Coimisiún Pleanála
[17] 321238 | An Coimisiún Pleanála
[18] 322045 | An Coimisiún Pleanála
[19] 322063 | An Coimisiún Pleanála
[20] https://www.pleanala.ie/en-ie/case/323540
[21] 323932 | An Coimisiún Pleanála

waste water treatment plant and tertiary sand polishing filter, new site vehicle entrance and modification to existing entrance, new boundary treatments, new car and HGV parking areas, and all associated site works at Hodson Bay, Barry Beg Kiltoom, Athlone (Roscommon County Council Planning Ref.: 20361)[22]

- Permission for development consisting of: a) Conservation and protection of all existing woodland areas and the natural environment as a fundamental objective of the development, b) Regeneration of the former woodland areas towards the centre of the Yew Point peninsula, now largely depleted following generations of agricultural activity, with the extensive planting of native tree species of Irish provenance, c) Construction of 36 no. timber eco-cabins providing 12 no. family cabins and 24 no. two-person cabins raised on stilts above ground levels, to conserve existing ground conditions and preserve through routes for movement of wildlife. The cabins arranged in five clusters confined to the southern portion of the lands, carefully respond to their specific site context, respecting existing woodlands and topographical conditions, d) Provision of 4 no. timber guest shelters distributed across the site, and a covered shelter to facilitate the charging and storing of electric golf buggies, e) Extension and refurbishment of the existing building/shop, with minor internal reconfigurations and the upgrading of the exterior with slatted timber screens, new doors and windows and a covered deck area, f) Construction of an Environmental Induction Area to facilitate the immersion of guests in environmental topics and the principles of fully sustainable living, and inform them, specifically, on the ecology and biodiversity of the Yew Point/Lough Ree area, g) All cabins and other new structures are designed to minimise environmental impact and disruption through the off-site fabrication of the main components, careful siting and reversible forms of construction. Materials of low embedded carbon are to be used and operational carbon is minimised through the use of renewable sources of energy. Surface water run-off is dealt with by strategically located Rain Gardens to filter and slowly release rainwater into the ground, h) Sustainable energy sources with the use of renewable solar photovoltaic panels as the primary source of energy generation for the entire development, i) Provision of slatted timber entrance gate structure to provide vehicular access and a covered pedestrian entrance with related signage, j) Construction of 1 no. reinforced "Grass-crete" surfaced car park at the existing site entrance providing 48 no. car parking spaces in total (1 no. car parking space per cabin and 12 no. staff car parking spaces). The car parking provision includes 10 no. EV charge at Yew Point Hodson Bay, townlands of Barrymore Kiltoom Athlone , Co. Roscommon (Roscommon County Council Planning Ref.: 2360204)[23]
- Permission for minor amendments to the sustainable eco-tourism project previously approved under Planning Ref. No. PD/23/60204. The development, situated on a 59.71-hectare (147.55-acre) site, is a low-density visitor destination designed with minimal environmental impact, utilizing renewable energy, sustainable materials, and reversible construction methods. The proposed amendments are: A) minor relocation southward by c.7 metres of the permitted Environmental Induction Building with bicycle parking (8 spaces) relocated adjacent to the building, B) A small increase in the building's floor area (from the permitted area of c.111 sq.m. to c.142 sq.m.), to include a café/restaurant (c.107 sq.m.) area, kitchen (c.28 sq.m.) and storage (c.6 sq.m.) to serve guests and staff only, enhancing the environmental education experience, with associated amendments to the building's elevations. c. The addition of an external covered walkway (c.86 sq.m.) connecting the Environmental Induction Building as amended to the existing WC/shower facilities building. The application is supported by an addendum Natura Impact Statement (NIS) to the original NIS submitted under Ref. No. PD/23/60204 at Yew Point Hodson Bay, Barrymore Kiltoom, Athlone Co. Roscommon (Roscommon County Council Planning Ref.: 2560020)[24]
- Permission for development consisting of the following recreational facilities: Part A. Landside installations details of which are outlined below: 1) 2 No. marquees for use as a reception and wet suit distribution, measuring 9m x 9m x 6.6m high and 21m x 15m x 7.8M high; 2) 1 No. 9m x 9m x 3.8m high disabled changing marquee; 3) 1 No. 9m x 9m x 4.7m high safety

[22] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/20361/0
[23] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/2360204/0
[24] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/2560020/0

briefing marquee; 4) 9 No. 12m x 6m x 3.3m high changing marquees; 5) 3 No. 12m x 15m x 5m high marquees for use as a customer observation area, a dining area and a gift shop; 6) 1 No. 4m x 8m x 3.7m high café marquee; 7) 2 No. 3m x 6m x 3m high prefabricated office buildings; 8) Outdoor showers 5m x 6m; 9) Realignment of existing fencing. All the marquees will be coloured white. The proposed development includes all ancillary and enabling site works. The changing rooms and coffee shop will be connected by gravity to existing public sewerage. Part B. Waterside Installations, details of which are outlined below: 1) Main waterpark consisting of inflatable platforms, slides and climbing walls with overall dimensions of 35m x 40m x 8m high; 2) Inflatable junior waterpark measuring 8m x 15m x 5.2 high; 3) No. 1 inflatable water slide measuring 15m x 12m x 12m high; 4) No. 1 inflatable water slide measuring 31m x 22m x 16m high; 5) No. 1 inflatable water slide measuring 20m x 8m x 13m high; 6) No. 1 inflatable water slide measuring 32m x 16m x 13m high; 7) 50 No. cylindrical shaped inflatable safety booms 4m by .4m diameter. All of the above installations are inflatable PVC structures which are permanently fixed to the lakebed using ropes and anchors. Proposed Operation Periods: It is intended that the overall facility will be operational annually between the 15th of March and the 15th of October. The facility will operate during daylight hours only and will not operate past 21:00 hours on any day (a Natura Impact Statement (NIS) will be submitted to the Planning Authority with the planning application) at Barrymore Townland , Hodson Bay, Kiltoom Athlone (Roscommon County Council Planning Ref.: 2262)[25]

- Permission for the construction of a new two storey dwelling (280 sqm) and associated ancillary works to facilitate the development including site development works, parking, drainage, foul connection to the mains drainage and landscaping at Hodson's Bay , Barrymore Townland Athlone, Co. Roscommon (Roscommon County Council Planning Ref.: 2360194)[26]
- Permission to demolish semi derelict dwelling and construct replacement part two storey and part single storey dwelling, domestic garage and connect to existing public sewer and water services on site, associated site development works and services at Barrymore, Kiltoom, Athlone (Roscommon County Council Planning Ref.: 20571)[27]
- Permission for the construction of a new private dwelling with a detached garage, a new entrance, connection to mains sewer and water services and all associated site development works at Barrymore Townland, Athlone, Co Roscommon (Roscommon County Council Planning Ref.: 21483)[28]
- Permission for development consisting of single storey dwelling with mono-pitch roof to include lower ground floor to rear. The development also includes domestic garage with mono-pitch roof, connection to all mains services together with all associated site works at Barrymore, Kiltoom, Athlone (Roscommon County Council Planning Ref.: 2460593)[29]
- Permission for the construction of a dwelling house, domestic garage, the installation of a sewerage treatment unit and percolation area along with connections to all site services and all other associated site works at Barrybeg Townland, Kiltoom, Athlone (Roscommon County Council Planning Ref.: 21656)[30]
- Permission for works to uprate approximately 35.7km of the overall 35.82km of the existing Athlone to Lanesboro 110 kV overhead line (OHL) circuit located within the administrative boundary within County Roscommon. The proposed development will consist of: 1) Replacement ("restringing") and uprating of the conductor along the existing Athlone-Lanesboro 110 kV OHL circuit; 2) Provision of fibre communication connection on the uprated circuit; 3) Replacement of 155No. Intermediate Wooden Polesets (IMPs), with similar structures, including poleset stays at 32No. IMPs. The change in structures will result in standardised heights from 16m to 23m along the circuit, the majority of height increases will be between 0.1m and 2.0m (at 125 No. IMPs), with the remainder between 2.1m and 3.7m, and a

[25] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/2262/0
[26] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/2360194/0
[27] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/20571/0
[28] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/21483/0
[29] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/2460593/0
[30] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/21656/0

4.0m height increase at only one IMP. 3no. IMP replacements will not result in a height change; 4) Replacement of 25No. Intermediate Wooden Poleset crossarms; 5) Replacement of 1No. steel angle mast, the replacement structure will result in a height increase of 0.5m; 6) Foundation strengthening of 9No. steel angle masts, and 1No. end mast; 7) Bar member replacements to 12No. steel angle masts and 1No. end mast; and, 8) All associated development including insulator/hardware replacement (suspension clamps and vibration dampers), replacement of signage, painting of angle masts, replacement/installation of anticlimbing guards, access tracks, vegetation clearance, temporary construction compounds and all other works necessary to facilitate the development. A Natura Impact Statement (NIS) has been prepared to accompany this planning application, the location of which begins at Athlone 110kV substation in the townland of Monksland and then traverses the following townlands , Knockcroghery Moher Gardentown Toberreeoge Toberdan Feamore Corraclogh Kilteevan Kellybrook Srah Corboley Curry Cloontogher Derrycarbry Carrigeens Cloo (Roscommon County Council Planning Ref.: 2460559)[31]

- Permission to construct a detached dwelling house and garage on site no. 5 (Phase 2). (Note: development access entrance/exit onto the public road, ancillary landscaping and footpaths along with connection to public services and sewers including all associated site development works previously granted under PD/21/233) at Barrymore Townland, Kiltoom, Athlone (Roscommon County Council Planning Ref.: 23298)[32]
- Permission to A) Construct development access entrance /exit onto the public road, ancillary landscaping and footpaths along with connection to public services and sewers including all associated site development works and B) construct 4 no. detached dwelling houses and garages at Barrymore Townland, Kiltoom, Athlone (Roscommon County Council Planning Ref.: 19187)[33]
- Permission for extension of 64.13sqm to clubhouse to include a chair store, kitchen store and office, relocation of gas storage compound and construction of open-sided boat shelter building of 164.15sqm, the expansion of internal circulation road within the site and all ancillary works at Lough Ree Yacht Club, Hillquarter Meehanquarter, Coosan (Westmeath County Council Planning Ref.: 21474)[34]
- Permission for alterations & extensions to existing dwelling house including: 1: Proposed Demolition of the following: 1A: Demolition of existing garage/storage shed & boiler house to rear of existing dwelling to accommodate proposed rear extension, 1B: Demolition of existing rear garden wall, bin & bicycle storage area to rear of existing dwelling to accommodate proposed rear extension, 2: Proposed single storey extension to rear of existing dwelling incorporating hall/link, corridor, pantry/store, kitchen, dining & living area, 3: The following proposed elevational changes: 3A: Proposed extension to front elevation to existing porch incorporating proposed office study, 3B: Proposed window to proposed wc to east northeast side elevation, 3C: Proposed removal of window to proposed master bedroom to west southwest side elevation, 3D: Proposed french doors to master bedroom to rear elevation replacing existing kitchen window, 3E: Proposed door to rear elevation to proposed plan room replacing existing kitchen door, 3F: Proposed removal of existing window to existing/proposed bathroom to be replaced with relocated, longer feature window to rear elevation, 3G: Proposed removal of chimneys and associated works (Westmeath County Council Planning Ref.: 2360337)[35]
- Reconstruction and extension to house and extension to garage. The development will include decommissioning of the existing septic tank and construction of packaged wastewater treatment system and polishing filter at Hillquarter, Coosan, Athlone (Westmeath County Council Planning Ref.: 207164)[36]

[31] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/2460559/0
[32] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/23298/0
[33] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/19187/0
[34] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/21474/0
[35] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/2360337/0
[36] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/207164/0

- Permission for construction of a new ESB substation to the south of the existing factory and elevational change involving relocation of an existing door on the south elevation including all ancillary site works at Vitabond Ltd, Diskin Enterprise Centre, Grace Road (Westmeath County Council Planning Ref.: 21163)[37]
- Permission for the proposed development, which will consist of: Construction of 51 no. residential units which comprises of (a) Type A - 12 no. two storey 2 bed semi-detached houses, (b) Type B - 18 no. two storey 3 bed semi - detached houses, (c.) Type B1 - 2 no. two storey 3 bed semi detached houses, (d) Type B2 - 4 no. two storey 3 bed semi-detached houses, (e) Type C - 9 no. two storey 2 bed terraced houses, (f) Type D - 1 no. single storey 3 bed detached house, (g) Type D1 - 1 no. single storey 3 bed detached house, (h) Type E - 4 no. single storey 2 bed semi detached houses. The proposed development will also consist of widening of existing site entrance, construction of access roads, footpaths and cycle paths, public and private open spaces, car parking spaces, electric car charging points, boundary wall/fence, pedestrian link, street lighting, ducting for utilities, hard & soft landscaped areas, removal of existing trees and planting of new native trees, hedges and shrubs, formation of new connections to existing foul services and to pumping station, attenuation tank for surface water drainage, ESB substation and all associated site works and services. An Appropriate Assessment Screening Report and Environmental Impact Assessment Screening Report of the proposed development has been completed and is available for inspection with this proposed development. The reports concluded that a full EIAR is not required and that the development does not need to proceed to Stage 2 Appropriate Assessment, located at Slí An Choiste, Monksland, Co. Roscommon (Roscommon County Council Planning Ref.: 24155)[38]
- Permission to revise site development layout, from that previously granted planning permission under Ref No.'s 19/348 an 21/455. The revisions will include the following - relocate dwelling unit No's 25 to 32 and provide 1 no. additional detached 2 storey X 4 bed dwelling, thus increasing the development to a total of 79 no. dwelling units; Connect the relocated dwellings and the additional 1 No. detached dwelling, to the previously approved site ancillary services at Monksland, Athlone, Co Roscommon (Roscommon County Council Planning Ref.: 23220)
- Construction of horse stables and ancillary building, dungstead with underground soiled water tank, new agricultural entrance and all associated site works at Killinure North, Glasson, Athlone (Westmeath County Council Planning Ref.: 21263)[39]
- Permission for a) The reprofiling of site levels to south of hotel so as to create landscaped grassed terraces with interconnecting steps, b) a lit pathway for hotel residents to and from the lake shore to replace present pathway alongside driving range, c) 5 no. glazed doors on the south elevation of the hotel building, d) miscellaneous alterations, amendments and refurbishments to the hotel buildings, both internally and externally, e) excavation and removal of soil to the south of hotel and filling with gravel for proposed banqueting room, f) retention of 1 no. prototype of eco-cabin, 35 sqm in size to the north side of hotel linked to the existing drainage system in the hotel, g) enclosure of area to north of hotel for use as a paddock for farm animals, presently containing two concrete bases for chicken coops, a further concrete base, 10 x 4 metres to support an animal shelter, to be open on one side, h) a prefabricated timber structure, 57 sqm in size, beside the car park for use as golf club reception and administration. I) an outdoor heated swimming pool 12m x 6m located to south of hotel. j) a barbeque pavilion, 197 sqm meter in extent. k) a children's play frame to north of the hotel. l) a children's play pond to the south of the hotel and m) provision of bicycle shelter. These works are subject to screening for Appropriate Assessment. Permission is sought for 1) the demolition of 2 no. service sheds to the north-west of the hotel building and their replacement by overflow parking on "grass-crete" surface. 2) alterations to the roof profiles of the bedroom blocks to create a setback penthouse with balconies. 3) the addition of small balconies. 3) the addition of small balconies to some first floor bedrooms, north and south and double door openings in the ground floor bedrooms. 4) an extension at first floor level to the

[37] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/21163/0
[38] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/24155/0
[39] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/21263/0

north of Killinure House to provide seven additional bedrooms, five of which will have a set-back terrace. 5) elevation changes to entrance lobby and cinema on the north and west facades, 6) the construction of a two storey timber and stonework clad gymnasium, with single storey link to the western bedroom block, and with first floor terrace and ground level terrace with swimming pool. 7) the construction of a single storey banqueting room containing rooflights, external access steps and terrace (Westmeath County Council Planning Ref.: 21553)[40]

- Permission is sought for a formal change of use of the previously converted private residence into a Guest House/Function Venue, with 12 number existing bedrooms with en-suites within the castle and coach house, commercial kitchen, dining room, breakfast room, bar and lounge, toilets, stores and associated site works. Retention Permission is sought for the following works undertaken since 2020: (i) completed replacement to the Tower Roof at increased roof pitch with Blue Bangor slate covering and new dormer to back elevation as access to viewing balcony behind parapet and roof lights to front elevation replicating positions on removed roof (ii) repair of existing timber windows, replacement of decayed timber window and door heads with concrete lintels (iii) removal of existing rotten and damaged timber windows with timber framed replacements (iv) removal of cement based render to middle section of front elevation and reinstatement of hood mouldings based on historic photos to same, removal of cement based pointing to external stone elevations and replacement with lime based mortar, repairs to various damaged stone window cills, heads and reveals, stone waterspouts and other associated damaged stone wall elements, (v) removal of internal wall dry lining systems exposing original stone masonry and replacement of lime plaster in some areas, (vi) part sub division of upper levels (with en-suites) (vii) exposure and re-pointing of bare rubble walls, partial completion of new internal stud walls, and floors to upper levels(viii) replacement of concrete floors at ground level and in the 'Great Hall' at first floor with limecrete floors and underfloor heating, (ix) opening up works throughout the structure and removal of damaged and decayed internal drylining, joinery including skirting boards, door frames and doors, architraves, dado rails and picture rails, repairs to all internal timber floors, walls and ceilings, (x) alterations to the non-historic rear and side extensions including removal of blockwork castellations, fitting of new windows in existing openings, and creation of new window openings (xi) alterations to the coach house involving removal of sand cement render, window and door (Westmeath County Council Planning Ref.: 2560266)[41]
- Permission for A large Scale Residential Development on a site of total c. 7.31 ha comprising of a residential development and public open space comprising the following: Construction of 177 no. residential units on a gross site area of 7.31 ha, ranging in height from 2-3 storeys comprising detached, semi-detached, and terraced houses, maisonettes and 3 storey duplex apartments. 65 no. 2 bed houses, 71 no. 3 bed houses and 9 no. 4 bed houses will be provided. 24 no. 1 bed maisonette apartment units and 8 no. 3 storey duplex apartment units will be provided included all associated development works. This development will form part of a larger phase of permitted and proposed development. This planning application is accompanied by an Environmental Impact Assessment Report and Natura Impact Statement (Westmeath County Council Planning Ref.: 2360374)[42]
- Permission for construction of four bay slatted cattle shed (Westmeath County Council Planning Ref.: 2613)[43]
- Permission to construct 49 no. residential units (comprising of 12 no. 1 bed apartments and 37 no. 2, 3 and 4 bed semi-detached and terraced houses) and a creche, and all associated site development works including 1 no. substation, footpaths, car and bicycle parking, bicycle and bin stores, drainage, public lighting and landscaping/amenity areas at Cornamaddy, Athlone, Co. Westmeath. The proposed 49 no. residential units will replace 56 no. units previously permitted under planning ref. 22/253, and the proposed creche will replace a creche previously permitted under planning ref. 22/340. A Natura Impact Statement is submitted to

[40] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/21553/0
[41] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/2560266/0
[42] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/2360374/0
[43] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/2613/0

the Planning Authority with this application (Westmeath County Council Planning Ref.: 2660165)[44]

- Permission for the: • Construction of 75 no. residential units comprising: 51 no. 2 storey semi-detached and terraced houses (consisting 4 no. 2 bed houses and 47 no. 3 bed houses, ranging in size from c.78 sq.m – 120 sq.m each), and 24 no. 3 storey apartment/duplex units (consisting 12 no. 2 bed apartments and 12 no. 3 bed duplexes, ranging in size from 84sq.m to 121 sq.m each), with associated private gardens and east/west facing terraces; • All pedestrian and vehicular access roads and footpaths including a section of the planned east/west distributor road connecting to a section of the distributor road permitted under WMCC Reg. Ref. 14/7103/ ABP Ref. PL25.244826 to the south east of the site. • All associated site development works, services provision, drainage works, residential open space (c.0.28ha) and public open space (c.0.82ha), landscaping, boundary treatment works, public lighting, 1 no. esb substation cabinets, bin stores, car and bicycle parking provision; • Provision of a new detention basin on the eastern portion of the site designed to cater for the proposed development, in lieu of the drainage works permitted under WMCC Reg. Ref. 14/7103 / ABP Ref. PL 25.244826; • This development will form part of a larger/future phase of the development; • No changes to the existing pumping station located outside the northern site boundary; A Natura Impact Statement has been prepared in respect of this application (Westmeath County Council Planning Ref.: 22253)[45]
- 5-year permission for development at a site of total c.1.13ha on lands located at Cornamaddy, Athlone, Co. Westmeath. The site is generally bounded to the west by greenfield lands and Cornamagh Cemetery, to the north by greenfield lands, to the south by greenfield lands and the Ballymahon Road (N55) and to the east by the existing Drumaconn housing estate. The development will consist of modifications to the permitted application WMCC Reg. Ref. 14/7103/ ABP Ref. PL25.244826 and concurrent application WMCC Reg. Ref. 22/577 to include the following: • Removal of the permitted creche c.260sqm and associated parking granted under WMCC Reg Ref. 14/7103/ ABP Ref. PL25.244826. The recently permitted creche granted under WMCC Ref. 22/340 will regularise childcare provision on site. The remaining area will form part of the public open space associated with the wider development at Cornamaddy (c.710sqm). Associated minor landscape revisions to the concurrent application WMCC Reg. Ref. 22/577; • Provision of 6 no. additional houses comprising 4 no. Type A1 4-5 bed 2-3 storey semi-detached units (c.166sqm area each) and 2 no. Type B 3 bed 2 storey semi-detached units (c.113sqm area each). All with associated rear gardens and 2 no. parking spaces per unit. No new house types are proposed under this application; • Relocation and minor alterations including changes to the floor levels, house plots and associated gardens and boundary treatments of the remaining units comprising 4 no. Type A1 4-5 bed 2-3 storey semi-detached units (c.166sqm area each), 2 no. Type B 3 bed 2 storey semi-detached units (c.113sqm area each), 1 no. Type D 5 bed 2-3 storey detached unit (c. 215sqm area) and 2 no. Type E1 3 bed 2 storey semi-detached units (c.112sqm area each) permitted under WMCC Reg. Ref. 14/7103/ ABP Ref. PL25.244826. No changes to the permitted floor area of these units; • Minor modifications to the concurrent application WMCC Reg. Ref. 22/577 to include reconfiguration and relocation of the main access roads south of the planned distributor road. Readjustment of the internal shared access road parallel to the distributor road permitted under WMCC Reg. Ref. 14/7103/ ABP Ref. PL25.244826; • All associated site development works, services provision, connection to water services and connection to the section of the distributor road proposed under WMCC Reg. Ref. 22/577, public open space (c.600sqm), landscaping, boundary treatment works and car parking provision (Westmeath County Council Planning Ref.: 2360047)[46]
- 5-year permission for development at a site of total c.10.87 ha on lands located at Cornamaddy, Athlone, Co. Westmeath. The site is generally bounded to the west by greenfield lands and Cornamagh Cemetery, to the north by greenfield lands, to the south by greenfield lands and the Ballymahon Road (N55) and to the east by the existing Drumaconn

[44] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/2660165/0
[45] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/22253/0
[46] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/2360047/0

housing estate. The development will comprise of a residential development and public open space comprising the following: • Amendments to permitted application WMCC Reg Ref. 14/7103 ABP Ref. PL25.244826 for the removal of 38 no. permitted units (not constructed) to be replaced by: Construction of 70 no. residential units comprising: 4 no. 2 bed terraced houses (c.78 sq.m each), 60 no. 3 bed semidetached (c. 96-116 sq.m each) and 6 no. 4 bed semidetached houses (c. 147 sq.m each) with associated private gardens. • The creche facility, public open spaces, landscaping, roads layouts, car parking, boundary treatment works, public lighting and all associated site works associated with the 87 no. remaining units retained as permitted under WMCC Reg Ref. 14/7103 ABP Ref. PL25.244826 will remain unchanged. • All pedestrian and vehicular access roads and footpaths including a section of the planned east/west distributor road connecting to a sections of the distributor road permitted under WMCC Reg. Refs 14/7103 ABP Ref. PL25.244826 and 22/253 to the east of the site. • All associated site development works, services provision, drainage works, public open space (c.1.03ha), landscaping, boundary treatment works, public lighting, associated esb substation cabinets, bin stores, car and bicycle parking provision. • This development will form part of a larger/future phase of the development. • This planning application is accompanied by an Environmental Impact Assessment Report and Natura Impact Statement (Westmeath County Council Planning Ref.: 22577)[47]

- Permission for the development consisting of a 10 year permission for the provision of a total of 332no. residential units along with provision of a crèche. Particulars of the development comprise as follows: (a) Site excavation works to facilitate the proposed development to include excavation and general site preparation works, (b) The provision of a total of 172no. 2-storey residential dwellings which will consisting of 152no. 3 bed units and 20no. 4 bed units, (c) The provision of a total of 160no. apartments/duplex units consisting of 36no.1 bed units, 99no.2bed units and 25no. 3bed units. The apartment blocks range in height from 2 storey to 4 storey and the duplex blocks range from 2 storey to 3 storey in height, (d) Provision of a 2 storey creche, (e) Provision of associated car parking at surface level via a combination of in-curtilage parking for dwellings and via on-street parking for the creche, duplexes and apartment units, (f) Provision of electric vehicle charge points with associated site infrastructure ducting to provide charge points for residents throughout the site, (g) Provision of associated bicycle storage facilities at surface level throughout the site and bin storage facilities, (h) The provision of a new link road via adjacent lands to the west to provide for vehicular, pedestrian and cyclist access, (i)The provision of internal culverts and associated bridges along with a realignment of a section of an existing drainage channel within the site to facilitate internal access roads along with associated crossing points across the drainage channel (to facilitate pedestrian, cyclist and vehicular crossing points), (j)The creation of a pedestrian footpath alongside the local road which will connect to the existing footpath aligning the N55 National road; (k)Provision of associated open space areas, residential communal open space areas to include formal play areas along with all hard and soft landscape works for private gardens and amenity spaces along with public lighting, planting and boundary treatments to include boundary walls, railings & fencing; (l)Provision of 2no. ESB substations; (m)Internal site works and attenuation systems; (n)All ancillary site development/construction works to facilitate foul, water and service networks for connection to the existing foul, water and ESB networks. An Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS) have been prepared in respect of the proposed development (Westmeath County Council Planning Ref.: 2360074)[48]
- Permission for: 1) Construction of a two Storey childcare facility, including classrooms, reception, kitchen, associated staff areas and office, toilets, storage, plant rooms, circulation areas and photovoltaic panels at roof level (c.668sqm total gross floor area) 2) The proposed facility includes a secure outdoor play area(c. 595 sqm), 18 no. car parking spaces and 20 no. bicycle parking spaces. 3) Existing vehicular access onto the existing link road and provision of an internal access road, footpaths and 2 no. pedestrian access points. 4) All associated site development works, service provision, drainage works, landscape and boundary treatment

[47] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/22577/0
[48] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/2360074/0

works and public lighting. 5) This development will form part of a larger/future phase of the development. 6) A Natura Impact Statement has been prepared in respect of this planning application (Westmeath County Council Planning Ref.: 22340)[49]

- Permission for demolition of Existing Derelict Building & Construct New Two Storey Dwelling including the Installation of a Sewerage Pumping Station discharging into Public Wastewater Mains on adjoining Public Road (L1459),and to de-commission the Existing Septic Tank & Soak pit. A Natura Impact Statement (NIS) has been included with the Application (Westmeath County Council Planning Ref.: 2560355)[50]
- Planning Permission for construction of slatted shed, underground tanks and all associated site works (Westmeath County Council Planning Ref.: 22384)[51]
- Permission for a proposed fully serviced private dwelling with access to public road including domestic garage to the rear and sewage treatment unit. This application includes a Natura Impact Statement (Westmeath County Council Planning Ref.: 22365)[52]
- Permission to construct an Organic Poultry unit with manure storage facility and a five bay storage shed with solid concrete floor, 2 No. meal silos and all ancillary works whereby it is now proposed to (i) Relocate the proposed organic poultry unit with manure storage facility to a new location; (ii) Relocate the proposed five bay storage shed to a new location together with seeking full planning permission for the addition of an underground slatted effluent storage tank under same; (iii) Relocate the original 2 no. meal silos to a new location together with seeking full planning permission for an additional meal silo; (iv) Full Planning Permission is now also being sought for the proposed installation of a new entrance and access road to service the proposed development and all ancillary works at Corrool Fox, Newtowncashel, Co. Longford (Longford County Council Planning Ref.: 22244)[53]
- Permission for proposed extension with underground effluent to existing agricultural storage shed with underground effluent storage tank which was previously granted full planning permission under planning reference number PL17/250 together with the proposed construction of 2 No. silage bases and all ancillary works (Longford County Council Planning Ref.: 21127)[54]
- Permission for PART 8 - Provision of Car and Boat Trailer Parking Area at Lackan Townland, Portrunny, Co. Roscommon (Roscommon County Council: 21692)[55]
- Permission to construct a fisheries base, the proposed development will include, (a) A single-storey building with a combination of flat and pitched roofs, this building will contain offices, meeting rooms, a canteen, sanitary, changing facilities and ancillary areas along with storage facilities for boats and associated equipment, (b) New vehicular access, entrance walls, driveways, car parking areas, and storage yards, (c) Installation of a new mechanical aeration unit with a polishing filter system, a rainwater harvesting system, ground-mounted solar array, site lighting, security fencing, and general landscaping, along with all associated site works. The Planning Application is supported by the submission of a Natura Impact Statement (NIS) at Lackan Townland, Portrunny, Co. Roscommon (Roscommon County Council Planning Ref.: 2560258)[56]
- Permission to (1) demolish existing milking parlour and storage shed building, (2) construct agricultural shed to incorporate milking parlour area, dairy, plant room, ancillary storage, drafting / cow dispersal area and external underground slatted washings storage tank, (3) complete all ancillary site works and associated site structures (Longford County Council Planning Ref.: 2360012)[57]

[49] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/22340/0
[50] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/2560355/0
[51] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/22384/0
[52] https://www.eplanning.ie/WestmeathCC/AppFileRefDetails/22365/0
[53] https://www.eplanning.ie/LongfordCC/AppFileRefDetails/22244/0
[54] https://www.eplanning.ie/LongfordCC/AppFileRefDetails/21127/0
[55] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/21692/0
[56] https://www.eplanning.ie/RoscommonCC/AppFileRefDetails/2560258/0
[57] https://www.eplanning.ie/LongfordCC/AppFileRefDetails/2360012/0

- Permission will consist of a battery energy storage system (BESS) located within a fenced compound and will (subject to detailed design, commercial and technical considerations) comprise of: 1) Up to 896 no. battery energy storage enclosures, organised in approx. 36 no. bays. Each battery enclosure will incorporate battery packs as well as power electronics, battery management systems, cooling units and fire suppression systems. The battery bays will be c. 5m wide x 3m high and vary in length from 33.7m to 36.3m; 2) 10 no. Medium Voltage (MV) Skids (c. 6m x 10.2m x 2.5m); 3) Control Building (c. 378.9 sq.m); 4) Ancillary plant and equipment comprising of: a. an emergency diesel generator plinth (c. 28.7 sq.m); b. two spare parts containers (c. 29.7 sq.m); c. a fire fighting water tank and pump house (c. 15 sq.m); d. an underground oil separator and repurposing of existing settlement basin to provide storm water attenuation; an underground emergency retention basin; e. transformer compound including a bunded main step-up transformer (c. 130 sq.m) and firewalls, and High Voltage (HV) switchgear, linking with an underground cable; and f. 4 no. auxiliary transformers (c. 4m x 4m x 3m); 5) Operation and Maintenance site office including welfare facilities (c. 25.5 sq.m); 6) All services connections including electrical, water and wastewater and connections to existing surface water drains; 7) 1 no. lightning monopole (c. 18m high); 8) Modifications to the permitted HV customer compound currently under construction (under Planning Application Reg. Ref. No. 22/275) to include the upgrade of the 110kV:33kV transformer with associated equipment including Circuit Breaker (CB), modifications to the transformer bund and control building; and 9) All other ancillary site clearance and development works including provision of biodiversity enhancement area; areas of hardstanding; internal access roads; lighting and CCTV; laydown area; fencing and access gates (c. 4m in height); car parking; and connections to site services networks. Note For Information Purposes: This application relates to elements previously consented by Longford County Council under Planning Application Reg. Ref. No. 22/75. It is expected that the already consented demolition of existing structures on site will occur in advance of the commencement of the construction of this proposed development. The demolition works, therefore, do not form part of this application. Planning Permission is being sought for a c. 4.63 ha site within the former Lough Ree Power (LRP) Station , in the townlands of Aghamore and Lanesborough , Lanesborough (Lanesboro) Co. Longford (Longford County Council Planning Ref: 2460315)[58]
- Permission an underground electrical cable and transformer compound which will connect permitted solar farms within the townlands of Middleton, Ballycore, Treanboy, Newtown, Ballynakill, Bunacloy to the national grid via the proposed transformer compound at Lough Ree Power Station (within the townland of Aghamore). The Development will consist of the following components 1) and 2): 1) installation of 110kV:33kV Transformer (TRAFO) Compound on private lands at Lough Ree Power Station, within the townland of Aghamore, with associated equipment including; cable sealing end (CSE) surge arrestor (SA), earth disconnect (ED) current/voltage transformer (CT/VT) house transformer (HT) circuit breaker (CB) 1 x lightening mast (LM) at approx. 8m tall, associated underground cabling connection to the existing 110kV underground cable, diesel generator, security fence, removal of portacabins, use of and realignment of the existing access road and associated works, drainage provision, temporary construction compound and also predevelopment site investigation works. 2) installation of underground 33kV medium Voltage electrical cable with associated ducting primarily on private lands within the townlands of Kilnacarrow, Ballynakill, Cloonkeel, Derryaroge, Cloonbearla, Mount Davys, Cloonbony and Aghamore. 5.77km of the route is located on private lands with0.011km to be located on the L52652 local road and L-11623 local road. The cable installation will include the installation of 7 no. joint bays with associated communication chambers, ancillary development and also pre-development site investigation works. The underground cable is intended to connect the permitted Middleton House Solar Farm (Planning ref: 18/135) and "Middleton House Solar Farm" Bunacloy extension (Planning Ref: 21/225) to the national grid via the proposed transformer compound at Lough Ree Power Station within the townland of Aghamore. Temporary construction compounds to facilitate the installation of the cable will be located along the underground grid connection route. Part of the proposed development site lies within the boundary of Lough Ree Power Station which is

[58] https://www.eplanning.ie/LongfordCC/AppFileRefDetails/2460315/0

licenced by the Environmental Protection Agency under an Industrial Emissions (IE) Licence Ref. P0610-02). Permission is sought for a period of 10 years (Longford County Council Planning Ref.: 22275)[59]

- Permission for works to uprate the existing Lanesboro - Sliabh Bawn 100kV overhead line (OHL). Within County Roscommon the proposed development is located in the following townlands; Ballyleague, Gortgallan, Ballyglass, Cloontuskert, Erenagh, Killavackan, Culleenanory, Curraghroe, Doonahaha, Terila (Dillon), Trila (Martin), Kilmacananneny, Bunnageddy, Corhawny, Tonycurneen and Tooreen. The proposed development will consist of works along the c.9.5km Lanesboro - Sliabh Bawn 100kV OHL between the existing Lanesboro 110kV substation in the townland of Lanesborough in Co Longford & the existing SliabhBawn 110kV substation in the townland of Tooreen, Co. Roscommon. Approximately 9.4 km of the existing OHL circuit is located within the functional area of Roscommon County Council with approximately 0.1 km in the functional area of Longford County Council (A separate planning application is being lodged with Longford County Council). A Natura impact Statement will be submitted to the Planning Authority with the application (Roscommon County Council Planning Ref.: 23342)[60]

[59] https://www.eplanning.ie/LongfordCC/AppFileRefDetails/22275/0
[60] https://www.eplanning.ie/RoscommonCC/searchtypes

1.2 Review of Plans

The following plans have been reviewed and taken into consideration as part of this assessment and are assessed in Table 1-1.

- Roscommon County Council Development Plan 2022-2028
- 4th National Biodiversity Action Plan 2023-2027
- Regional Spatial and Economic Strategy for the Northern and Western Regional Assembly (2020-2032)

Table 1-1. Assessment of Plans.

Plans	Key Policies and Objectives directly related the Natura 2000 Network	Assessment of In-Combination Effects with the Plan
Roscommon County Development Plan 2022-2028	**ED 6.18** Ensure that the development of aggregate resources (stone and sand/gravel deposits) is carried out in a manner which minimises effects on the environment, including the Natura 2000 network and its sustaining habitats (including water dependent habitats and species), amenities, infrastructure and the community, and can demonstrate environmental enhancement through habitat management plans/ecological restoration. **CAEE 8.7** Ensure that proposals for renewable energy developments are considered in the context of relevant EU and national legislation, including in respect of environmental protection. No renewable energy developments will be considered in designated Natura 2000 sites or their surrounding buffer areas. **CAEE 8.27** Ensure that peatland areas, including those designated or proposed for designation (including NHA, pNHA or Natura 2000 sites), are protected so as to allow their continued role as carbon sinks, which contribute towards reducing CO2 emissions **CAEE 8.28** Facilitate forestry related proposals which can support reduction in CO2 emissions, where it can be demonstrated they will not have significant adverse the Natura 2000 network and accord with the principles of proper planning and sustainable development. **NH 10.7** Implement Article 6(3) and where necessary Article 6(4) of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011. **NH 10.8**	The Roscommon Country Council Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for in-combination effects when considered in conjunction with the current Proposed Development were identified. Following the implementation of best practice construction methodologies and mitigation measures, there will be no residual impact on designated sites as a result of the Proposed Development. There will be no adverse effects on receptors listed as QIs/SCIs of European Sites, as a result of the Proposed Development. Therefore, no potential for in-combination effects on European Designated Sites were identified between the Proposed Development in-combination with the Roscommon County Development Plan.

Plans	Key Policies and Objectives directly related the Natura 2000 Network	Assessment of In-Combination Effects with the Plan
	Ensure that no plans, programmes, etc. or projects are permitted that give rise to significant cumulative, direct, indirect or secondary impacts on the integrity of European Sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects, (either individually or in combination with other plans, programmes, etc. or projects). **NH 10.9** Ensure that any plan or project that could have a significant adverse impact (either alone or in combination with other plans and projects) upon the conservation objectives of any Natura 2000 Site or would result in the deterioration of any habitat or any species reliant on that habitat will not be permitted unless in exceptional circumstances.	
Regional Spatial and Economic Strategy for the Northern and Western Regional Assembly 2020-2032	**RPO 5.4** Encourage the prioritisation of Site-Specific Conservation Objectives (SSCO) for all sites of Conservation Value, designated in EU Directive (i.e. SACs, SPAs) to integrate with the development objectives of this Strategy. **RPO 5.5** Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European sites and their integrity. **RPO 5.6** Develop awareness and create a greater appreciation of the benefits of our natural heritage, including on the health, wealth and well-being of the region's ecosystem services. **RPO 5.7** Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate.	The action plans were comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species and designated sites. The Proposed Project has been designed in order to avoid likely significant effect on biodiversity. Where the potential for adverse effect on European Designated Sites and biodiversity has been identified, mitigation will be implemented as prescribed within this NIS to ensure that there is no significant impact. Where pathways for effects on European Sites have been identified, mitigation shall also be implemented to ensure that there are no significant effects. Therefore, no potential for in-combination effects on European Designated Sites were identified between the Proposed Development in-combination with the Regional Spatial and

Plans	Key Policies and Objectives directly related the Natura 2000 Network	Assessment of In-Combination Effects with the Plan
	RPO 5.22 To protect and conserve our designated peatlands and bogs for reasons of biodiversity, ecosystem services, carbon sinks, areas of habitat importance, amenity and landscape value. **RPO 5.23** To establish a Regional Fora that shall prepare an audit of worked out bogs and peatlands within our region and to identify strategic sites and propositions of regional value, including but not limited to areas such as renewable energy, tourism, biodiversity, climate mitigation, education, recreation and amenity. **RPO 5.24** A Regional Fora to be established to set out a framework for sustainable afforestation across the region that enables government policy to grow the sector and that addresses community concerns and perceptions.	Economic Strategy for the Northern and Western Regional Assembly 2020-2032.
National Biodiversity Action Plan 2023-2030	**Objective 1:** Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity. Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan. **Objective 2:** Meet Urgent Conservation and Restoration Needs. Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government. › **Outcome 2A:** The protection of existing designated areas and species is strengthened and conservation and restoration within the existing protected network are enhanced. › **Outcome 2B:** Biodiversity and ecosystem services in the wider countryside are conserved and restored – agriculture & forestry. › **Outcome 2C:** Biodiversity and ecosystem services in the wider countryside are conserved and restored – peatlands & climate action.	The National Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 Network. The Proposed Development has been subject to Appropriate Assessment (Stage 1 & 2). The Proposed Development is in line with the Objectives of the National Biodiversity Action Plan. No potential for in-combination adverse effects on any European Designated Site when considered in-combination with the Proposed Development was identified.

Plans	Key Policies and Objectives directly related the Natura 2000 Network	Assessment of In-Combination Effects with the Plan
	› **Outcome 2D** Biodiversity and ecosystem services in the marine and freshwater environment are conserved and restored. › **Outcome 2E** Genetic diversity of wild and domesticated species is safeguarded. › **Outcome 2F:** A National Restoration Plan is in place to contribute to the ambition of the EU Biodiversity Strategy 2030 and global restoration targets. › **Outcome 2H**: Invasive alien species (IAS) are controlled and managed on an all-island basis to reduce the harmful impact they have on biodiversity and measures are undertaken to tackle the introduction and spread of new IAS to the environment. **Objective 3:** Secure Nature's Contribution to People. Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy. **Objective 4:** Enhance the Evidence Base for Action on Biodiversity. This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts. **Objective 5:** Strengthen Ireland's Contribution to International Biodiversity Initiatives. Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity.	