Planning and Environmental Consultants

# Natura Impact Statement

## Sky Castle Ltd – Moygaddy Mixed Use Scheme, Co. Meath & Co. Kildare

# DOCUMENT DETAILS

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# Table of Contents

## TABLE OF FIGURES

## TABLE OF TABLES



## APPENDICES

# 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) Screening for Appropriate Assessment.

An Appropriate Assessment Screening Report has been prepared and is provided in Appendix 1. This Article 6(3) Appropriate Assessment Screening Report has identified the European Sites upon which the proposed development has the potential to result in significant effects and the pathways by which those effects may occur. It has also identified those qualifying interests/special conservation interests that have the potential to be affected by the proposed development.

This report has been prepared in accordance with the European Commission guidance document 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), European Communities (2018) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

In addition to the guidelines referenced above, the following relevant guidance was considered in preparation of this report:

1. *1.European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
2. *2.Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
3. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission.*

## 1.2 Statement of Authority

Field assessment surveys were undertaken by Julie O'Sullivan (B.Sc., M.Sc.) and Colin Murphy (B.Sc., M.Sc.) across multiple dates in July 2021. Additional follow up surveys were carried out in July 2022. Bat surveys were carried out across various dates in July and August 2021. This report has been prepared by Colin Murphy (B.Sc., M.Sc.). Colin is an experienced ecologist with over two years professional experience in ecological consultancy. This report has been reviewed by Pat Roberts (B.Sc. (Env.)) who has over 16 years' experience in ecological consultancy.

# 2. CONCLUSIONS OF ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING REPORT

The Article 6(3) Appropriate Assessment Screening report identified the potential for the proposed development to result in significant effects on the following European Sites:

- Rye Water Valley/Carton SAC [001398]
- South Dublin Bay SAC [000210]
- North Dublin Bay SAC [000206]
- South Dublin Bay and River Tolka Estuary SPA [004024]
- North Bull Island SPA [004006]

Each of these sites is discussed individually below in terms of the Qualifying Interests/Special Conservation Interests with the potential to be affected and the pathways by which any such effects may occur.

## 2.1 Rye Water Valley/Carton SAC [001398]

The individual pathways for effect that were identified in Table 3-1 of the AA Screening Report **(Appendix 1)** and the QIs with the potential to be affected are described below.

### 2.1.1 Pathway for Effect

The River Rye Water flows along the southern boundary of the development Sites B, C and the MOOR and along the northern boundary of the Kildare Bridge and Moygaddy Bridge sites. A potential pathway for indirect effects on water dependent Qualifying Interests (QIs) was identified in the form of deterioration of water quality resulting from pollution, associated with the construction and operational phases of the Proposed Development. The Blackhall Little stream is a tributary of the River Rye and the River Rye water flows into this SAC, Pollution of surface water and groundwater may result in adverse impacts on the following downstream aquatic or groundwater influenced QI habitats within the SAC in the absence of mitigation:

- [7220] Petrifying springs with tufa formation (*Cratoneurion*)*
- [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)
- [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)

## 2.2 South Dublin Bay SAC [000210]

The individual pathways for effect that were identified in Table 3-1 of the AA Screening Report **(Appendix 1)** and the QIs with the potential to be affected are described below.

### 2.2.1 Pathway for Effect

Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Qualifying Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the development via the Rye Water River and the River Liffey. The SAC is located approximately 31km downstream of the Proposed Development. On an extremely precautionary basis effects on the following aquatic receptors are considered:

- Mudflats and sandflats not covered by seawater at low tide [1140]

## 2.3 North Dublin Bay SAC [000206]

The individual pathways for effect that were identified in Table 3-1 of the AA Screening Report **(Appendix 1)** and the QIs with the potential to be affected are described below.

### 2.3.1 Pathway for Effect

Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Qualifying Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the Proposed Development via the Rye Water River and the River Liffey. The SAC is located approximately 31km downstream of the Proposed Development. On an extremely precautionary basis effects on the following aquatic receptors are considered:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Annual vegetation of drift lines [1210]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi)* [1410]

## 2.1 South Dublin Bay and River Tolka Estuary SPA [004024]

### 2.1.1 Pathway for Effect

Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Special Conservation Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the Proposed Development via the Rye Water River and the River Liffey. The SPA is located approximately 31km downstream of the Proposed Development. Potential effects on all SCI species are considered under Wetland and waterbirds [A999].

## 2.2 North Bull Island SPA [004006]

### 2.2.1 Pathway for Effect

Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Special Conservation Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the Proposed Development via the Rye Water River and the River Liffey. The SPA is located approximately 31km downstream of the Proposed Development. Potential effects on all SCI species are considered under Wetland and waterbirds [A999].

# 3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

## 3.1 Site Location

The Proposed Development site is located on the northern environs of Maynooth town, located in both Co. Meath and Co. Kildare.

The site location is shown in Figure 3-1 below.

## 3.2 Characteristics of the Proposed Development

### 3.2.1 Project Description

Sky Castle Ltd. intends to submit to a total of six planning applications as part of the Moygaddy Mixed Use Development (henceforth referred to as the Proposed Development). A total of three planning applications will be submitted to Meath County Council as the competent authority. The first planning application seeks to provide a Strategic Employment Zone (Biotechnology & Life Sciences Campus), the second planning application for Community Infrastructure which includes a Nursing Home and Primary Care Centre, and the third planning application is for the delivery of the proposed Maynooth Outer Orbital Road (MOOR).

A planning application for a Strategic Housing Development (SHD) will be submitted to An Bord Pleanála under the Strategic Housing Provisions of the Planning and Development (Housing) and Residential Tenancies Act, 2016.

The site location map for the 6 separate planning applications is shown in Figure 3-2.

### 3.2.2 Strategic Employment Zone (Site A)

The site measures approximately 6.8 hectares and is located in County Meath on the northern edge of Maynooth town. The site consists of a green field currently of agricultural use

The Strategic Employment Zone (**Site A**) will consist of:

1) The proposed development comprises 3 no. office blocks and all associated site development works (GFA: 20,633.26 sq.m) as follows:
2) Block A: 5 storey office building providing offices, stair and lift cores and plant rooms (GFA: 10,260.42 sq.m)
3) Block B: 3 storey office building providing offices, stair and lift cores and plant rooms (GFA: 5,186.54 sq.m)
4) Block C: 3 storey office building providing offices, stair and lift cores and plant rooms (GFA: 5,186.30 sq.m)
5) The development includes a surface car park which includes 323 no. car parking spaces and 320 no. bicycle car parking spaces (including 16 no. accessible car parking spaces and 12 no. EV charging spaces)
6) Undertaking of road upgrade works including the provision of a signalised junction on the R157 Dunboyne Road and the construction of a section of the Maynooth Outer Orbital Route and provision of associated pedestrian and cycle infrastructure, as well

as a realignment of a section of the R157. The works to the R157 adjoin the Carton Demense Wall which is a Protected Structure (RPS Ref 91556).

7) Vehicular access to the site will be provided via the R157 Dunboyne Road and provision is made for a secondary vehicular access via the proposed section of the Maynooth Outer Orbital Route.
8) Provision of water, foul and surface water drainage infrastructure including pumping station.
9) Provision of a new pedestrian & cycle bridge structure at the River Rye Water adjacent to the existing Kildare Bridge.
10) Provision of roof mounted solar PV panels on Office Blocks A, B & C.
11) Provision of 3 no. ESB Kiosks.
12) Provision of bin stores, bike stands, landscaping, boundary treatments and public lighting and all other site development works and services ancillary to the proposed development.

### 3.2.3 Healthcare Facilities (Site B)

Site B measures approximately 6.1 hectares and is located in County Meath on the northern edge of Maynooth town. The site consists of a green field currently of agricultural use.

The Healthcare Facilities (**Site B**) will consist of:

1) Construction of a new two-storey Nursing Home of 156 no. bedrooms with a Gross Floor Area (GFA) of 8,576m$^2$, including vehicular pick up/drop-off area and service road;
2) Construction of a new three-storey Primary Care Centre (PCC) with a Gross Floor Area (GFA) of 3,049m$^2$;
3) The development includes a shared surface car park providing 161 no. car parking spaces (comprising of 151 no. standard car parking spaces and 10 no. accessible car parking spaces) and 160 no. bicycle parking spaces.
4) Provision of foul and surface water drainage including wastewater pumping station.
5) Connection to potable water supply at Kildare Bridge.
6) Provision of communal (semi-private) and public open space
7) Provision of hard and soft landscaping including amenity equipment, fencing and gates.
8) Provision of substation and public lighting.
9) Proposed road improvement and realignment works including:

    i. Construction of a new 2-way, 6m-wide access road from the R157 Dunboune Road to include a priority T-junction on the R157,
    ii. Upgrade works to a section of the R157 from the new site entrance south to Kildare Bridge on the R157 (representing delivery of a 15m-wide portion of the Maynooth Outer Relief Road (MOOR)), including creation of a new 2m-wide footpath, 3m-wide cycle lane and pedestrian and cycle link adacent to the Kildare Bridge,
    iii. Provision of pedestrian and cycle improvement measures along the R157 which abuts the Carton Demense Wall which is a Protected Structure (RPS Ref 91556)

10) All other site development works and services ancillary to the proposed development.
11) A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) will be submitted to the planning authority with the planning application.

## 3.2.4 Strategic Housing Development (Site C)

Site C measures approximately 17.6 hectares and is located in County Meath on the northern edge of Maynooth town. The site consists of a green field currently of agricultural use.

The Strategic Housing Development (**SHD: Site C**) will consist of:

1) Construction of 360 no. residential homes comprising:
   196 no houses (including 19 no. 2 beds, 156 no. 3 beds and 21 no. 4 beds).
   102 no. duplexes (including 51 no. 1 beds and 51 no. 2 beds) set out in 6 no. blocks.
   62 no. apartments (including 26 no. 1 beds and 36 no. 2 beds) set out in 2 no. blocks.
2) Provision of a public park and playground with associated 42 no. car parking spaces adjacent to Moygaddy Castle Towerhouse and pedestrian and cyclist links along the Rye Water River. The overall public open space (including the High Amenity Lands) equates to 7.98 hectares.
3) Provision of private open spaces in the form of balconies and terraces is provided to all individual apartments and duplexes to all elevations.
4) Development of a two-storey creche facility (514 sqm), outdoor play area and associated parking of 29 no. spaces.
5) Provision of a single storey Scout Den facility, including a hall, kitchen, meeting room and ancillary facilities (220sqm) and associated parking of 6 no. spaces.
6) Provision of 4 no. bridge structures comprising:
   iv. an integral single span bridge at Moyglare Hall over the Rye Water River to connect with existing road infrastructure in County Kildare and associated floodplain works and embankments.
   v. a new pedestrian and cyclist bridge at Kildare Bridge which will link the proposed site with the existing road network in County Kildare.
   vi. a new pedestrian and cycle bridge across the Blackhall Little Stream on the L6219 adjacent to the existing unnamed bridge.
   vii. a new pedestrian and cycle bridge over the Blackhall Little Stream linking the proposed residential site with the proposed Childcare Facility, Scout Den and Moygaddy Castle Public Park.
7) Provision of 500m of distributor road comprising of 7.0m carriageway with turning lane where required, footpaths, cycle tracks and grass verges. All associated utilities and public lighting including storm water drainage with SuDS treatment and attenuation.
8) Proposed road improvement and realignment works including:
   realignment of a section of the existing L6219 local road, which will entail the demolition of an existing section of the road which extends to circa 2,500 sqm.
   Provision of pedestrian and cycle improvement measures along the L6219 which abuts the boundary of Moygaddy House which is a Protected Structure (RPS ref 91558).
   Provision of pedestrian and cycle improvement measures along the R157 which abuts the Carton Demense Wall which is a Protected Structure (RPS Ref 91556).
9) Provision of 3 no. vehicular and pedestrian accesses from the L6219 local road and an additional vehicular and pedestrian access from the R157 to the Childcare and Scout Den facilities.
10) The proposed development will provide 283 no. of bicycle parking spaces, of which 200 no. are long term spaces in secure bicycle stores and 83 no. are short term visitor bicycle parking spaces. 12 no. bicycle spaces are provided for the creche and 12 no. bicycle spaces are provided for the Scout Den.
11) A total of 667 no. car parking spaces are provided on site located at surface level. The car parking provision includes 10 no. Electric Vehicle charging and Universally Accessible spaces allocated for the Apartment & Duplex units. All Houses will be constructed with provision for EV Charging.

12) Provision of site landscaping, public lighting, bin stores, 3 no. ESB unit substations, site services and all associated site development works. Site C measures approximately 17.6

hectares and is located in County Meath on the northern edge of Maynooth town. The site consists of a green field currently of agricultural use.

13) A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) has been included with this application.

## 3.2.5 Maynooth Outer Orbital Road (MOOR)

Planning Permission is sought by Sky Castle Ltd. for the development of the Maynooth Outer Orbital Road (MOOR) in the townland of Moygaddy, Maynooth Environs, Co. Meath.

The proposed road development will consist of the following:

1. Provision of approximately 1,700m of new distributor road (MOOR Arc) comprising of 7.0m carriageway with turning lane where required, footpaths, cycle tracks and grass verges. All associated utilities and public lighting including storm water drainage with SuDS treatment and attenuation.
2. Proposed road improvement and realignment works including:
    i. realignment of a section of the existing L6219 local road, which will entail the demolition of an existing section of the road which extends to circa 2,500 sqm.
    ii. Provision of pedestrian and cycle improvement measures along the L6219 and L22143 which abuts the boundary of Moygaddy House which is a Protected Structure (RPS ref 91558).
    iii. Provision of pedestrian and cycle improvement measures along the R157 which abuts the Carton Demense Wall which is a Protected Structure (RPS Ref 91556).
    iv. Realignment of a section of the existing L22143 local road and R157, which will entail the demolition of an existing section of the road which extends to circa 3,200 sqm.
    v. Provision of a new signalised junction at the realigned junction between the L22143 and R157.
    vi. Provision of a new signalised junction between the L2214 local road and the MOOR with right-turn lanes on approaches.
    vii. Reconfiguration of the L2214 section within the MOOR arc to a one-way from north to south with right-turn lanes, where applicable.
    viii. Reconfiguration of the northbound lane of the L2214 within the arc to a shared facility for use by pedestrians and cyclists.
    ix. Addition of chicanes on the L6219 and L22143 local road to reduce traffic flow and encourage utilisation of the MOOR.
3. Provision of 4 no. bridge structures comprising:
    i. an integral single span bridge at Moyglare Hall over the River Rye Water to connect with existing road infrastructure in County Kildare and associated floodplain works and embankments.
    ii. a new pedestrian and cyclist bridge at Kildare Bridge which will link the proposed site with the existing road network in County Kildare.
    iii. a new pedestrian and cycle bridge across Blackhall Little stream on the L22143 adjacent to the existing unnamed bridge.
    iv. an integral single span bridge on the north-eastern section of the MOOR arc, over the Blackhall Little Stream, and associated floodplain works and embankments.
4. Provision of site landscaping, public lighting, site services and all associated site development works.
5. A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) has been included with this application.

## 3.2.6 Kildare Bridge Application

Planning Permission is sought by Sky Castle Ltd. for the development of a portion of the Maynooth Outer Orbital Road (MOOR) within Co. Kildare, on the County border to Co. Meath.

The proposed development will consist of the following:

1. Provision of a new bridge structure comprising the following:
    a. a pedestrian and cycle bridge structure to be erected adjacent to the upstream/western side of the existing Kildare Bridge, with a 2m clearance, with the infrastructure tying into new infrastructure in Co. Meath.
    b. This bridge will be a standalone, independent structure that will also support new water main assets
2. New wastewater rising mains to be installed underground adjacent the bridge structure, to the west.
3. New walkways and cycle track will tie-in with new infrastructure to be constructed by Cairn Homes and their Agents.
4. Provision of site landscaping, public lighting, site services and all associated site development works.
5. A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) has been included with this application.

## 3.2.7 Moyglare Bridge Application

Planning Permission is sought by Sky Castle Ltd. for the development of a portion of the Maynooth Outer Orbital Road (MOOR) within Co. Kildare, on the county border to Co. Meath.

The proposed development will consist of the following:

1. Provision of approximately 200m of new portion of distributor road comprising of 7.0m carriageway with footpaths, cycle tracks and grass verges. All associated utilities and public lighting including storm water drainage with SuDS treatment and attenuation. This new road section with pedestrian and cycle infrastructure will tie in with existing infrastructure just east of the roundabout which provides access to the Maynooth Community College and Moyglare Hall Estate.
2. Provision of a new bridge structure comprising the following:
    a. an integral 50m single span bridge at Moyglare Hall over the River Rye Water to connect with existing road infrastructure in County Kildare and associated floodplain works and embankments.
    b. The bridge will include pedestrian and cycle facilities
    c. Extension of the water main assets to serve new developments in Maynooth Environs
3. Provision of site landscaping, public lighting, site services and all associated site development works.
4. A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) has been included with this application.

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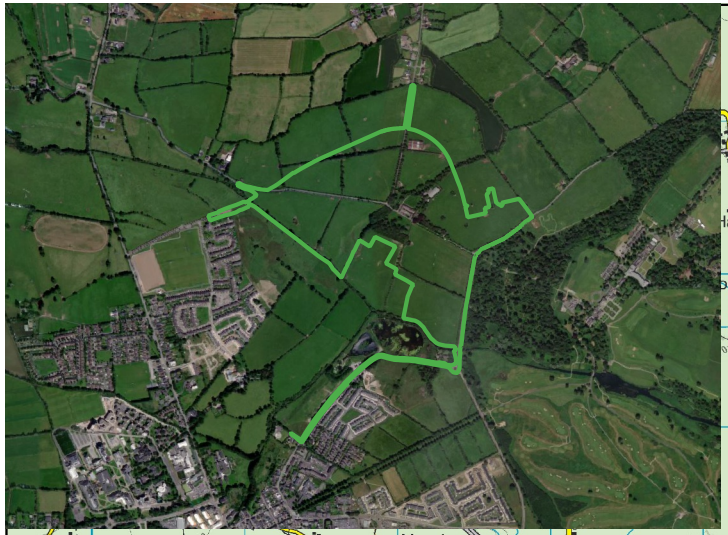

## Map Legend

EIAR Site Boundary



Drawing Title

EIAR Site Boundary

Project Title

Sky Castle Ltd – Moygaddy Mixed Use Scheme, Co. Meath & Co. Kildare

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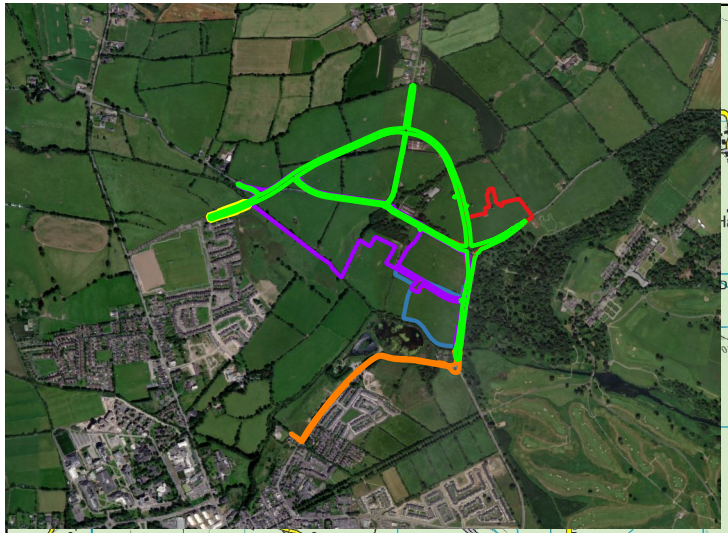

## Map Legend

- Site A - Strategic Employment Zone
- Site B - Healthcare Facilities
- Site C - Strategic Housing Development
- MOOR- Maynooth Outer Orbital Road
- Kildare Bridge
- Moyglare Bridge



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Drawing Title
Six Planning Applications Site Boundaries

Project Title
Sky Castle Ltd – Moygaddy Mixed Use Scheme, Co. Meath & Co. Kildare

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## 3.3 Proposed Site Drainage

Once the drainage systems and the majority of the buildings are constructed, it is proposed to separate the surface water and wastewater drainage networks, which will serve the Proposed Development, and provide independent surface water connections to the adjacent Blackhall Little stream and River Rye and a separate connection to the local wastewater sewer network respectively. The Proposed Development will direct surface water from surfaced areas roads, and roofs, via gravity, infiltration area/attenuation storage, swales, hydrocarbon interceptors and filtration drain to a high-level outfall at the Blackhall Little and at the River Rye, just west of the Kildare Bridge. The remaining areas are considered green space and will be allowed to drain naturally to ground, with negligible impact on the performance of the surface water network, and therefore do not contribute to the surface water drainage networks.

### 3.3.1 Site A

It is proposed that surface water within Site A (from roads, roofs and hardstanding areas) will drain via gravity, and via hydrocarbon interceptors, and infiltration area/attenuation storage areas, to an existing ditch along the southern boundary, which is to be replaced by a new filter trench as part of the upgraded and re-aligned R157. This drain conveys surface water runoff in a southerly direction, ultimately towards the River Rye at the proposed outfall location described below. Underground attenuation will comprise underground poly-tunnel systems, to be provided within proposed green spaces at Site A.

The discharge rates at the proposed surface outfall, which serves Site A, is to be restricted to a low rate less than 10.1 l/s (i.e. 5.61 l/s/ha), which is less than the current greenfield equivalent runoff rate, to ensure that there is no increase in flow rates and volumes to be discharged from the Proposed Development to the receiving infrastructure and waterbodies. Therefore, there will be no adverse impact on the River Rye and other downstream properties.

### 3.3.2 Site B

It is proposed that surface water within Site B (from roads, roofs and hardstanding areas) will drain via gravity, and via hydrocarbon interceptors, and infiltration area/attenuation storage (located in the shared carpark at Site B), to a high-level outfall at the River Rye, just west of the Kildare Bridge. The Proposed Development will direct surface water from surfaced areas roads, and roofs, via gravity, infiltration area/attenuation storage, hydrocarbon interceptors and filtration drain to a high-level outfall at the River Rye, just west of the Kildare Bridge. The remaining areas are considered green space and will be allowed to drain naturally to ground, with negligible impact on the performance of the surface water network, and therefore do not contribute to the surface water drainage networks.

The discharge rates at the proposed surface water outfall, which serves Site B, is to be restricted to a flow rate less than 10.1 l/s (i.e. 5.61 l/s/ha), which is less than the current greenfield equivalent runoff rate, to ensure that there is no increase in flow rates and volumes to be discharged from the Proposed Development to the receiving infrastructure and waterbodies. Therefore, there will be no adverse impact on the River Rye and other downstream properties.

### 3.3.3 Site C

It is proposed that surface water within Site C (from roads, roofs and hardstanding areas) will drain via gravity, and via hydrocarbon interceptors, and infiltration area/attenuation storage and swales (located

in the open spaces to the south and east of the site), to a high-level outfall at the Blackhall Little Stream. The remaining areas are considered green space and will be allowed to drain naturally to ground, with negligible impact on the performance of the surface water network, and therefore do not contribute to the surface water drainage networks.

The discharge rates at the proposed surface water outfall, which serves Site C, is to be restricted to a flow rate less than 5.5 l/s/ha, which is less than the current greenfield equivalent runoff rate, to ensure that there is no increase in flow rates and volumes to be discharged from the Proposed Development to the receiving infrastructure and waterbodies. Therefore, there will be no adverse impact on the Blackhall Little Stream or the Rye Water River and other downstream properties.

### 3.3.4 MOOR

It is proposed that surface water run off on the MOOR is to be captured by adequately spaced trapped road gullies, which connect to a main carrier drain under the road. The rainfall runoff on the aligning footpath and cycle track shall be intercepted by the dividing tree-lined grass verge, with excess runoff only being collected by the road's gully network. Surface water attenuation will be used to control runoff from all hard surfaces in accordance with the GDSDS, with these being restricted to a maximum flow rate of 5.5 l/s/ha, which is less than the calculated greenfield runoff equivalent.

The proposed surface water network is to be split into 4 no. catchments, in order to optimise the network based on the natural topography of the site.

It is proposed that surface water from the MOOR is to discharge the treated and attenuated runoff from each catchment to the existing watercourses at the proposed outfall locations, namely the Rye Water River and Blackhall Little Stream.

### 3.3.5 Kildare Bridge

It is proposed that surface water run off on the Kildare Bridge is to be captured by the proposed drainage features proposed as part of the MOOR. Adequately spaced trapped road gullies, which connect to a main carrier drain under the road. The rainfall runoff on the aligning footpath and cycle track and bridge shall be intercepted by the dividing tree-lined grass verge, rainfall allowed to percolate to ground and/or flow via subsurface flow to the Rye Water River. Surface water attenuation will be used to control runoff from all hard surfaces in accordance with the GDSDS, with these being restricted to a maximum flow rate of 5.5 l/s/ha, which is less than the calculated greenfield runoff equivalent.

### 3.3.6 Moyglare bridge

It is proposed that surface water run off on the Moyglare Bridge is to be captured by the proposed drainage features proposed as part of the MOOR. Adequately spaced trapped road gullies, which connect to a main carrier drain under the road. The rainfall runoff on the aligning footpath and cycle track shall be intercepted by the dividing tree-lined grass verge, with excess runoff only being collected by the road's gully network. Surface water attenuation will be used to control runoff from all hard surfaces in accordance with the GDSDS, with these being restricted to a maximum flow rate of 5.5 l/s/ha, which is less than the calculated greenfield runoff equivalent.

It is proposed that surface water from the MOOR and Moyglare Bridge is to discharge the treated and attenuated runoff from each catchment to the existing watercourses at the proposed outfall locations, namely the Rye Water River.

## 3.3.7 Operational Phase Sustainable Drainage Systems

The Proposed Development is to contain a series of measures for Sustainable Drainage Systems as outlined below

### 3.3.7.1 Rainwater Harvesting

#### Site A

**Rainwater Harvesting** will be considered at each of the proposed office facilities, which can re-use the collected rainwater for welfare facilities, or landscaping purposes. Rainwater Harvesting helps to reduce the overall volume of rainfall runoff entering the surface water network.

*Plate 3-1 Example of Rainwater Harvesting System*

#### Site C

Rainwater harvesting is to be considered at individual residential units in the form of 'Water Butts', which can re-use the collected rainwater for gardening and other domestic watering purposes. Rainwater Butts help to reduce the overall volume of rainfall runoff entering the surface water network.

*Plate 3-2 Example of Domestic Rainwater Harvesting Butt for Site C.*

### 3.3.7.2 Attenuation Storage

Attenuation Storage will be provided at strategic locations, in order to temporarily store excessive surface water, due to the restricted flow rates during rainfall events up to, and including, the design 1% AEP with a 20% additional allowance for climate change. This will allow for the limiting discharge rates at the Proposed Development outfall, as outlined above.

Attenuation will be provided in the form of unlined proprietary poly-tunnel storage units (or similar approved). These poly-tunnel storage units will be underground, in proposed green-spaces for both Site A and Site C and in the car parking area for Site B, for the attenuation of rainfall runoff prior to discharge. Typical poly-tunnel storage systems comprise plastic arch-units with open-graded crushed rock bedding and surround. These units are arranged in rows, with an isolator row for efficient operation and maintenance. These systems also allow for interception of initial rainfall to be provided at the base of the system, by elevating the outlet relative to the systems base. The attenuation systems are to be installed in the Open space areas of Site A and C and in the parking areas of Site B and they are calculated to support a rate that is less than the the natural greenfield runoff rate.

*Plate 3-3 Typical Poly-Tunnel Installation Arrangement*

### 3.3.7.3 Limiting Discharge

The discharge rate from the catchments are to be restricted to a maximum discharge rate of 5.5 l/s/ha, which is less than the equivalent greenfield runoff. The Proposed Development discharge rates are to be restricted by using a flow control device, in a chamber upstream of the outfalls, such as Hydro-Brake Optimum Vortex Flow control unit, or similar approved by Meath and Kildare County Councils, downstream of the proposed attenuation systems as outlined above.

### 3.3.7.4 Permeable Paving

Permeable Paving is to be provided for all in-curtilage car parking space within the Residential Development (Site C), which will have a layer of drainage stone underneath. This will provide at-source treatment, interception, and attenuate rainfall runoff throughout the site, prior to entering the main surface water drainage network. A **Type B** porous asphalt, with a 300mm depth of open graded crushed rock as base course, is to be provided in all car parking spaces that serve the Apartments and Duplex homes in Site C and the Primary Care and Nursing Home in Site B.

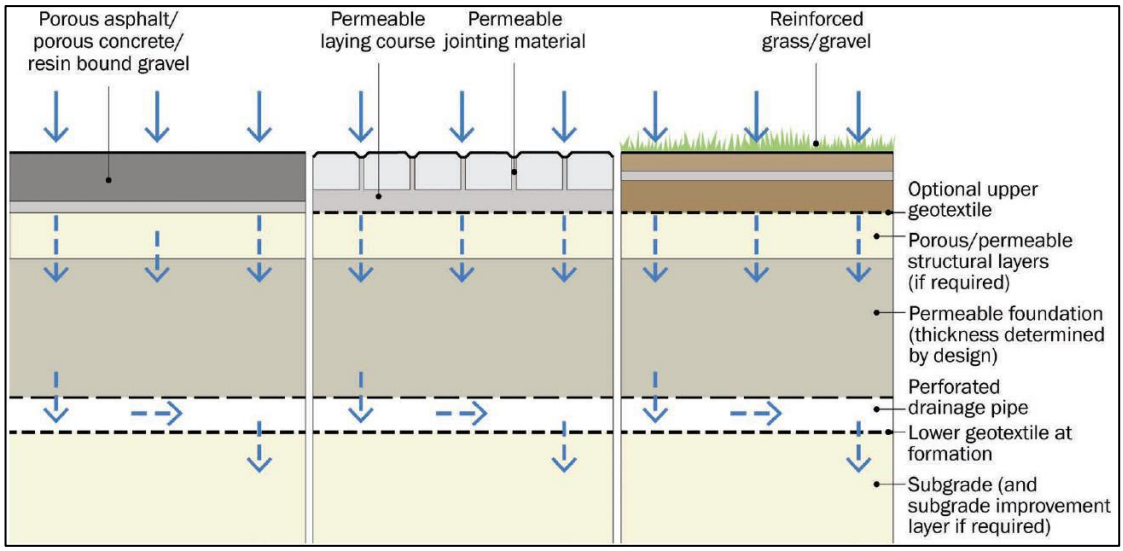



*Plate 3-4 Detail of Type B Pervious Paving (CIRIA C753)*

### 3.3.7.5 Trapped Road Gullies

**Trapped Road Gullies** will be provided for all road gullies serving the Proposed Development, to help prevent sediment and gross pollutants from entering the surface water network, and thus improving the water quality discharging from site. The road gullies will have grated covers with a minimum load classification of D400, for frequent vehicular traffic, and shall be lockable, as required by MCC.

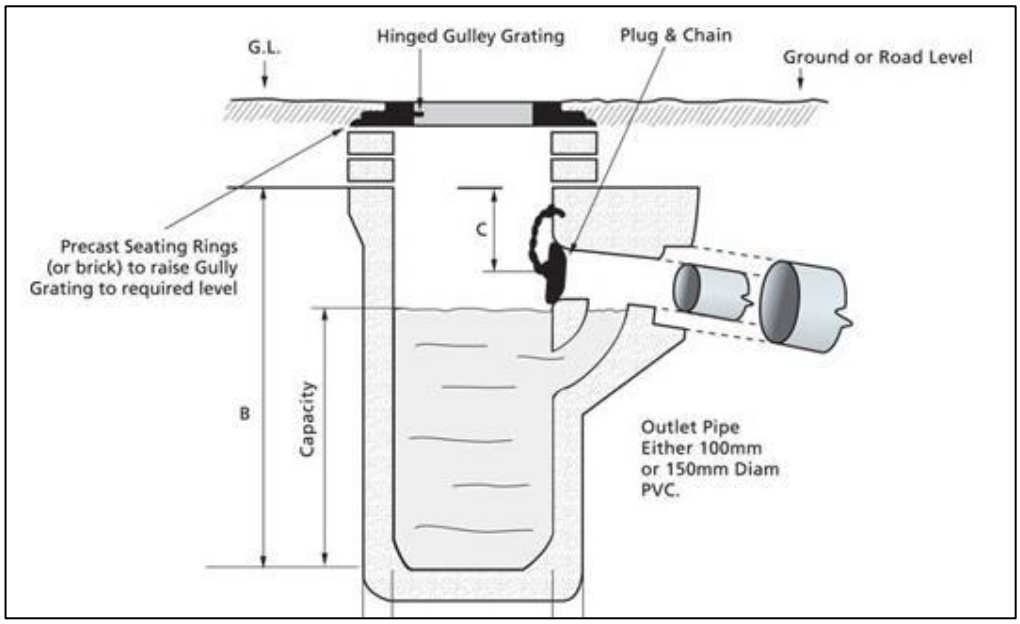



*Plate 3-5 Trapped Road Gully (Typical Detail)*

### 3.3.7.6 Summary of Measures

**Water quality** of the surface water, discharging from site, is to be improved with the following provisions:

Permeable Paving in all private driveways, as described above;
Intensive landscaping, where practical;
Trapped road gullies on all road carriageways, to trap silt and gross pollutants;
Traditional gravity pipe and manhole network will be provided, to convey the collected rainfall runoff as far as the development's outfall. Manholes are provided for

maintenance access at branched connections, change in pipe size and gradient, and at intervals no greater than 90m distance.

Silt traps to be provided on manholes immediately upstream of attenuation systems, as a further preventative measure to trap silt and other gross pollutants;

Surface water attenuation storage in the form of poly-tunnel installation at both Site A and Site C (green spaces) and Site B (car parking area);

A Class 1 Bypass Fuel/Oil Separator is to be provided as an additional and final mitigation measure, prior to surface water discharge from the Proposed Development sites.

## 3.4 Proposed Wastewater Infrastructure

### 3.4.1 Site A, Site B and Site C

It is proposed to provide an onsite underground wastewater pumping station constructed to IW standards and specifications to the west of the proposed nursing home building at Site B within the Proposed Development. Both Site A to the north and Site B to the east and Site C to the west of the proposed pumping station, will drain by gravity to the Pumping Station where it will then be pumped along the R157 and L1013 Local Road towards the existing Irish Water network at Maynooth Municipal Wastewater Pumping Station in County Kildare, approximately 1km south of the proposed pumping station. All wastewater is to discharge to the public infrastructure, this is subject to agreement with Irish Water through the PCE process. In order to achieve this, a new gravity wastewater network is to be installed across the River Rye water, as part of the proposed bridge structure. The wastewater from the proposed crèche facility is to discharge to the main wastewater network that is to be provided within the residential development, via independent packaged pump system.

Individual buildings will connect to the 225mm diameter foul drains via individual 100mm diameter connections, as per Irish Water Code of Practice for Wastewater Infrastructure. The wastewater discharge from each dwelling is to connect, via a private outfall chamber, to the new development's gravity wastewater network, which is to be designed in accordance with the Irish Water Code of Practice for Wastewater Infrastructure. A Pre-Connection Enquiry Form has been submitted to Irish Water for review, for both the Proposed Development, as well as the masterplan development for the LAP lands. Irish Water (IW) issued a Confirmation of Feasibility Letter (Refer to Appendix 4-9 in Volumes 3a, 3b & 3c of this EIAR) for the Proposed Development, subject to upgrade works being carried out.

The foul sewers will be sealed and there will be no discharge of wastewater to ground within the Proposed Development. Wastewater will be pumped from the Proposed Development to the Maynooth pumping station, and onwards from Maynooth pumping station to the Leixlip Wastewater Treatment Plant

## 3.5 Proposed Water Supply

### 3.5.1 Site A and Site B

A proposed new connection to one of the existing watermains local to **Site A** and **Site B** will be made for the Proposed Development. There is an existing 200mm watermain to the south of the **Site B**, in County Kildare, just south of the Kildare bridge. An extension from the existing 200mm watermain will be provided along/within the existing R157 Regional Road, to the connection point at the Proposed Development. It is anticipated that a metered 150mm high density polyethylene connection will be required. Internal distribution network of 150mm HDPE watermain will be provided to serve the proposed Nursing Home and Primary Care Centre and Biotechnology & Life Sciences Campus.

The Proposed Development will be subject to a New Connection Agreement with Irish Water, with all details in accordance with their requirements.

There is no proposed extraction of groundwater at the site for drinking water purposes.

### 3.5.2 Site C

A proposed new connection to one of the existing watermains local to Site C (SHD) will be made for the Proposed Development. It is proposed to provide an extension to the existing 200mm ductile iron watermain at Moyglare Close, with a metered 200mm high density polyethylene connection provided to serve the Proposed Development. Internal distribution networks of 100mm and 150mm HDPE watermain will be provided to serve the proposed residential units. An extension from the Proposed Development's watermain will be provided to serve the proposed crèche facility, adjacent.

The Proposed Development will be subject to a New Connection Agreement with Irish Water, with all details in accordance with their requirements.

There is no proposed extraction of groundwater at the site for drinking water purposes.

# 4. CHARACTERISTICS OF THE RECEIVING ENVIRONNMENT

The sections below describe the details of the desk study and field surveys undertaken to inform this assessment regarding the "Screened in" Sites and associated Qualifying Interests/Special Conservation Interests.

## 4.1 Ecological Survey Methodologies

### 4.1.1 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with the study area 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 EU 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.

### 4.1.2 Ecological Multidisciplinary Walkover Surveys

A dedicated habitat survey of the proposed development site was undertaken on the 6th of July 2021 by Julie O'Sullivan and Colin Murphy, with follow up surveys carried out in July 2022. All habitats within and adjacent to the Proposed Development were readily identifiable during the site visit. Habitats were identified in accordance with the Heritage Council's '*Guide to Habitats in Ireland*' (Fossitt, 2000). Habitat mapping was undertaken with regard to guidance set out in '*Best Practice Guidance for Habitat Survey and Mapping*' (Smith et al., 2011).

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).

### 4.1.3 Rye Water Valley/Carton SAC survey

A survey of the area to the east of Kildare bridge designated as part of Rye Water Valley/Carton House SAC was undertaken on the 21st of July 2022. During the survey, the area was extensibility searched for any Petrifying springs with tufa formation (Cratoneurion) [7220], listed as a QI habitat for Rye Water Valley/Carton House SAC. No Petrifying springs with tufa formation (Cratoneurion) were discovered during the survey.

## 4.2 Desk Study Results

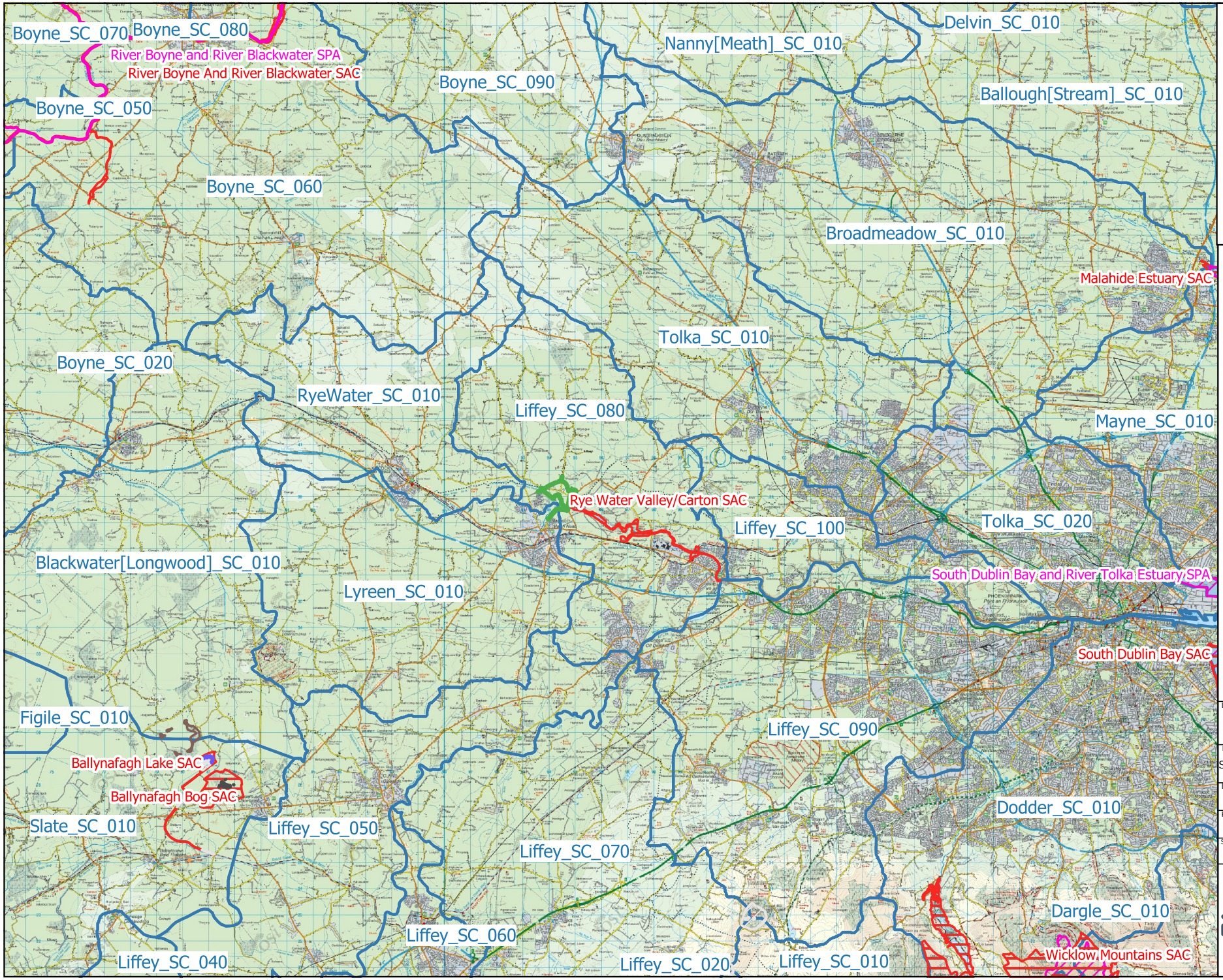
The EPA web-mapper (https://gis.epa.ie/EPAMaps/) was consulted on the 15th November 2021 regarding the water quality and status of waterbodies that are located downstream of the site of the Proposed Development. Figure 5-1 shows the Proposed Development site in relation to the hydrological catchment and designated sites.

The Proposed Development is located within the Rye Water_30 river sub basin.

The Rye Water River flows along the southern boundary of the Proposed Development. The Rye Water is designated as part of the Rye Water Valley/Carton SAC. This watercourse had a 'moderate' ecological status in the WFD monitoring period 2013- 2018 and was listed as 'at risk' of failing to meet their Water Framework Directive (WFD) objectives by 2027.

The Biotic Index of Water Quality (BIWQ) was developed in Ireland by the Environmental Protection Agency (EPA). Q-values are assigned using a combination of habitat characteristics and structure of the macro-invertebrate community within the waterbody. Individual macro-invertebrate families are classified according to their sensitivity to organic pollution and the Q-value is assessed based primarily on their relative abundance within a sample.

The most recent Q-value monitoring for the Rye Water River was undertaken in 2019 at Kildare Bridge (sample station: RS09R010400), outside the south-eastern site boundary. The latest Q-Value at this location has been recorded as "Q3-4 - Moderate". The EPA sampling station result provide a baseline against which any water quality changes occurring in the future can be measured.




## Map Legend

- EIAR Site Boundary
- EPA Hydrological Sub Catchments
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)



N

Drawing Title
European Sites within Zone of Impact

Project Title
Sky Castle Ltd – Moygaddy Mixed Use Scheme, Co. Meath & Co. Kildare

| Drawn By | Checked By |
|---|---|
| CM | CM |
| Project No. | Drawing No. |
| 210414 | Figure 4-1 |
| Scale | Date |
| 1:188,700 | 2022-08-30 |

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## 4.2.1 Rye Water Valley/Carton SAC [001398]

The Site-Specific Conservation Objectives document (Version 1, 2021) and Natura 2000 Data Form for this site as available on the NPWS website was reviewed during this assessment. Information in relation to the conservation objectives of the QI's and site-specific pressures and threats for the SAC is detailed below.

### 4.2.1.1 Review of Conservation Objectives

The relevant QIs and the associated conservation objectives of the site are presented in Table 4-1. The Targets and Attributes for the relevant habitats and species, as described in the Rye Water Valley/Carton SAC [001398] Conservation Objectives supporting documents, were reviewed and considered in this assessment.

*Table 4-1 Qualifying Interests and Conservation Objectives.*

| Qualifying Interest | Conservation Objective |
|---|---|
| 7220 Petrifying springs with tufa formation (*Cratoneurion*)* | To restore the favourable conservation condition of Petrifying springs with tufa formation (*Cratoneurion*)* in Rye Water Valley/Carton SAC |
| 1014 Narrow-mouthed Whorl Snail *Vertigo angustior* | To restore the favourable conservation condition of Narrow-mouthed Whorl Snail (*Vertigo angustior*) in Rye Water Valley/Carton SAC |
| 1016 Desmoulin's Whorl Snail *Vertigo moulinsiana* | To maintain the favourable conservation condition of Desmoulin's Whorl Snail (*Vertigo moulinsiana*) in Rye Water Valley/Carton SAC |

### 4.2.1.2 Site Specific Pressures and threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to effect on the SAC were reviewed and considered in relation to the Proposed Development. These are provided in Table 4-2 below.

*Table 4-2 Site specific threats, pressures and activities to have effect on the SAC.*

| Negative Impacts | | |
|---|---|---|
| Rank | Threats and pressures [code] | Inside/outside/both [i] o [b] |
| M | E01.01 - continuous urbanisation | O |
| L | A08 - fertilisation | B |
| L | D01.02 - roads, motorways | O |
| L | A04 - grazing | I |
| L | A10.01 - removal of hedges and copses or scrub | I |
| L | E01.03 - dispersed habitation | O |
| M | J02.05.02 - modifying structures of inland water courses | I |
| M | B - sylviculture, forestry | I |
| L | A04 - grazing | O |

*Rank: H = high, M = medium, L = low; i = inside, o = outside, b = both*

No additional pathways for impact with regard to the site-specific threats, pressures were identified.

#### 4.2.1.2.1 QI Habitats of Rye Water Valley/Carton SAC

##### 7220 Petrifying springs with tufa formation (Cratoneurion)*

According to the NPWS site synopsis, '*The marsh, mineral spring and seepage area found at Louisa Bridge supports a good diversity of plant species, including stoneworts, Marsh Arrowgrass (Triglochin palustris), Purple Moor-grass (Molinea caerulea), sedges (Carex spp.), Common Butterwort (Pinguicula vulgaris), Marsh Lousewort (Pedicularis palustris), Grass-of-parnassus (Parnassia palustris) and Cuckooflower (Cardamine pratensis). The mineral spring found at the site is of a type considered to be rare in Europe and is a habitat listed on Annex I of the E.U. Habitats Directive*', (NPWS, 2013).

#### 4.2.1.2.2 QI species of Rye Valley/Carton SAC

##### Vertigo species

According to the NPWS site synopsis, '*The rare Narrow-mouthed Whorl Snail and Desmoulin's Whorl Snail occur in marsh vegetation near Louisa Bridge. Both are rare in Ireland and in Europe and are listed on Annex II of the E.U. Habitats Directive*', (NPWS, 2013).

## 4.2.2 South Dublin Bay SAC [000210]

The Conservation Objectives document and Natura 2000 Data Form for this site as available on the NPWS website was reviewed during this assessment (NPWS,2013). Information in relation to the conservation objectives of the QIs and site-specific pressures and threats for the SAC is detailed below.

### 4.2.2.1 Review of the Conservation Objectives

The relevant QI's and the associated conservation objectives of the site are presented in Table 4-3. The Targets and Attributes for the relevant habitats and species, as described in the South Dublin Bay SAC Conservation Objectives supporting documents, were reviewed and considered in this assessment.

*Table 4-3 Qualifying Interests and Conservation Objectives.*

| Qualifying Interest | Conservation Objective |
|---|---|
| [1140] Mudflats and sandflats not covered by seawater at low tide | To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in South Dublin Bay SAC |

### 4.2.2.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to effect on the SPA were reviewed and considered in relation to the Proposed Development. These are provided in Table 4-4.

*Table 4-4 Site specific threats, pressures and activities to have effect on the SAC.*

| Negative Impacts | | |
|---|---|---|
| Rank | Threats and pressures [code] | Inside/outside/both [i] o [b] |
| M | D01.01 - paths, tracks, cycling tracks | i |
| H | E02 - Industrial or commercial areas | o |
| M | E03 – Discharges | b |
| H | J02.01.02 - reclamation of land from sea, estuary or marsh | o |
| M | F02.03.01 - bait digging / collection | i |

| Negative Impacts | | |
|---|---|---|
| Rank | Threats and pressures [code] | Inside/outside/both [i] o [b] |
| M | G01.01.02 - non-motorized nautical sports | i |
| M | G01.01 - nautical sports | i |
| H | G01.02 - walking, horseriding and non-motorised vehicles | i |
| H | K02.02 - accumulation of organic material | i |
| H | E01 - Urbanised areas, human habitation | o |
| M | H03 - Marine water pollution | b |
| L | D01.02 - roads, motorways | o |

*Rank: H = high, M = medium, L = low; i = inside, o = outside, b = both*

*E03 Discharges (Medium)* and *H03 - Marine water pollution (Medium)* have been identified as having potential to impact on the aquatic QI habitats for which the SAC has been designated. Construction activities and the operation of the proposed development have the potential to result in pollution to surface waters.

#### 4.2.2.2.1 QIs of South Dublin Bay SAC

**[1140] Mudflats and sandflats not covered by seawater at low tide**

According to the site-specific conservation objectives document the habitat area Mudflats and sandflats not covered by seawater at low tide within South Dublin Bay SAC was estimated using OSi data as 720ha.

## 4.2.3 North Dublin Bay SAC [000206]

The Conservation Objectives document and Natura 2000 Data Form for this site as available on the NPWS website was reviewed during this assessment (NPWS, 2013). Information in relation to the conservation objectives of the QIs and site-specific pressures and threats for the SAC is detailed below.

### 4.2.3.1 Review of Conservation Objectives

*Table 4-5 Qualifying Interest and Conservation*

| Qualifying Interest | Conservation Objective |
|---|---|
| [1140] Mudflats and sandflats not covered by seawater at low tide | To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in North Dublin Bay SAC |
| [1310] *Salicornia* and other annuals colonising mud and sand | To restore the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in North Dublin Bay SAC |
| [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) | To maintain the favourable conservation condition of Atlantic salt meadows (Glauco-Puccinellietalia maritimae) in North Dublin Bay SAC |
| [1410] Mediterranean salt meadows (*Juncetalia maritimi*) | To maintain the favourable conservation condition of Mediterranean salt meadows (Juncetalia maritimi) in North Dublin Bay SAC |

#### 4.2.3.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to effect on the SPA were reviewed and considered in relation to the Proposed Development. These are provided in Table 4-6.

*Table 4-6 Site specific threats, pressures and activities to have effects on the SAC.*

| Negative Impacts | | |
|---|---|---|
| Rank | Threats and pressures [code] | Inside/outside/both [i] o [b] |
| L | F02.03 - Leisure fishing | i |
| H | E02 - Industrial or commercial areas | o |
| M | A04 – grazing | i |
| L | G05.05 - intensive maintenance of public parcs /cleaning of beaches | i |
| M | I01 - invasive non-native species | i |
| M | J01.01 - burning down | i |
| H | E01 - Urbanised areas, human habitation | o |
| H | K03.06 - antagonism with domestic animals | i |
| M | F02.03.01 - bait digging / collection | i |
| M | G02.01 - golf course | o |
| M | H01.09 - diffuse pollution to surface waters due to other sources not listed | i |
| M | H01.03 - other point source pollution to surface water | i |
| H | G01.02 - walking, horseriding and non-motorised vehicles | i |
| H | E03 – Discharges | i |
| M | G01.01 - nautical sports | i |

*H01.09 - diffuse pollution to surface waters due to other sources not listed (medium), H01.03 - other point source pollution to surface water (medium)* and *E03 – Discharges (high)* have been identified as having potential to impact on the aquatic/surface water dependent QIs for which the SAC has been designated. Construction activities and the operation of the Proposed Development have the potential to result in pollution to surface waters.

##### 4.2.3.2.1 *QIs North Dublin Bay SAC*

###### [1140] Mudflats and sandflats not covered by seawater at low tide

According to the site specific conservation objectives document the habitat area of mudflats and sandflats not covered by seawater at low tide within North Dublin Bay SAC was estimated using OSi data as 578ha.

###### [1310] *Salicornia* and other annuals colonising mud and sand

According to the conservation supporting objectives document (coastal habitats), this habitat is mainly situated in a large area on the mudflats north of the causeway called the Salicornia bank. This area developed soon after the construction of the causeway in 1964 so this section of habitat is relatively

young. Glasswort (*Salicornia* sp.) is quite dense in places (20-30%) but becomes sparser at the edges of its distribution.

The habitat may be wider at the mouths of creeks and extend further onto the mudflats along the bank of creeks for up to 25 m in places. This zone of Glasswort is discontinuous and disappears in places leaving a boundary between ASM and the mudflats. This is particularly seen along the edge of the southern section where it disappears frequently and reappears at and around the mouths of the creeks.

#### [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

According to the conservation supporting objectives document (coastal habitats) this habitat dominates the saltmarsh vegetation. It extends from the saltmarsh cliff (the boundary with the mudflats) back to the golf course boundary or with MSM dominated by Sea Rush. The front of the saltmarsh is dominated by the presence of Sea Purslane (Atriplex portulacoides). Common Saltmarsh-grass, Glasswort, Annual Sea-blite and Lax-flowered Sea Lavender are all frequent to abundant in cover. Other species such as Sea Arrowgrass (Triglochin maritima), Greater Sea Spurrey and Sea Pink (Armeria maritima) are less frequent. Clumps of Common Cordgrass are also frequent in this zone and occasionally abundant in places. The cover of this species is less frequent towards the tips of the island and most frequent on the saltmarsh in the areas closer to the causeway. Parts of the edge of the saltmarsh show signs of erosion.

#### [1410] Mediterranean salt meadows (*Juncetalia maritimi*)

According to the conservation supporting objectives document (coastal habitats), this habitat is found at the back of the saltmarsh section found north of the causeway. One area is located on upper saltmarsh and its landward boundary is the St Anne's Golf Course embankment. The other main section is found towards the northern tip of the island, north of the golf course. Here there is an excellent natural transition between the ASM to MSM on upper saltmarsh, and then into fixed dunes. This habitat is distinguished by the presence of Sea Rush. This tall rush forms large clumps in places and though it may not actually dominate the cover (cover varies from 20-50%), it is the most significant part of the vegetation. Many of the clumps have other species colonising within them and this reduces the actual overall cover of Sea Rush.

## 4.2.4 South Dublin Bay and the River Tolka Estuary SPA [004024]

The Conservation Objectives document and Natura 2000 Data Form for this site as available on the NPWS website was reviewed during this assessment (NPWS,2015). Information in relation to the conservation objectives of the SCIs and site-specific pressures and threats for the SPA is detailed below.

### 4.2.4.1.1 *Review of Conservation Objectives*

The relevant SCI's and the associated conservation objectives of the site are presented in 4-7. The Targets and Attributes for the relevant habitats and species, as described in the South Dublin Bay and the River Tolka Estuary SPA Conservation Objectives supporting documents, were reviewed and considered in this assessment.

*Table 4-7 Special Conservation Interest and Conservation Objectives*

| Special Conservation Interest | Conservation Objective |
|---|---|
| Wetlands and Waterbirds [A999] | To maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it. |

#### 4.2.4.2 Site Specific Pressure and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to effect on the SPA were reviewed and considered in relation to the Proposed Development. These are provided in Table 4-8.

*Table 4-8 Site specific pressures, threats and activities with potential to have effect on the SPA.*

| Negative Impacts | | |
|---|---|---|
| Rank | Threats and pressures [code] | Inside/outside/both [i] o [b] |
| H | E02 - Industrial or commercial areas | o |
| M | F02.03.01 - bait digging / collection | i |
| H | G01.02 - walking, horseriding and non-motorised vehicles | i |
| M | G01.01 - nautical sports | i |
| M | F02.03 - Leisure fishing | i |
| H | E01 - Urbanised areas, human habitation | o |
| H | J02.01.02 - reclamation of land from sea, estuary or marsh | o |
| M | K02.03 - eutrophication (natural) | i |
| H | E03 - Discharges | i |
| M | D01.02 - roads, motorways | o |

*Rank: H = high, M = medium, L = low; i = inside, o = outside, b = both*

*E03 Discharges (High)* and *E01 Urbanised areas/human habitation* (High) have been identified as having potential to impact on the SCI bird species and the SCI feature Wetlands [A999] for which the SPA has been designated. Construction activities and the operation of the Proposed Development have the potential to result in pollution to surface waters.

The screening assessment of the Proposed Development, see Table 3-1, identified potential for water pollution associated with the construction phase and operational phases of the development.

##### 4.2.4.2.1 *SCIs of South Dublin Bay and the River Tolka Estuary SPA*

**Wetlands and Waterbirds [A999]**

According to the site-specific conservation objectives document the wetland habitat area was estimated as 2,192ha using OSi data and relevant orthophotography.

According to the Conservation Objectives Supporting Document (NPWS, 2014), '*The wetland habitats can be categorised into three broad types: subtidal; intertidal and supratidal. Over time and though natural variation these subcomponents of the overall wetland complex may vary due to factors such as changing rates of sedimentation, erosion etc. Many waterbird species will use more than one of the habitat types for different reasons throughout the tidal cycle. Subtidal areas refer to those areas contained within the SPA that lie below the mean low water mark and are predominantly covered by marine water. Tidal rivers, creeks and channels are included in this category.*'

### 4.2.5 North Bull Island SPA [004006]

The Conservation Objectives document and Natura 2000 Data Form for this site as available on the NPWS website was reviewed during this assessment (NPWS,2015). Information in relation to the conservation objectives of the SCIs and site-specific pressures and threats for the SPA is detailed below.

*Table 4-9 Special Conservation Interests Conservation Objectives*

| Special Conservation Interest | Conservation Objective |
|---|---|
| Wetlands and Waterbirds [A999] | To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it. |

*Table 4-10 Site specific pressures, threats and activities with potential to have effect on the SPA.*

| Negative Impacts | | |
|---|---|---|
| Rank | Threats and pressures [code] | Inside/outside/both [i] o [b] |
| M | D03.02 - Shipping lanes | O |
| M | E03 - Discharges | O |
| M | G01.01 - nautical sports | I |
| M | G02.01 - golf course | I |
| M | F02.03.01 - bait digging / collection | I |
| M | E02 - Industrial or commercial areas | O |
| M | D01.02 - roads, motorways | O |
| M | E01.01 - continuous urbanisation | O |
| L | E01.04 - other patterns of habitation | I |
| H | G01.02 - walking, horseriding and non-motorised vehicles | I |
| M | E03 - Discharges | I |
| H | D01.05 - bridge, viaduct | I |

*Rank: H = high, M = medium, L = low; i = inside, o = outside, b = both*

*E03 Discharges (High)* has been identified as having the potential to impact on the SCI feature Wetlands [A999] for which the SPA has been designated. Construction activities and the operation of the Proposed Development have the potential to result in pollution to surface waters.

The screening assessment of the proposed project, see Table 3-1, identified potential for water pollution associated with the construction phase and operational phases of the Proposed Development.

#### 4.2.5.1.1 *SCI of North Bull Island SPA*

##### Wetlands and Waterbirds [A999]

According to the site synopsis (NPWS, 2014), '*The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the E.U. Birds Directive, notably Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl. North Bull Island is a Ramsar Convention site, and part of the North Bull Island SPA is a Statutory Nature Reserve and a Wildfowl Sanctuary*'.

# 4.3 Ecological Survey Results

## 4.3.1 Habitats

A dedicated habitat survey of the proposed development site was undertaken on the 6th of July 2021 by Julie O'Sullivan and Colin Murphy, with follow up surveys carried out in July 2022. All habitats within the development site were readily identifiable during the site visit. The habitat classifications and codes correspond to those described in '*A Guide to Habitats in Ireland*' (Fossitt, 2000).

The following section describes the habitats found within the 6 separates planning application sites (Site, A, Site B, Site C, MOOR, Kildare bridge and Moyglare Bridge).

### 4.3.1.1 Site A- Strategic Employment Zone

*Table 4-11. Habitats recorded in Site A*

| Habitat (Fossitt) | Code |
|---|---|
| Improved Agricultural Grassland | *GA1* |
| Hedgerows | *WL1* |
| Treeline | WL2 |
| Buildings and Artificial Surfaces | *BL3* |

***Improved Agricultural Grassland (GA1)*** is the dominant habitat within the development site. This habitat had a low species diversity and a low sward height, and during the survey was being grazed by sheep and horses. Species recorded in this habitat included abundant perennial rye-grass (*Lolium perenne*), clovers (*Trifolium* spp.), broadleaved plantain (*Plantago major*), frequent ribwort plantain (*Plantago lanceolata*). creeping buttercup (*Ranunculus repens*), annual meadow grass (*Poa annua*), daisy (*Bellis perennis*), cock's-foot (*Dactylis glomerata*), crested dogs tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*), nettle (*Urtica dioica*), dandelion (*Taraxacum officinale* agg.), broad-leaved dock (*Rumex obtusifolius*), mouse-ear chickweed (*Cerastium fontanum*), creeping thistle (*Cirsium arvense*) and germander speedwell (*Veronica chamaedrys*). See Plate 4.1.

Field boundaries are delineated by mature ***Treelines (WL2)*** and ***Hedgerows (WL1).*** Species recorded in the treelines (WL2) include oak, ash, sycamore, hawthorn and beech and was recorded along the southern boundary of the site. Species recorded in the hedgerows (WL1) and hedgerow understory included elder (*Sambucus nigra)*, hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus fructicosus*), willows (*Salix* spp.), holly (*Ilex aquilifolium*), ash (*Fraxinus excelsior*) and ivy (*Hedera helix*). Species recorded in the field margins and hedgerow understory included common sorrel (*Rumex acetosa*), meadow buttercup (*Ranunculus acris*), herb Robert (*Geranium robertianum*), *harts tongue fern (Asplenium scolopendrium*), dandelion (*Taraxacum officinale* agg.), primrose (*Primula vulgaris*), vetch (*Vicia* spp.), lesser celandine (*Ficaria verna*), lords and ladies (*Arum maculatum*) and creeping cinquefoil (*Potentilla reptans).* See plate 4.2.

Remnant dried up former drainage ditches occur in parts of the site bordering hedgerows and treelines in the north-west of the site. These former drainage ditches had dried up, had no flow and were heavily vegetated with dense bramble and nettles.

The R157 located along the eastern boundary of the proposed development site is categorized as Buildings and Artificial Surfaces (BL3). See Plate 4.3.

There are no Annex I habitats listed under the EU Habitats Directive present within the Proposed development site boundary. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data

Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape.

*Plate 4-1.Agricultural grassland recorded within development site A.*

*Plate 4-2. Hedgerow habitat along the eastern boundary of site A*

*Plate 4-3. R157 located along the eastern boundary of Site A.*

### 4.3.1.2 Site B- Healthcare Facilities

*Table 4-12. Habitats recorded within development site B.*

| Habitat (Fossitt) | Code |
|---|---|
| Improved Agricultural Grassland | *GA1* |
| Hedgerows | *WL1* |
| Treeline | WL2 |
| Eroding/upland Rivers | *FL2* |
| Buildings and Artificial Surfaces | *BL3* |

***Improved Agricultural Grassland (GA1)*** is the dominant habitat within the development site. This habitat had a low species diversity and a low sward height, and during the survey was being grazed by sheep and horses. Species recorded in this habitat included abundant perennial rye-grass (*Lolium perenne*), clovers (*Trifolium* spp.), broadleaved plantain (*Plantago major*), frequent ribwort plantain (*Plantago lanceolata*). creeping buttercup (*Ranunculus repens*), annual meadow grass (*Poa annua*), daisy (*Bellis perennis*), cock's-foot (*Dactylis glomerata*), crested dogs tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*), nettle (*Urtica dioica*), dandelion (*Taraxacum officinale* agg.), broad-leaved dock (*Rumex obtusifolius*), mouse-ear chickweed (*Cerastium fontanum*), creeping thistle (*Cirsium arvense*) and germander speedwell (*Veronica chamaedrys*). See Plate 4.4.

Field boundaries are delineated by mature ***Treelines (WL2)*** and ***Hedgerows (WL1).*** Species recorded in the treelines (WL2) include oak, ash, sycamore, hawthorn and beech and was recorded along the southern boundary of the site. Species recorded in the hedgerows (WL1) and hedgerow understory included elder (*Sambucus nigra)*, hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus fructicosus*), willows (*Salix* spp.), holly (*Ilex aquilifolium*), ash (*Fraxinus excelsior*) and ivy (*Hedera helix*). Species recorded in the field margins and hedgerow understory included common sorrel (*Rumex acetosa*), meadow buttercup (*Ranunculus acris*), herb Robert (*Geranium robertianum*), *harts tongue fern (Asplenium scolopendrium*), dandelion (*Taraxacum officinale* agg.), primrose (*Primula vulgaris*), vetch (*Vicia* spp.), lesser celandine (*Ficaria verna*), lords and ladies (*Arum maculatum*) and creeping cinquefoil (*Potentilla reptans).* See plate 4.5.

Remnant dried up former drainage ditches occur in parts of the site bordering hedgerows and treelines in the north-west of the site. These former drainage ditches had dried up, had no flow and were heavily vegetated with dense bramble and nettles.

The Rye Water River flows along the southern boundary of the site and is categorised as Eroding/upland River. The river is fringed by a mature treeline on its northern banks, which also forms part of the development boundary. See plate 4.6.

The R157 located along the eastern boundary of the proposed development site is categorized as Buildings and Artificial Surfaces (BL3).

There are no Annex I habitats listed under the EU Habitats Directive present within the Proposed development site boundary. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape.

*Plate 4-4. Agricultural grassland recorded in site B.*

*Plate 4-5. Hedgerow recorded in eastern section of site B.*

*Plate 4-6. Rye Water River along recorded along the southern boundary of site B.*

### 4.3.1.3 Site C- Strategic Housing Development

*Table 4-13. Habitats recorded on the proposed development site.*

| Habitat (Fossitt) | Code |
|---|---|
| Improved Agricultural Grassland | *GA1* |
| Buildings and Artificial Surfaces | BL3 |
| Mixed broadleaved woodland | *WD1* |
| Eroding upland River | FW1 |
| Hedgerows | *WL1* |
| Treeline | *WL2* |

***Improved Agricultural Grassland (GA1)*** is the dominant habitat within the site C. This habitat had a low species diversity and a low sward height, and during the survey was being grazed by sheep and horses. Species recorded in this habitat included abundant perennial rye-grass (*Lolium perenne*), clovers (*Trifolium* spp.), broadleaved plantain (*Plantago major*), frequent ribwort plantain (*Plantago lanceolata*). creeping buttercup (*Ranunculus repens*), annual meadow grass (*Poa annua*), daisy (*Bellis perennis*), cock's-foot (*Dactylis glomerata*), crested dogs tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*), nettle (*Urtica dioica*), dandelion (*Taraxacum officinale* agg.), broad-leaved dock (*Rumex obtusifolius*), mouse-ear chickweed (*Cerastium fontanum*), creeping thistle (*Cirsium arvense*) and germander speedwell (*Veronica chamaedrys*). See Plate 4.7.

Moygaddy castle in the northern section of the site is classified as ***Buildings and Artificial Surfaces (BL3)***. See plate 4.8.

Field boundaries are delineated by mature ***Treelines (WL2)*** and ***Hedgerows (WL1).*** Species recorded in the treelines (WL2) include oak (*Quercus sp.*), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus),* hawthorn (*Crataegus monogyna*) and beech (*Fagus sylvatica*) and was recorded along the southern boundary of the site. Species recorded in the hedgerows (WL1) and hedgerow understory included elder (*Sambucus nigra)*, hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus fruticosus*), willows (*Salix* spp.), holly (*Ilex aquilifolium*), ash (*Fraxinus excelsior*) and ivy (*Hedera helix*). Species recorded in the field margins and hedgerow understory included common sorrel (*Rumex acetosa*), meadow buttercup (*Ranunculus acris*), herb Robert (*Geranium robertianum*), *harts tongue fern (Asplenium scolopendrium*), dandelion (*Taraxacum officinale* agg.), primrose (*Primula vulgaris*), vetch (*Vicia* spp.), lesser celandine (*Ficaria verna*), lords and ladies (*Arum maculatum*) and creeping cinquefoil (*Potentilla reptans).* See plate 4.9.

Remnant dried up former drainage ditches occur in parts of the site bordering hedgerows and treelines in the north-west of the site. These former drainage ditches had dried up, had no flow and were heavily vegetated with dense bramble and nettles.

The Blackhall Little River, classified as **Eroding/upland river (FW1)** flows through the site, in a southerly direction ((See plate 4.10), discharging to the Rye Water River which flows in an easterly direction outside the southern site boundary. The Rye Water River is designated as part of the Rye Water Valley/Carton SAC, downstream of the proposed development site.

The Blackhall Little is characterized by a rocky substrate, with some pool, riffle and glide areas. The river is approximately 1-2m in the southern section of the site. At the time of the field survey, the river had a low flow and the water was slightly turbid. The river is fringed by mature treeline/hedgerow on its eastern bank and improved agricultural grassland on is western bank. The western embankment of the river had a low profile and had evidence of cattle poaching in places. Emergent vegetation included watercress (*Nasturtium officinale),* wild angelica (*Angelica sylvestris)*, marsh marigold (*Caltha palustris*), meadow buttercup (*Ranunculus acris*) and fools water cress (*Apium nodiflorum). W*illow (*Salix* spp.) and bramble (*Rubus fructicosus)* occur along the embankment.

**Mixed broadleaved woodland (WD1**) occurs on either side of the Blackhall Little River in the centre of the site. This woodland has been planted and is approximately 20-25 years old. The topography of the wooded area, slope down toward the river. See plate 4.11.

The mixed broadleaved woodland (WD1) on the eastern shore of the river, is dominated by mature beech trees, and had a low diversity of species in the ground flora. The woodland on the western shoreline of the watercourse was recently planted with ash, beech and oak, with sycamore also present. The ground flora included abundant nettle, hogweed, herb Robert, ground elder, ivy and wood avens with frequent *poa trivialis*, goosegrass, *ranunculus repens*, foxtail, dock, and cow parsley.

There are no Annex I habitats listed under the EU Habitats Directive present within the Proposed development site boundary. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape.

*Plate 4-7. Improved agricultural grassland in centre of site C.*

*Plate 4-8.Moygaddy castle, categorized as Buildings and Artificial surfaces in the north section of site C.*

*Plate 4-9.Hedgerow habitat delineating improved agricultural grassland (GA1) in the centre of the site.*

*Plate 4-10.Blackhall Little River categorised as eroding upland river in the centre of site C.*

*Plate 4-11.Mixed Broadleaved woodland planted with Ash, Beech and Sycamore located in the centre of site C.*

### 4.3.1.4 MOOR (Maynooth Outer Orbital Road) Site

*Table 4-14. Habitats recorded within the MOOR application site.*

| Habitat (Fossitt) | Code |
|---|---|
| Improved Agricultural Grassland | *GA1* |
| Buildings and Artificial Surfaces | BL3 |
| Eroding upland River | FW1 |
| Hedgerows | *WL1* |
| Treeline | *WL2* |

***Improved Agricultural Grassland (GA1)*** is the dominant habitat within the MOOR application site boundary. This habitat had a low species diversity and a low sward height, and during the survey was being grazed by sheep and horses. Species recorded in this habitat included abundant perennial rye-grass (*Lolium perenne*), clovers (*Trifolium* spp.), broadleaved plantain (*Plantago major*), frequent ribwort plantain (*Plantago lanceolata*). creeping buttercup (*Ranunculus repens*), annual meadow grass (*Poa annua*), daisy (*Bellis perennis*), cock's-foot (*Dactylis glomerata*), crested dogs tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*), nettle (*Urtica dioica*), dandelion (*Taraxacum officinale* agg.), broad-leaved dock (*Rumex obtusifolius*), mouse-ear chickweed (*Cerastium fontanum*), creeping thistle (*Cirsium arvense*) and germander speedwell (*Veronica chamaedrys*). See Plate 4.12.

The R157 located to the east of the site and the L2214 located within the centre of the site are both categorized as **Buildings and Artificial Surfaces (BL3).** See plate 4.13.

The MOOR application intersects multiple fields that are delineated by mature **Treelines (WL2)** and **Hedgerows (WL1).** Species recorded in the treelines (WL2) include oak (*Quercus sp.*), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), hawthorn (*Crataegus monogyna*) and beech (*Fagus sylvatica*) and was recorded along the southern boundary of the site. Species recorded in the hedgerows (WL1) and hedgerow understory included elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus fruticosus*), willows (*Salix spp.*), holly (*Ilex aquilifolium*), ash (*Fraxinus excelsior*) and ivy (*Hedera helix*). Species recorded in the field margins and hedgerow understory included common sorrel (*Rumex acetosa*), meadow buttercup (*Ranunculus acris*), herb Robert (*Geranium robertianum*), harts tongue fern (*Asplenium scolopendrium*), dandelion (*Taraxacum officinale agg.*), primrose (*Primula vulgaris*), vetch (*Vicia spp.*), lesser celandine (*Ficaria verna*), lords and ladies (*Arum maculatum)* and creeping cinquefoil (*Potentilla reptans*). See plate 4.14.

The proposed MOOR route intersects the Rye Water River to the east of the route and the BlackhallLittle River to the north of the route. Both rivers are categorized as **Eroding Upland River (FW1)**. It should be noted that during the 2022 site survey, the Blackhall Little River had largely dried up and there was no flowing water present. See plate 4.15 & 4.16.

*Plate 4-12. Improved agricultural grassland located within the route of the MOOR application.*

*Plate 4-13. L2214 categorized as Buildings and Artificial surfaces located within route of the proposed MOOR fringes by mature Treeline habitat*

*Plate 4-14. Treeline recorded along the Blackhall Little River within the centre of the MOOR route*

*Plate 4-15. Blackhall Little Rive with no flowing water located to the north of the MOOR route*

*Plate 4-16. Rye Water River located to the western boundary of the MOOR route*

### 4.3.1.5 Kildare Bridge

The habitats described below refer to the habitats recorded within the boundary of the Kildare bridge application.

*Table 4-15. Habitats recorded within the Kildare bridge application site.*

| Habitat (Fossitt) | Code |
|---|---|
| Buildings and Artificial Surfaces | BL3 |
| Treeline | *WL2* |
| Eroding upland River | |

The Kildare bridge, R157 and the Dunboyne Road are all categorized as Buildings and artificial (BL3). See plate 4.17.


*Plate 4-17. Kildare bridge and R157*

The Rye River located at the bridge is categorized as Eroding upland River (FW1) and is fringed by riparian Treeline (WL1) with Sycamore (*Acer pseodoplatanus*), Ash (*Fraxinus excelsior*), Willow (*Salix sp.)* and *Leyandii cypress* occurring here. See Plate 4-18.

*Plate 4-18. Rye River (FW1) fringed by riparian Treeline (WL1).*

### 4.3.1.6 Moyglare Bridge

The habitats described below refer to the habitats recorded with the Moyglare Bridge application site.

*Table 4-16. Habitats recorded within the Moyglare bridge site*

| Habitat (Fossitt) | Code |
|---|---|
| Spoil and Bare ground | *ED2* |
| Dry Meadows and grassy verges | *GS2* |
| Eroding upland River | *FW1* |

The area to the south of the Rye Water River is dominated by rank grassland categorised as Dry Meadows and grassy verges (GS2). The species diversity here was low and dominated by tussocky vegetation composing of Broad-leaved dock (*Rumex obtusifolius*), Ragwort (*Jacobaea vulgaris*), Creeping thistle (*Cirsium arvense*), Yorkshire fog (*Holcus lanatus*) and Cock's foot (*Dactylis glomerata*). See Plate 6-19. A small section of Spoil and bare ground (ED2) habitat was recorded to the south of the Moyglare Bridgel-Kildare application boundary, in the area adjacent to the Moyglare Hall Estate. See Plate 4-20.

The Rye Water River occurs at the northern boundary of the Moyglare Bridge-Kildare application site and is categorised as Eroding upland River (FW1). See Plate 4-21.

*Plate 4-19. Dry meadows and grassy Verges habitat recorded south of the Rye Water River within Moyglare site*

*Plate 4-20. Spoil and bare ground fringed by dry meadows and grassy verges within Moyglare site*

*Plate 4-21. Rye Water River categorised as Eroding upland river within Moyglare site.*

### 4.3.2 Rye Water Valley/Carton SAC Survey

A survey of the area to the east of Kildare bridge designated as part of Rye Water Valley/Carton House SAC was undertaken on the 21st of July 2022. No Petrifying springs with tufa formation (Cratoneurion) were discovered during the survey.

# 5. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

## 5.1 Potential for Direct Effects on European Sites

There will be no direct effects on the Qualifying Interests/Special Conservation Interests of Rye Water Valley/Carton SAC [001398], South Dublin Bay SAC [000210], North Dublin Bay SAC [000206], South Dublin Bay and River Tolka Estuary SPA [004024] or North Bull Island SPA [004006].

There are no Annex I habitats on site and the site does not contain suitable supporting habitat for Annex II species or SCI bird species of South Dublin Bay and River Tolka Estuary SPA [004024] or North Bull Island SPA [004006]. No potential for direct effects on any European Site exists.

## 5.2 Potential for Indirect Effects on the European Sites

### 5.2.1 Deterioration of Water Quality

Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the following European Sites was identified, in the form of deterioration of water quality:

- Rye Water Valley/Carton SAC [001398]
- South Dublin Bay SAC [000210]
- North Dublin Bay SAC [000206]
- South Dublin Bay and River Tolka Estuary SPA [004024]
- North Bull Island SPA [004006]

A potential pathway for impact was identified River Rye Water which runs along the southern boundary of the Proposed Development area and via groundwater.

Taking a precautionary approach, the proposed development has the potential, in the absence of mitigation, to impact on water quality and downstream aquatic ecological receptors through pollutants including hydrocarbons, fuel, cement and sedimentation during the construction phase.

A full description of mitigation measures to protecct surface and groundwater quality during the construction and operational phase of the proposed development have been described in sections 8.5 and 8.6 of Chapter 8 of the EIAR submitted as part of this planning application. As part of the six planning applications, separate Construction and Enviromental Management Plans (CEMPs) have been prepared and are located in Volume 3.a, appendix 4-3, Volume 3.b appendix 4-3, Volume 3.c appendix 4-3, Voulme 3.d, appendix 4-3, Voulme 3.e, appendix 4-3 and voulume 3.f, appendix 4-3 of the EIAR submitted as of this planning applcation.

The measures are descriobed in full in the Schedule of Mitigation available in appendix 2 and are summarized below.

#### 5.2.1.1 Construction Phase Measures and Assessment

Construction phase activities including site levelling, service trench construction, levelling/construction and building foundation excavation will require earthworks resulting in removal of vegetation cover and excavation of any minor local pockets of organic soil/subsoils, and bedrock. Such excavations will

be relatively shallow and temporary. The main risk will be from surface water runoff from bare soil and soil storage areas during construction works.

Much of the surface water generally percolates to shallow ground and discharges via shallow subsurface flow to the Blackhall Little and River Rye and this will likely continue during the construction phase. The construction activities have the potential to result in the release of suspended solids to this local drainage feature and could potentially result in an increase in the suspended sediment load, resulting in increased turbidity which, in turn, could affect the water quality and fish stocks of the Blackhall Little and River Rye and downstream water bodies, such as the Rye Water Valley/ Carton SAC. Potential impacts are potentially significant if not mitigated against.

### Earthworks (Removal of Vegetation Cover, Excavations and Stock Piling) Resulting in Suspended Solids Entrainment in Surface Waters

Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work as follows:

- Silt fencing will be constructed around the construction footprint, where there is a surface water receptor, in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint (other than operational surface water outfall installations which are described below) and surface water receptors and associated riparian habitats.
- A silt fence will also be attached to solid boundary fencing where it is in place and where there is a surface water receptor. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities.
- The silt fence will comprise a geotextile membrane that will buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated.
- 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;
- Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing;
- A suitably sized detention basin or settlement area will be installed at the lowest point before discharge to ground where excess run- off must leave the site. Silt curtains or earth berms will be used to channel run-off to locations where it can be controlled. These may take the form of an open detention area or, where the need arises, a portable skip/s, or similar, where inflow passes through straw bales, gravel etc.
- Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present;
- Daily monitoring and inspections of site drainage during construction will be completed;
- No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed works.
- Surface water outfalls will be constructed in accordance with the measures described in Chapter 6 and section 8.6.3.4.4 of the EIAR and subject to agreement with IFI.
- Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance, which will be implemented, will ensure minimal risk. 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), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.

- Preventative measures during construction have been incorporated into the Construction and Environmental Management Plan, 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.

## Potential Surface Water Quality Impacts from Shallow Excavation Dewatering

Management of groundwater seepages and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:

- Silt fencing measures as described above will be installed.
- Appropriate temporary interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place, as required;
- If required, pumping of excavation inflows will prevent build-up of water in the excavation;
- The pumped water volumes will be discharged to ground within the site through a silt bag at a distance of over 30m from nearby watercourses (Rye Water River and Blackhall Little Stream).
- There will be no direct discharge to any water body, and therefore no risk of hydraulic loading or contamination will occur;

## Potential Release of Hydrocarbons During Construction Phase

Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows:

- All plant and machinery will be serviced before being mobilised to site;
- No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed;
- Refuelling will be completed in a controlled manner using drip trays at all times;
- Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water;
- Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores;
- Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored;
- 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;
- Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills;
- Only designated trained operators will be authorised to refuel plant on site;
- Procedures and contingency plans will be set up to deal with emergency accidents or spills; and,
- An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment.

## Potential Groundwater and Surface Water Contamination from Wastewater Disposal

- A self-contained port-a-loo 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; and,
- No wastewater will be discharged on-site during either the construction or operational phase.

## Release of Cement Based Products

- No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place.
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;
- Where possible pre-cast elements for culverts and concrete works will be used.
- 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 phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined cement washout ponds.
- Weather forecasting will be used to plan dry days for pouring concrete.
- The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event.

## Morphological Changes to Surface Water Courses & Drainage Patterns

- The proposed design for water course crossings and culverts, which minimises interactions with water courses, ensures that there will be no perceptible effects on the morphology of those watercourses.
- Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Rye Water River
- The necessary pipelaying works will be undertaken within this defined area.
- Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Rye Water River will be removed to facilitate the construction of the outfall.
- No instream works will take place outside the period July 31st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- Cofferdams will be constructed using one tonne sandbags at the edge of the Rye Water River at the outfall point to create dry working areas.
- A submersible pump will be used to dewater inside the cofferdammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag.
- The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included).
- The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed.
- The surface water discharge point is likely to take less than one day to install. During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas; and,

- The Kildare Bridge upgrade works will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer.

## Directional Drilling

Construction phase activities associated with the Kildare bridge application will include service trench construction, levelling/construction and bridge foundation excavation as well as directional drilling. The main risk will be from surface water runoff from bare soil and soil storage areas during construction works and frac-out from directional drilling. Mitigation measures during directional drilling activities have been fully described in section 4.4.9 of Chapter 4 and section 8.6.3.9.1of Chapter 8 of the EIAR submitted as part of this application. The measures = are summarized below.

- For directional drilling the area around the bentonite batching, pumping and recycling plant will be bunded using terram (as it will clog) and sandbags in order to contain any spillages.
- Drilling fluid returns will be contained within a sealed tank / sump to prevent migration from the works area;
- Spills of drilling fluid will be clean up immediately and stored in an adequately sized skip before been taken off-site;
- The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e., Clear Bore Drilling Fluid or similar will be used);
- The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse;
- This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur then drilling will be immediately stopped;
- Any frac-out material will be contained and removed off-site;

## Construction activities associated with the operational surface water outfalls

The proposed development requires the construction of a number of operational surface water outfalls along the Rye Water River or the Blackhall Little River.

The following best practice construction measures will be followed to ensure that there are no significant effects on the Rye Water River or the Blackhall Little River as a result of the in-stream construction works related to the outfall pipes.

- Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Rye Water River
- The necessary pipelaying works will be undertaken within this defined area.
- Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Rye Water River will be removed to facilitate the construction of the outfall.
- No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- Cofferdams will be constructed using one tonne sandbags at the edge of the Rye Water River at the outfall point to create dry working areas.

- A submersible pump will be used to dewater inside the cofferdammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag.
- The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included).
- The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed.
- The surface water discharge point is likely to take less than one day to install.
- Sondes will be put in place in the Rye Water River upstream and downstream of the works area. These will continuously measure turbidity throughout the construction period. If there is a 10% or greater difference between upstream and downstream turbidity, an alarm will sound and a message will be sent to the site foreman and the EcoW. Works will be ceased until the cause of the difference is identified and (if it is associated with the works) rectified

## Construction activities associated with pedestrian/cycle and road bridges

A total of five bridges are proposed as part of the proposed development This includes three pedestrian/cycle bridges and two road bridges. The mitigation measures during the construction of fully described in section 6.7 and 8.6 of the EIAR and are summarized below.

- The proposed design for water course crossings and culverts, which minimises interactions with water courses, ensures that there will be no perceptible effects on the morphology of those watercourses.
- Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Rye Water River
- The necessary pipelaying works will be undertaken within this defined area.
- Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Rye Water River will be removed to facilitate the construction of the outfall.
- No instream works will take place outside the period July 31st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- Cofferdams will be constructed using one tonne sandbags at the edge of the Rye Water River at the outfall point to create dry working areas.
- A submersible pump will be used to dewater inside the cofferdammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag.
- The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included).
- The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed.
- The surface water discharge point is likely to take less than one day to install
- The bridge works will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer.
- Prior to entering the works area, all machinery and personnel entering the works area will be thoroughly disinfected.

### 5.2.1.2 Operational Phase Measures and Assessment

Once the construction phase is completed potential emissions to ground and / or surface water include storm water run-off and wastewater. In relation to storm water run-off, the surface water drainage system will consist of a gravity sewer network that will convey runoff from the roofs and paved areas of the development to outfall manholes, which will discharge at controlled flow rates to the Rye Water River. Discharge will be limited to the greenfield equivalent runoff rate. Temporary underground attenuation will also be provided at separate locations in the form of underground cellular storage units. Silt traps will be provided for upstream of the attenuation tanks. Surface water will pass through oil interceptors prior to discharging from the site.

Wastewater from the development will discharge to the proposed onsite underground wastewater pumping station, which will ultimately link up to the existing Maynooth town wastewater network prior to discharging to Leixlip Wastewater Treatment Plant. The wastewater treatment plant is regulated and operates under an EPA licence which controls emissions to acceptable levels.

Rainfall allowed to percolate to ground and/or flow via subsurface flow to the Rye Water River will be within the green/ landscaped areas of the proposed development site and so there is no significant source of pollution related to these areas.

**Proposed Mitigation Measures**

The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Blackhall Little and River Rye via, attenuation tanks, swales, filter drain and petrol/oil interceptors as described above. It is also proposed to retain the existing riparian zone which will act as a buffer between the development and the Blackhall Little and River Rye.

The potential source of pollution can be readily controlled and standard procedures will ensure no significant releases will occur. Mitigation measures, by way of the drainage design systems outline above will break the pathway from the Proposed Development to the watercourse. The residual impacts are indirect, neutral, imperceptible, long term, unlikely impact.

Foul water discharges will be directed to the municipal sewer via the proposed onsite pumping station and from Maynooth pumping station on towards the regulated Leixlip wastewater treatment plant and so the residual impacts are neutral, indirect, imperceptible, long term, unlikely impact.

Therefore, significant effects on surface water or ground water quality will not occur.

## 5.2.2 Assessment of Potential Changes to Local Hydrological Regime

Surface water runoff from roads and car parking areas can potentially contain elevated levels of contaminants such as hydrocarbons and suspended solids. These contaminants have the potential to impact on local downstream groundwater and surface water quality. This is somewhat relevant to this site, due to its proximity to the Rye Water River and the Rye Water Valley/Carton SAC however the QI's for this site relate to ground water dependant species rather than surface water. Ecological surveys also show that there are no mapped petrifying springs or QI's downstream of the site and there is no potential for impacts on the Louisa Bridge Springs.

Possible effects during the operational phase continue to include water quality impacts which could occur if ongoing mitigation is not put in place.

There will be no impacts on the local surface water hydrological regime during the operational phase of the development for the following reasons:

- During the operational phase all surface water arising on site will drain to attenuation tanks before discharge to a local watercourse and a connection to a storm water sewer will be installed.
- All road and car parking gullies are designed to intercept and trap road grit and silt. All footpath and road drainage water will pass through hydrocarbon interceptors and attenuation systems, prior to controlled/flow limited outfall. Groundwater quality risks are reduced during the operational phase by use of hydrocarbon interceptors and filter drain prior to discharge to the watercourse.
- As one of the qualifying interests of the SAC is linked to groundwater flows (calcareous tufa springs), the distance between them is seen as a significant factor, and there is no connection between groundwater at the Proposed Development site, and that discharging to any tufa springs within the SAC (including the mapped spring located approximately 5km from the Proposed Development at Louisa Bridge).
- No dewatering will occur during the operational phase of the development.
- All building works will be complete and will have been installed at or very near existing ground levels with minimal ground disturbance having occurred.
- No extensive areas of deep foundations, such as basements, underground carparks etc, will have been installed. As such there will be no interruption or blocking of shallow or deep groundwater pathways below the site during the operational phase

While there are no known petrifying springs or qualifying interests of the Rye Water Valley/Carton SAC within proximity of the Proposed Development Site, the potential for the occurrence of unmapped petrifying springs within the SAC has been considered below.

These standard drainage design controls and construction phase mitigation measures will ensure the development will not give rise to any significant surface water or groundwater impacts at or downstream of the site or in the SAC. The majority of runoff from the existing site discharges to the river and stream via shallow subsurface flows as shown by the results of the SI investigations and the ground water level data. The drainage design ensures that these discharges will continue at the existing greenfield rates and therefore the hydrological regime locally and regionally will not be affected by the proposed development.

The project design ensures that there will be no dewatering of the bedrock aquifer during the construction phase and so there will be no obstruction or alteration of existing groundwater flows.

There will be no significant alteration to groundwater recharge. The majority of rainfall will continue to percolate to shallow subsurface and discharge to the surface water systems locally with low levels of recharge to ground. Rainfall allowed to percolate to ground and/or flow via subsurface flow to the Rye Water River will be within the green/ landscaped areas of Site A and so there is no significant source of pollution related to these areas. Rainfall will be directed to the surface water drainage system there by mimicking the existing hydrological regime and so the impact of this is considered to be imperceptible.

With the implementation of the project as designed and the standard drainage control measures outlined above and in Section 3.3 above and throughout section 4.6 and section 8.6 of the EIAR, the potential for Proposed Development Site to cause any groundwater drawdown or groundwater quality impacts in the SAC is imperceptible.

Groundwater below Proposed Development Site will flow to the south and discharge as baseflow to the Rye Water River and/or the Blackhall Little stream to the north. Groundwater flow from the site will, therefore, have no impact on the Louisa Bridge (spring) groundwater flow (Rye Water Valley/Carton SAC) as previous site investigations and hydrological assessments (c.f. Section 2.4, (Hydro-G, 2008)) have shown that the flow to these springs is not derived from the Rye Water River.

Groundwater flowpaths will be maintained during the operational phase as existing building foundations and any previous excavation will be shallow. Groundwater flowpaths during the

operational phase will be unaltered by Proposed Development Site. The SI data shows that dewatering of groundwater from the bedrock aquifer will not occur and so there is no potential for significant effects on the calcareous tufa springs and associated species.

Following an extremely precautionary principle, the potential for other downstream designated sites (South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka SPA and North Bull Island SPA) to be impacted by the proposed works was also considered. On the basis of the Proposed Development design and the mitigation measures proposed to protect the immediate water receptors there will be no impacts on designated sites.

# 5.3 Assessment of Residual Adverse Effects

The sections provided below detail the site-specific residual impact assessment in relation to the relevant QI's and SCIs of the above European sites in light of their site-specific targets and attributes.

## 5.3.1 Rye Water/ValleyCarton SAC [001398]

### 5.3.1.1 [7220] Petrifying springs with tufa formation (Cratoneurion]

The conservation objective for [7220] Petrifying springs with tufa formation (Cratoneurion)*is: *'To restore the favourable conservation condition of Petrifying springs with tufa formation (Cratoneurion)* in Rye Water Valley/Carton SAC'*

The extrapolated targets and attributes for this SCI have been reviewed and considered in relation to the Proposed Development as described below.

*Table 5-1 Targets and attributes associated with nominated site-specific conservation objectives for [7220] Petrifying springs with tufa formation (Cratoneurion)**

| Attribute | Target | Assessment |
|---|---|---|
| Habitat area | Area stable or increasing, subject to natural processes | There will be no changes to habitat area or distribution, hydrological regime, water quality, vegetation structure or composition or physical structure within the SAC as a result of the proposed development. Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Habitat distribution | No decline, subject to natural processes | |
| Hydrological regime: height of water table; water flow | Maintain appropriate hydrological regimes | |
| Physical structure: tufa formations | Maintain appropriate levels of tufa formation | |
| Ecosystem function: water quality - nitrate level | Maintain nitrate level at less than 10mg/l | |
| Ecosystem function: water quality - phosphate leve | Restore phosphate level to less than 15µg/l | |
| Vegetation composition: community diversity | Maintain variety of vegetation communities, subject to natural processes | |
| Vegetation composition: positive indicator species | At least three positive/high quality indicator species as listed in Lyons and Kelly (2016) and no loss from baseline number | |
| Vegetation composition: negative indicator species | Potentially negative indicator species should not be Dominant or Abundant; woody species should be absent in unwooded springs; invasive species should be absent | |

| | | |
|---|---|---|
| Vegetation composition: algal cover | Cover of algae less than 2% | |
| Vegetation structure: sward height | Field layer height between 10cm and 50cm (except for bryophyte-dominated ground | |
| Physical structure: trampling/dung | Cover should not be Dominant or Abundant | |
| 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 | |

### 5.3.1.2 1014 Narrow-mouthed Whorl Snail *Vertigo angustior*

The conservation objective for Narrow-mouthed Whorl Snail *Vertigo angustior* is: *'To restore the favourable conservation condition of Narrow-mouthed Whorl Snail (Vertigo angustior) in Rye Water Valley/Carton SAC'*

The extrapolated targets and attributes for this QI have been reviewed and considered in relation to the Proposed Development as described below.

*Table 5-2 Targets and attributes associated with nominated site-specific conservation objectives Narrow-mouthed Whorl Snail Vertigo angustior*

| Attribute | Target | Assessment |
|---|---|---|
| Distribution | Population restored to baseline. There is one recorded site for the species in the SAC within the 1km grid square N9936. | There will be no changes to supporting habitat extent/quality or distribution of this species within the SAC.<br><br>The proposed development will not affect the hydrological regime, water quality of supporting habitat for this species within the SAC.<br><br>Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Occurrence in suitable habitat | Restore to self-sustaining population | |
| Habitat area | Restore area of suitable habitat, subject to natural processes | |
| Habitat quality: water levels | Restore suitable hydrological regime, subject to natural processes | |

#### 5.3.1.3 1016 Desmoulin's Whorl Snail *Vertigo moulinsiana*

The conservation objective for Desmoulin's Whorl Snail *Vertigo moulinsiana* is: *'To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected'.*

The extrapolated targets and attributes for this QI have been reviewed and considered in relation to the Proposed Development as described below.

*Table 5-3 Targets and attributes associated with nominated site-specific conservation objectives Desmoulin's Whorl Snail Vertigo moulinsiana*

| Attribute | Target | Assessment |
|---|---|---|
| Distribution | No decline, subject to natural processes. There is one known site for this species in the SAC within the 1km grid square N9936 | There will be no changes to supporting habitat extent/quality or distribution of this species within the SAC.<br><br>The proposed development will not affect the hydrological regime, water quality of supporting habitat for this species within the SAC.<br><br>Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Occurrence in suitable habitat | No decline, subject to natural processes. A baseline figure of 50% positive samples is set | |
| Density within habitat | No decline, subject to natural processes; at least 25% of samples should have more than 10 individuals | |
| Habitat area | Area of suitable habitat stable or increasing, subject to natural processes; no less than 0.2ha of at least suboptimal habitat | |
| Habitat quality: occupied patches in at least suboptimal condition | No decline, subject to natural processes. A baseline of 50% is set | |
| Habitat quality: soil wetness | No decline, subject to natural processes | |

## 5.3.2 South Dublin Bay SAC [000210]

### 5.3.2.1 Mudflats and sandflats not covered by seawater at low tide

The conservation objective for Mudflats and sandflats not covered by seawater at low tide is: *'To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in South Dublin Bay SAC'.*

Site-specific conservation objectives are available for South Dublin Bay SAC. The targets and attributes for this QI have been reviewed and considered in relation to the Proposed Development as described below.

*Table 5-4Targets and attributes associated with the site-specific conservation objectives for Mudflats and sandflats*

| Attribute | Target | Assessment |
|---|---|---|
| Habitat area | The permanent habitat area is stable or increasing, subject to natural processes | There will be no reduction in habitat area or alteration in community extent, structure or distribution as a result of the proposed development.<br><br>Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Community extent | Maintain the extent of the Zostera-dominated community, subject to natural processes. | |
| Community structure | Conserve the high quality of the *Zostera*-dominated community, subject to natural processes | |
| Community distribution | Conserve the following community type in a natural condition: Fine sands with *Angulus tenuis* community complex. | |

## 5.3.3 North Dublin Bay SAC [000206]

### 5.3.3.1 [1140] Mudflats and sandflats not covered by seawater at low tide

The conservation objective for Mudflats and sandflats not covered by seawater at low tide is: *'To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in North Dublin Bay SAC'.*

Site-specific conservation objectives are available for North Dublin Bay SAC. The targets and attributes for this QI have been reviewed and considered in relation to the Proposed Development as described below.

*Table 5-5 Targets and attributes associated with the site-specific conservation objectives for Mudflats and sandflats*

| Attribute | Target | Assessment |
|---|---|---|
| Habitat area | The permanent habitat area is stable or increasing, subject to natural processes | There will be no reduction in habitat area or alteration in community extent, structure or distribution as a result of the proposed development.<br><br>Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Community extent | Maintain the extent of the Zostera-dominated community, subject to natural processes. | |
| Community structure | Conserve the high quality of the *Zostera*-dominated community, subject to natural processes | |
| Community distribution | Conserve the following community type in a natural condition: Fine sands with *Angulus tenuis* community complex. | |

### 5.3.3.2 [1310] Salicornia and other annuals colonising mudflats

The conservation objective for this QI is: *'To restore the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in North Dublin Bay SAC'.*

Site-specific conservation objectives are available for North Dublin Bay SAC. The targets and attributes for this QI have been reviewed and considered in relation to the Proposed Development as described below.

*Table 5-6 Targets and attributes associated with the site-specific conservation objectives for salicornia*

| Attribute | Target | Assessment |
|---|---|---|
| Habitat area | Area stable or increasing, subject to natural processes, including erosion and succession. | There will be no reduction in habitat area or habitat distribution.<br><br>Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Habitat distribution | No decline, or change in habitat distribution, subject to natural processes. | |
| Physical structure: sediment supply | Maintain/restore, natural circulation of sediments and organic matter, without any physical obstructions | There will be no changes to physical structure of this QI habitat within the SAC. |
| Physical structure: creeks and pans | Maintain, or where necessary restore creek and pan structure, subject to natural processes, including erosion and succession | |
| Physical structure: flooding regime | Maintain natural tidal regime | |
| Vegetation structure: zonation | Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession. | There will be no changes to vegetation structure or composition within the SAC. Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Vegetation structure: vegetation height | Maintain structural vegetation within sward | |
| Vegetation structure: vegetation cover | Maintain more than 90% of area outside creeks vegetated | |
| Vegetation composition: typical species and subcommunities | Maintain the range of species-poor communities with typical species listed in SMP (McCorry and Ryle, 2009) | |
| Vegetation structure: negative indicator species – *Spartina anglica* | No significant expansion of common cordgrass (Spartina anglica), with an annual spread of less than 1% | |

### 5.3.3.3 [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

*Table 5-7 Targets and attributes associated with the site-specific conservation objectives Atlantic salt meadows*

| Attribute | Target | Assessment |
|---|---|---|
| Habitat area | Area stable or increasing, subject to natural processes, including erosion and succession. | There will be no reduction in habitat area or habitat distribution.<br><br>Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Habitat distribution | No decline, or change in habitat distribution, subject to natural processes. | |
| Physical structure: sediment supply | Maintain/restore, natural circulation of sediments and organic matter, without any physical obstructions | There will be no changes to physical structure of this QI habitat within the SAC. |
| Physical structure: creeks and pans | Maintain creek and pan structure structure, subject to natural processes, including erosion and succession | |
| Physical structure: flooding regime | Maintain natural tidal regime | |
| Vegetation structure: zonation | Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession. | There will be no changes to vegetation structure or composition within the SAC. Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Vegetation structure: vegetation height | Maintain structural vegetation within sward | |
| Vegetation structure: vegetation cover | Maintain more than 90% of area outside creeks vegetated | |
| Vegetation composition: typical species and subcommunities | Maintain range of sub-communities with typical species listed in SMP (McCorry and Ryle, 2009) | |
| Vegetation structure: negative indicator species – *Spartina anglica* | No significant expansion of common cordgrass (Spartina anglica), with an annual spread of less than 1% | |

### 5.3.3.4 [1410] Mediterranean salt meadows (*Juncetalia maritime*)

The conservation objective for this QI is: 'To maintain the favourable conservation condition of Mediterranean salt meadows (Juncetalia maritimi) in North Dublin Bay SAC.'

Site-specific conservation objectives are available for North Dublin Bay SAC. The targets and attributes for this QI have been reviewed and considered in relation to the Proposed Development as described below.

*Table 5-8 Targets and attributes associated with the site-specific conservation objectives for Mediterranean salt meadows.*

| Attribute | Target | Assessment |
|---|---|---|
| Habitat area | Area stable or increasing, subject to natural processes, including erosion and succession. | There will be no reduction in habitat area or habitat distribution.<br><br>Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Habitat distribution | No decline, or change in habitat distribution, subject to natural processes. | |
| Physical structure: sediment supply | Maintain/restore, natural circulation of sediments and organic matter, without any physical obstructions | There will be no changes to physical structure of this QI habitat within the SAC. |
| Physical structure: creeks and pans | Maintain creek and pan structure structure, subject to natural processes, including erosion and succession | |
| Physical structure: flooding regime | Maintain natural tidal regime | |
| Vegetation structure: zonation | Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession. | There will be no changes to vegetation structure or composition within the SAC. Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |
| Vegetation structure: vegetation height | Maintain structural vegetation within sward | |
| Vegetation structure: vegetation cover | Maintain more than 90% of area outside creeks vegetated | |
| Vegetation composition: typical species and subcommunities | Maintain range of sub-communities with characteristic species listed in SMP (McCorry and Ryle, 2009) | |
| Vegetation structure: negative indicator species – *Spartina anglica* | No significant expansion of common cordgrass (Spartina anglica), with an annual spread of less than 1% | |

## 5.3.4 South Dublin Bay and River Tolka Estuary SPA

### 5.3.4.1 Wetlands and Waterbirds [A999]

A potential pathway for indirect effects on the SCI 'Wetlands and Waterbirds' was identified in the form of deterioration of water quality resulting from pollution during the construction and operational phase.

The conservation objective for Wetlands and waterbirds is: *'To maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it'.*

Site-specific conservation objectives are available for *South Dublin Bay and River Tolka Estuary SPA*. The targets and attributes for this SCI have been reviewed and considered in relation to the Proposed Development as described below.

*Table 5-9 Targets and attributes associated with the site-specific conservation objectives for wetlands and waterbirds*

| Attribute | Target | Assessment |
|---|---|---|
| Habitat area | The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192 hectares, other than that occurring from natural patterns of variation | There will be no reduction in habitat area as a result of the proposed development.<br><br>Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |

The design of the proposed project has been developed with an overall objective of minimising the impact on ecologically sensitive sites. Direct and indirect impacts on the Wetland and Waterbirds [A999] population associated with the SPA have been avoided through the design of the project. Best practice measures as outlined in Section 5 of this report are in place to avoid all ground water pollution during the construction and operational stages.

## 5.3.5 North Bull Island SPA

### 5.3.5.1 Wetlands and Waterbirds [A999]

A potential pathway for indirect effects on the SCI 'Wetlands and Waterbirds' was identified in the form of deterioration of water quality resulting from pollution during the construction and operational phase.

The conservation objective for Wetlands and waterbirds is:' To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it'.

Site-specific conservation objectives are available for North Bull Island SPA. The targets and attributes for this SCI have been reviewed and considered in relation to the Proposed Development as described below.

*Table 5-10 Targets and attributes associated with the site-specific conservation objectives for wetlands and waterbirds*

| Attribute | Target | Assessment |
|---|---|---|
| Habitat area | The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 1,713 hectares, other than that occurring from natural patterns of variation | There will be no reduction in habitat area as a result of the proposed development.<br><br>Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures fully described in Section 3.3, 5.2.1 & 5.2.2 of this report are in place to avoid all water pollution during the construction and operational stages. |

The design of the proposed project has been developed with an overall objective of minimising the impact on ecologically sensitive sites. Direct and indirect impacts on the Wetland and Waterbirds [A999] population associated with the SPA have been avoided through the design of the project. Best practice measures as outlined in Section 5 of this report are in place to avoid all ground water pollution during the construction and operational stages.

### 5.3.6 Conclusion of Residual Impact Assessment

Based on the above, in view of best scientific knowledge, on the basis of objective information, the proposed project will not adversely affect surface water during either construction or operation of the Proposed Development.

There is no potential for adverse effect on the identified QIs/SCIs and their associated targets and attributes, or on any European Site via the identified pathway, which has been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures into the project 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 project will not have an adverse effect on the integrity of any European site.

The proposed project 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 is provided below:

'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 the following European sites

- Rye Water Valley/Carton SAC [001398]
- South Dublin Bay SAC [000210]
- North Dublin Bay SAC [000206]
- South Dublin Bay and River Tolka Estuary SPA [004024]
- North Bull Island SPA [004006]

# 6. CUMULATIVE EFFECTS

## 6.1 Review of other plans and projects

The potential for the proposed works to contribute to a cumulative impact on European Sites was considered.

- Meath County Development Plan 2021-2027
- Meath County Development Plan 2021-2027-Natura Impact Statement
- Kildare County Development Plan 2017-2023
- Draft Kildare County Development Plan 2023-2027

A number of other relevant plans and projects have also been considered in this assessment and are provided in table 6-1 below.

## 6.2 Plans

*Table 6-1 Review of plans and policies*

| Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence | Assessment of development compliance with policy |
|---|---|
| **Meath County Development Plan 2021-2027** | |
| **HER POL 31-** To ensure that the ecological impact of all development proposals on habitats and species are appropriately assessed by suitably qualified professional(s) in accordance with best practice guidelines – e.g. the preparation of an Ecological Impact Assessment (EcIA), Screening Statement for Appropriate Assessment, Environmental Impact Assessment, Natura Impact Statement (NIS), species surveys etc. (as appropriate). | The 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 cumulative impacts on national designated sites including Natural Heritage Areas, Ramsar Sites and Nature Reserves or species protected under the wildlife act were identified when considered in conjunction with the current proposal. No potential for cumulative impacts on EU designated sites or Annex listed protected species were identified when considered in conjunction with the current proposal |
| **HER OBJ 33-** To ensure an Appropriate Assessment in accordance with Article 6(3) and Article 6(4) of the Habitats Directives (92/43/EEC) and in accordance with the Department of Environment, Heritage and Local Government Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, 2009 and relevant EPA and European Commission guidance documents, is carried out in respect of any plan or project not directly connected with or necessary for the management of the site but likely to have a significant effect on a Natura 2000 site(s), either individually or in-combination with other plans or projects, in view of the site's conservation objectives. | |
| **HER OBJ 60-** To encourage, pursuant to Article 10 of the Habitats Directive (92/43/EEC), the management of features of the landscape, such as traditional field boundaries, important for the ecological coherence of the Natura 2000 network and essential for the migration, dispersal and genetic exchange of wild species. | |
| **HER POL 288-** To integrate in the development management process the protection and enhancement of biodiversity and landscape features wherever possible, by minimising adverse impacts on existing habitats (whether designated or not) and by including mitigation and/or compensation measures, as appropriate. | |
| **Kildare County Council Development Plan 2017-2023 (and all related environmental documents)** | |
| NH3: Require compliance with Article 10 of the Habitats Directive with regard to encouraging the management of features in the landscape which are of major importance for wild fauna and flora. Such features are those which, by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems for marking field boundaries) or their function as stepping stones (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species. | The 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 cumulative impacts on national designated sites including Natural Heritage Areas, Ramsar Sites and Nature Reserves or species protected under the wildlife act were identified when considered in |
| NH4: Support the conservation and enhancement of Natura 2000 Sites including any additional sites that may | |

| Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence | Assessment of development compliance with policy |
|---|---|
| be proposed for designation during the period of this Plan and to protect the Natura 2000 network from any plans and projects that are likely to have a significant effect on the coherence or integrity of a Natura 2000 Site. | conjunction with the current proposal. No potential for cumulative impacts on EU designated sites or Annex listed protected species were identified when considered in conjunction with the current proposal |
| NH5: Prevent development that would adversely affect the integrity of any Natura 2000 site located within and immediately adjacent to the county and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive. | |
| NH8: Ensure that any proposal for development within or adjacent to a Natural Heritage Area (NHA), Ramsar Sites and Nature Reserves is designed and sited to minimise its impact on the biodiversity, ecological, geological and landscape value of the site, particularly plant and animal species listed under the Wildlife Acts and the Habitats and Birds Directive including their habitats. | |
| NH11: Ensure that development does not have a significant adverse impact on rare and threatened species, including those protected under the Wildlife Acts 1976 and 2012, the Birds Directive 1979 the Habitats Directive 1992 and the Flora Protection Order species. | |
| NH12: Ensure that, where evidence of species that are protected under the Wildlife Acts 1976-2012, the Birds Directive 1979 and the Habitats Directive 1992 exists, appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment. In the event of a proposed development impacting on a site known to be a breeding or resting site of species listed in the Habitats Regulations or the Wildlife Acts 1976 -2012 a derogation licence, issued by DAHRRGA, may be required | |
| NH13: Support measures for the prevention and / or eradication of invasive species within the count | |
| NH14: Promote best practice with respect to minimising the spread of invasive species in the carrying out of development and to support measures for the prevention and / or eradication of invasive species within the county. | |
| NH15: Require, as part of the planning application process, the eradication/control of invasive introduced species including Japanese Knotweed, when identified on a site or in the vicinity of a site, in accordance with Regulation 49 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015. | |
| **Kildare County Development Plan 2023-2027** | |
| **BI O5** Avoid development that would adversely affect the integrity of any Natura 2000 site located within and immediately adjacent to the county and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive, to support the conservation and enhancement of Natura 2000 Sites including any additional sites that may be proposed for designation during the period of this Plan and protect the Natura 2000 network from any plans and projects that are likely to have a significant effect on the coherence or integrity of a Natura 2000 Site. | The 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 cumulative impacts on national designated sites including Natural Heritage Areas, Ramsar Sites and Nature Reserves or species protected under the wildlife act were identified when considered in conjunction with the current proposal. No potential for cumulative |
| **BI O6** Ensure an Appropriate Assessment, in accordance with Article 6(3) and Article 6(4) of the Habitats Directive and with DEHLG guidance (2009), is carried out in respect of any plan or project not directly connected with or | |

| Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence | Assessment of development compliance with policy |
|---|---|
| necessary to the management of a Natura 2000 site to determine the likelihood of the plan or project having a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects and to ensure that projects which may give rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites will not be permitted (either individually or in combination with other plans or projects) unless for reasons of overriding public interest. | impacts on EU designated sites or Annex listed protected species were identified when considered in conjunction with the current proposal. |

## 6.3 Other Projects

The Proposed Development was considered in-combination with other plans and projects in the area that could result in cumulative impacts on designated Sites. The online National Planning Application Map Viewer was consulted on the 25/03/2022 for the area surrounding the development site.

A full list of the projects within he vicinity, which are of a similar nature and scale, is available in section 2.3 of Chapter 2 of the EIAR accompanying this application.

### 6.3.1 Conclusion of Cumulative Assessment

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 the European Sites, their integrity or their conservation objectives when considered on its own. There is therefore no potential for the proposed development to contribute to any cumulative adverse effects on any European Site when considered in-combination with other plans and projects.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts 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 impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to any European Site.

# 7. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites.

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

## APPROPRIATE ASSESSMENT SCREENING REPORT

# Article 6 (3) Appropriate Assessment Screening Report

## Sky Castle Ltd – Moygaddy Mixed Use Scheme, Co. Meath & Co. Kildare

# DOCUMENT DETAILS

| | |
|---|---|
| Client: | **Sky Castle Ltd** |
| Project Title: | **Proposed Moygaddy Mixed Use Development, Co. Meath** |
| Project Number: | **210414** |
| Document Title: | **Appropriate Assessment Screening Report** |
| Document File Name: | **AASR F – 2022.08.31 – 210414** |
| Prepared By: | **MKO**<br>**Tuam Road**<br>**Galway**<br>**Ireland**<br>**H91 VW84** |

Planning and Environmental Consultants

| Rev | Status | Date | Author(s) | Approved By |
|---|---|---|---|---|
| 01 | Draft | 20/05/2022 | CM | PR |
| 02 | Draft | 23/05/2022 | CM | PR/DN |
| 03 | Final | 31/08/2022 | CM | PR |
| | | | | |

# Table of Contents

## TABLE OF PLATES



## TABLE OF FIGURES

## TABLE OF TABLES

# 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) Screening for Appropriate Assessment for the Proposed Moygaddy Mixed Use Scheme. A full description of the Proposed Development is given in Section 2 below.

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 and consequently the project has been subject to the Appropriate Assessment Screening process.

The assessment in this report is based on a desk study and multiple field surveys undertaken during July and August 2021 and July and August 2022 respectively. It specifically assesses the potential for the proposed development to result in significant effects on European sites in the absence of any best practice, mitigation or preventative measures.

This Appropriate Assessment Screening Report has been prepared in accordance with the 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) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

In addition to the guidelines referenced above, the following relevant documents were also considered in the preparation of this report:

1. *Council of the European Commission (1992) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal of the European Communities. Series L 20, pp. 7-49.*
2. *EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.*
3. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence. Opinion of the commission.*
4. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.*

## 1.2 Appropriate Assessment

### 1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority. As per Section 177U of the Planning and Development Act, 2000, as amended 'A screening for appropriate assessment shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the

European site'. The Competent Authority's determination as to whether an Appropriate Assessment is required must be made on the basis of objective information and should be recorded. The Competent Authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may provide for the competent authority, the information necessary for them to determine whether an Appropriate Assessment is required and provide advice to assist them in the Article 6(3) Appropriate Assessment Screening decision.

Where it cannot be excluded beyond reasonable scientific doubt at the Screening stage, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment is required.

Where an Appropriate Assessment is required, the Competent Authority may require the applicant to prepare a Natura Impact Statement.

The term Natura Impact Statement (NIS) is defined in legislation[1]. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

This Article 6(3) Appropriate Assessment Screening Report has been prepared in compliance with the provision of section 177U of the Planning & Development Act 2010 as amended.

## Statement of Authority

A field assessment surveys were undertaken by Julie O'Sullivan (B.Sc., M.Sc.) and Colin Murphy (B.Sc., M.Sc.) across multiple dates in July 2021. Additional follow up surveys were carried out in July 2022. Bat surveys were carried out across various dates in July and August 2021. This report has been prepared by Colin Murphy (B.Sc., M.Sc.). Colin is an experienced ecologist with over two years professional experience in ecological consultancy. This report has been reviewed by Pat Roberts (B.Sc. (Env.)) who has over 16 years' experience in ecological consultancy.

[1] As defined in Section 177T of the Planning and Development Act, 2000 as amended, an NIS means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own and in combination with other plans and projects, for a European site in view of its conservation objectives. It is required to include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for the European site in view of its conservation objectives

# 2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

## 2.1 Site Location

The Proposed Development site is located on the northern environs of Maynooth town, located in both Co. Meath and Co. Kildare.

The EIAR Site location is shown in Figure 2-1 below.

## 2.2 Characteristics of the Proposed Development

### 2.2.1 Project Description

Sky Castle Ltd. intends to submit to a total of six planning applications as part of the Moygaddy Mixed Use Development (henceforth referred to as the Proposed Development). A total of three planning applications will be submitted to Meath County Council as the competent authority. The first planning application seeks to provide a Strategic Employment Zone (Biotechnology & Life Sciences Campus), the second planning application for Community Infrastructure which includes a Nursing Home and Primary Care Centre, and the third planning application is for the delivery of the proposed Maynooth Outer Orbital Road (MOOR).

A planning application for a Strategic Housing Development (SHD) will be submitted to An Bord Pleanála under the Strategic Housing Provisions of the Planning and Development (Housing) and Residential Tenancies Act, 2016.

The site location map for the 6 separate planning applications is shown in Figure 2-2.

### 2.2.2 Strategic Employment Zone (Site A)

The site measures approximately 6.8 hectares and is located in County Meath on the northern edge of Maynooth town. The site consists of a green field currently of agricultural use

The Strategic Employment Zone (**Site A**) will consist of:

1) The proposed development comprises 3 no. office blocks and all associated site development works (GFA: 20,633.26 sq.m) as follows:
2) Block A: 5 storey office building providing offices, stair and lift cores and plant rooms (GFA: 10,260.42 sq.m)
3) Block B: 3 storey office building providing offices, stair and lift cores and plant rooms (GFA: 5,186.54 sq.m)
4) Block C: 3 storey office building providing offices, stair and lift cores and plant rooms (GFA: 5,186.30 sq.m)
5) The development includes a surface car park which includes 323 no. car parking spaces and 320 no. bicycle car parking spaces (including 16 no. accessible car parking spaces and 12 no. EV charging spaces)
6) Undertaking of road upgrade works including the provision of a signalised junction on the R157 Dunboyne Road and the construction of a section of the Maynooth Outer Orbital Route and provision of associated pedestrian and cycle infrastructure, as well

as a realignment of a section of the R157. The works to the R157 adjoin the Carton Demense Wall which is a Protected Structure (RPS Ref 91556).

7) Vehicular access to the site will be provided via the R157 Dunboyne Road and provision is made for a secondary vehicular access via the proposed section of the Maynooth Outer Orbital Route.
8) Provision of water, foul and surface water drainage infrastructure including pumping station.
9) Provision of a new pedestrian & cycle bridge structure at the River Rye Water adjacent to the existing Kildare Bridge.
10) Provision of roof mounted solar PV panels on Office Blocks A, B & C.
11) Provision of 3 no. ESB Kiosks.
12) Provision of bin stores, bike stands, landscaping, boundary treatments and public lighting and all other site development works and services ancillary to the proposed development.

### 2.2.3 Healthcare Facilities (Site B)

Site B measures approximately 6.1 hectares and is located in County Meath on the northern edge of Maynooth town. The site consists of a green field currently of agricultural use.

The Healthcare Facilities (**Site B**) will consist of:

1) Construction of a new two-storey Nursing Home of 156 no. bedrooms with a Gross Floor Area (GFA) of 8,576m$^2$, including vehicular pick up/drop-off area and service road;
2) Construction of a new three-storey Primary Care Centre (PCC) with a Gross Floor Area (GFA) of 3,049m$^2$;
3) The development includes a shared surface car park providing 161 no. car parking spaces (comprising of 151 no. standard car parking spaces and 10 no. accessible car parking spaces) and 160 no. bicycle parking spaces.
4) Provision of foul and surface water drainage including wastewater pumping station.
5) Connection to potable water supply at Kildare Bridge.
6) Provision of communal (semi-private) and public open space
7) Provision of hard and soft landscaping including amenity equipment, fencing and gates.
8) Provision of substation and public lighting.
9) Proposed road improvement and realignment works including:

    i. Construction of a new 2-way, 6m-wide access road from the R157 Dunboune Road to include a priority T-junction on the R157,
    ii. Upgrade works to a section of the R157 from the new site entrance south to Kildare Bridge on the R157 (representing delivery of a 15m-wide portion of the Maynooth Outer Relief Road (MOOR)), including creation of a new 2m-wide footpath, 3m-wide cycle lane and pedestrian and cycle link adacent to the Kildare Bridge,
    iii. Provision of pedestrian and cycle improvement measures along the R157 which abuts the Carton Demense Wall which is a Protected Structure (RPS Ref 91556)

10) All other site development works and services ancillary to the proposed development.
11) A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) will be submitted to the planning authority with the planning application.

## 2.2.4 Strategic Housing Development (Site C)

Site C measures approximately 17.6 hectares and is located in County Meath on the northern edge of Maynooth town. The site consists of a green field currently of agricultural use.

The Strategic Housing Development (**SHD: Site C**) will consist of:

1) Construction of 360 no. residential homes comprising:
   196 no houses (including 19 no. 2 beds, 156 no. 3 beds and 21 no. 4 beds).
   102 no. duplexes (including 51 no. 1 beds and 51 no. 2 beds) set out in 6 no. blocks.
   62 no. apartments (including 26 no. 1 beds and 36 no. 2 beds) set out in 2 no. blocks.
2) Provision of a public park and playground with associated 42 no. car parking spaces adjacent to Moygaddy Castle Towerhouse and pedestrian and cyclist links along the Rye Water River. The overall public open space (including the High Amenity Lands) equates to 7.98 hectares.
3) Provision of private open spaces in the form of balconies and terraces is provided to all individual apartments and duplexes to all elevations.
4) Development of a two-storey creche facility (514 sqm), outdoor play area and associated parking of 29 no. spaces.
5) Provision of a single storey Scout Den facility, including a hall, kitchen, meeting room and ancillary facilities (220sqm) and associated parking of 6 no. spaces.
6) Provision of 4 no. bridge structures comprising:
   iv. an integral single span bridge at Moyglare Hall over the Rye Water River to connect with existing road infrastructure in County Kildare and associated floodplain works and embankments.
   v. a new pedestrian and cyclist bridge at Kildare Bridge which will link the proposed site with the existing road network in County Kildare.
   vi. a new pedestrian and cycle bridge across the Blackhall Little Stream on the L6219 adjacent to the existing unnamed bridge.
   vii. a new pedestrian and cycle bridge over the Blackhall Little Stream linking the proposed residential site with the proposed Childcare Facility, Scout Den and Moygaddy Castle Public Park.
7) Provision of 500m of distributor road comprising of 7.0m carriageway with turning lane where required, footpaths, cycle tracks and grass verges. All associated utilities and public lighting including storm water drainage with SuDS treatment and attenuation.
8) Proposed road improvement and realignment works including:
   realignment of a section of the existing L6219 local road, which will entail the demolition of an existing section of the road which extends to circa 2,500 sqm.
   Provision of pedestrian and cycle improvement measures along the L6219 which abuts the boundary of Moygaddy House which is a Protected Structure (RPS ref 91558).
   Provision of pedestrian and cycle improvement measures along the R157 which abuts the Carton Demense Wall which is a Protected Structure (RPS Ref 91556).
9) Provision of 3 no. vehicular and pedestrian accesses from the L6219 local road and an additional vehicular and pedestrian access from the R157 to the Childcare and Scout Den facilities.
10) The proposed development will provide 283 no. of bicycle parking spaces, of which 200 no. are long term spaces in secure bicycle stores and 83 no. are short term visitor bicycle parking spaces. 12 no. bicycle spaces are provided for the creche and 12 no. bicycle spaces are provided for the Scout Den.
11) A total of 667 no. car parking spaces are provided on site located at surface level. The car parking provision includes 10 no. Electric Vehicle charging and Universally Accessible spaces allocated for the Apartment & Duplex units. All Houses will be constructed with provision for EV Charging.
12) Provision of site landscaping, public lighting, bin stores, 3 no. ESB unit substations, site services and all associated site development works.

13) A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) has been included with this application.

## 2.2.5 Maynooth Outer Orbital Road (MOOR)

Planning Permission is sought by Sky Castle Ltd. for the development of the Maynooth Outer Orbital Road (MOOR) in the townland of Moygaddy, Maynooth Environs, Co. Meath.

The proposed road development will consist of the following:

1. Provision of approximately 1,700m of new distributor road (MOOR Arc) comprising of 7.0m carriageway with turning lane where required, footpaths, cycle tracks and grass verges. All associated utilities and public lighting including storm water drainage with SuDS treatment and attenuation.
2. Proposed road improvement and realignment works including:
    i. realignment of a section of the existing L6219 local road, which will entail the demolition of an existing section of the road which extends to circa 2,500 sqm.
    ii. Provision of pedestrian and cycle improvement measures along the L6219 and L22143 which abuts the boundary of Moygaddy House which is a Protected Structure (RPS ref 91558).
    iii. Provision of pedestrian and cycle improvement measures along the R157 which abuts the Carton Demense Wall which is a Protected Structure (RPS Ref 91556).
    iv. Realignment of a section of the existing L22143 local road and R157, which will entail the demolition of an existing section of the road which extends to circa 3,200 sqm.
    v. Provision of a new signalised junction at the realigned junction between the L22143 and R157.
    vi. Provision of a new signalised junction between the L2214 local road and the MOOR with right-turn lanes on approaches.
    vii. Reconfiguration of the L2214 section within the MOOR arc to a one-way from north to south with right-turn lanes, where applicable.
    viii. Reconfiguration of the northbound lane of the L2214 within the arc to a shared facility for use by pedestrians and cyclists.
    ix. Addition of chicanes on the L6219 and L22143 local road to reduce traffic flow and encourage utilisation of the MOOR.
3. Provision of 4 no. bridge structures comprising:
    i. an integral single span bridge at Moyglare Hall over the River Rye Water to connect with existing road infrastructure in County Kildare and associated floodplain works and embankments.
    ii. a new pedestrian and cyclist bridge at Kildare Bridge which will link the proposed site with the existing road network in County Kildare.
    iii. a new pedestrian and cycle bridge across Blackhall Little stream on the L22143 adjacent to the existing unnamed bridge.
    iv. an integral single span bridge on the north-eastern section of the MOOR arc, over the Blackhall Little Stream, and associated floodplain works and embankments.
4. Provision of site landscaping, public lighting, site services and all associated site development works.
5. A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) has been included with this application.

## 2.2.6 Kildare Bridge Application

Planning Permission is sought by Sky Castle Ltd. for the development of a portion of the Maynooth Outer Orbital Road (MOOR) within Co. Kildare, on the County border to Co. Meath.

The proposed development will consist of the following:

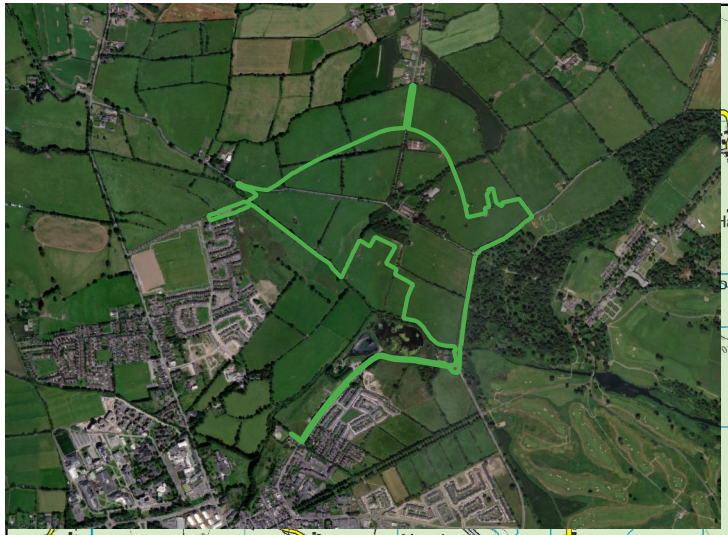
1. Provision of a new bridge structure comprising the following:
    a. a pedestrian and cycle bridge structure to be erected adjacent to the upstream/western side of the existing Kildare Bridge, with a 2m clearance, with the infrastructure tying into new infrastructure in Co. Meath.
    b. This bridge will be a standalone, independent structure that will also support new water main assets
2. New wastewater rising mains to be installed underground adjacent the bridge structure, to the west.
3. New walkways and cycle track will tie-in with new infrastructure to be constructed by Cairn Homes and their Agents.
4. Provision of site landscaping, public lighting, site services and all associated site development works.
5. A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) has been included with this application.

### 2.2.7 Moyglare Bridge Application

Planning Permission is sought by Sky Castle Ltd. for the development of a portion of the Maynooth Outer Orbital Road (MOOR) within Co. Kildare, on the county border to Co. Meath.

The proposed development will consist of the following:

1. Provision of approximately 200m of new portion of distributor road comprising of 7.0m carriageway with footpaths, cycle tracks and grass verges. All associated utilities and public lighting including storm water drainage with SuDS treatment and attenuation. This new road section with pedestrian and cycle infrastructure will tie in with existing infrastructure just east of the roundabout which provides access to the Maynooth Community College and Moyglare Hall Estate.
2. Provision of a new bridge structure comprising the following:
    a. an integral 50m single span bridge at Moyglare Hall over the River Rye Water to connect with existing road infrastructure in County Kildare and associated floodplain works and embankments.
    b. The bridge will include pedestrian and cycle facilities
    c. Extension of the water main assets to serve new developments in Maynooth Environs
3. Provision of site landscaping, public lighting, site services and all associated site development works.
4. A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) has been included with this application.



## Map Legend

EIAR Site Boundary



Drawing Title

EIAR Site Boundary

Project Title

Sky Castle Ltd – Moygaddy Mixed Use Scheme, Co. Meath & Co. Kildare

| Drawn By | Checked By |
|---|---|
| CM | CM |
| **Project No.** | **Drawing No.** |
| 210414 | Figure 2-1 |
| **Scale** | **Date** |
| 1:49,500 | 2022-08-30 |

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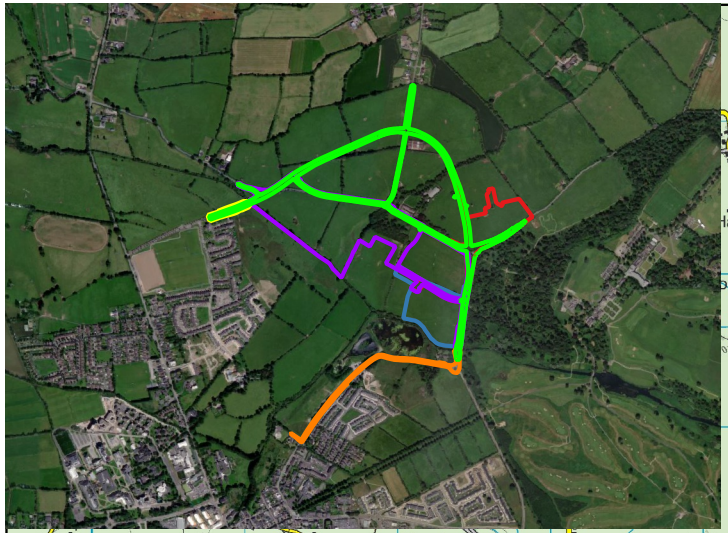

## Map Legend

- Site A - Strategic Employment Zone
- Site B - Healthcare Facilities
- Site C - Strategic Housing Development
- MOOR- Maynooth Outer Orbital Road
- Kildare Bridge
- Moyglare Bridge



N

Drawing Title
Six Planning Applications Site Boundaries

Project Title
Sky Castle Ltd – Moygaddy Mixed Use Scheme, Co. Meath & Co. Kildare

| Drawn By | Checked By |
|---|---|
| CM | CM |
| Project No. | Drawing No. |
| 210414 | Figure 2-2 |
| Scale | Date |
| 1:49,500 | 2022-08-30 |

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## 2.3 Proposed Site Drainage

Once the drainage systems and the majority of the buildings are constructed, it is proposed to separate the surface water and wastewater drainage networks, which will serve the Proposed Development, and provide independent surface water connections to the adjacent Blackhall Little stream and River Rye and a separate connection to the local wastewater sewer network respectively. The Proposed Development will direct surface water from surfaced areas roads, and roofs, via gravity, infiltration area/attenuation storage, swales, hydrocarbon interceptors and filtration drain to a high-level outfall at the Blackhall Little and at the River Rye, just west of the Kildare Bridge. The remaining areas are considered green space and will be allowed to drain naturally to ground, with negligible impact on the performance of the surface water network, and therefore do not contribute to the surface water drainage networks.

### 2.3.1 Site A

It is proposed that surface water within Site A (from roads, roofs and hardstanding areas) will drain via gravity, and via hydrocarbon interceptors, and infiltration area/attenuation storage areas, to an existing ditch along the southern boundary, which is to be replaced by a new filter trench as part of the upgraded and re-aligned R157. This drain conveys surface water runoff in a southerly direction, ultimately towards the River Rye at the proposed outfall location described below. Underground attenuation will comprise underground poly-tunnel systems, to be provided within proposed green spaces at Site A.

The discharge rates at the proposed surface outfall, which serves Site A, is to be restricted to a low rate less than 10.1 l/s (i.e. 5.61 l/s/ha), which is less than the current greenfield equivalent runoff rate, to ensure that there is no increase in flow rates and volumes to be discharged from the Proposed Development to the receiving infrastructure and waterbodies. Therefore, there will be no adverse impact on the River Rye and other downstream properties

### 2.3.2 Site B

It is proposed that surface water within Site B (from roads, roofs and hardstanding areas) will drain via gravity, and via hydrocarbon interceptors, and infiltration area/attenuation storage (located in the shared carpark at Site B), to a high-level outfall at the River Rye, just west of the Kildare Bridge. The Proposed Development will direct surface water from surfaced areas roads, and roofs, via gravity, infiltration area/attenuation storage, hydrocarbon interceptors and filtration drain to a high-level outfall at the River Rye, just west of the Kildare Bridge. The remaining areas are considered green space and will be allowed to drain naturally to ground, with negligible impact on the performance of the surface water network, and therefore do not contribute to the surface water drainage networks.

The discharge rates at the proposed surface water outfall, which serves Site B, is to be restricted to a flow rate less than 10.1 l/s (i.e. 5.61 l/s/ha), which is less than the current greenfield equivalent runoff rate, to ensure that there is no increase in flow rates and volumes to be discharged from the Proposed Development to the receiving infrastructure and waterbodies. Therefore, there will be no adverse impact on the River Rye and other downstream properties.

### 2.3.3 Site C

It is proposed that surface water within Site C (from roads, roofs and hardstanding areas) will drain via gravity, and via hydrocarbon interceptors, and infiltration area/attenuation storage and swales (located

in the open spaces to the south and east of the site), to a high-level outfall at the Blackhall Little Stream. The remaining areas are considered green space and will be allowed to drain naturally to ground, with negligible impact on the performance of the surface water network, and therefore do not contribute to the surface water drainage networks.

The discharge rates at the proposed surface water outfall, which serves Site C, is to be restricted to a flow rate less than 5.5 l/s/ha, which is less than the current greenfield equivalent runoff rate, to ensure that there is no increase in flow rates and volumes to be discharged from the Proposed Development to the receiving infrastructure and waterbodies. Therefore, there will be no adverse impact on the Blackhall Little Stream or the Rye Water River and other downstream properties.

### 2.3.4 MOOR

It is proposed that surface water run off on the MOOR is to be captured by adequately spaced trapped road gullies, which connect to a main carrier drain under the road. The rainfall runoff on the aligning footpath and cycle track shall be intercepted by the dividing tree-lined grass verge, with excess runoff only being collected by the road's gully network. Surface water attenuation will be used to control runoff from all hard surfaces in accordance with the GDSDS, with these being restricted to a maximum flow rate of 5.5 l/s/ha, which is less than the calculated greenfield runoff equivalent.

The proposed surface water network is to be split into 4 no. catchments, in order to optimise the network based on the natural topography of the site.

It is proposed that surface water from the MOOR is to discharge the treated and attenuated runoff from each catchment to the existing watercourses at the proposed outfall locations, namely the Rye Water River and Blackhall Little Stream.

### 2.3.5 Kildare Bridge

It is proposed that surface water run off on the Kildare Bridge is to be captured by the proposed drainage features proposed as part of the MOOR. Adequately spaced trapped road gullies, which connect to a main carrier drain under the road. The rainfall runoff on the aligning footpath and cycle track and bridge shall be intercepted by the dividing tree-lined grass verge, rainfall allowed to percolate to ground and/or flow via subsurface flow to the Rye Water River. Surface water attenuation will be used to control runoff from all hard surfaces in accordance with the GDSDS, with these being restricted to a maximum flow rate of 5.5 l/s/ha, which is less than the calculated greenfield runoff equivalent.

### 2.3.6 Moyglare bridge

It is proposed that surface water run off on the Moyglare Bridge is to be captured by the proposed drainage features proposed as part of the MOOR. Adequately spaced trapped road gullies, which connect to a main carrier drain under the road. The rainfall runoff on the aligning footpath and cycle track shall be intercepted by the dividing tree-lined grass verge, with excess runoff only being collected by the road's gully network. Surface water attenuation will be used to control runoff from all hard surfaces in accordance with the GDSDS, with these being restricted to a maximum flow rate of 5.5 l/s/ha, which is less than the calculated greenfield runoff equivalent.

It is proposed that surface water from the MOOR and Moyglare Bridge is to discharge the treated and attenuated runoff from each catchment to the existing watercourses at the proposed outfall locations, namely the Rye Water River.

## 2.3.7 Operational Phase Sustainable Drainage Systems

The Proposed Development is to contain a series of measures for Sustainable Drainage Systems as outlined below

### 2.3.7.1 Rainwater Harvesting

#### Site A

**Rainwater Harvesting** will be considered at each of the proposed office facilities, which can re-use the collected rainwater for welfare facilities, or landscaping purposes. Rainwater Harvesting helps to reduce the overall volume of rainfall runoff entering the surface water network.

*Plate 2-1.Example of Rainwater Harvesting System*

#### Site C

Rainwater harvesting is to be considered at individual residential units in the form of 'Water Butts', which can re-use the collected rainwater for gardening and other domestic watering purposes. Rainwater Butts help to reduce the overall volume of rainfall runoff entering the surface water network.

*Plate 2-2. Example of Domestic Rainwater Harvesting Butt for Site C*

### 2.3.7.2 Attenuation Storage

Attenuation Storage will be provided at strategic locations, in order to temporarily store excessive surface water, due to the restricted flow rates during rainfall events up to, and including, the design 1% AEP with a 20% additional allowance for climate change. This will allow for the limiting discharge rates at the Proposed Development outfall, as outlined above.

Attenuation will be provided in the form of swales or unlined proprietary poly-tunnel storage units (or similar approved). These poly-tunnel storage units will be underground, in proposed green-spaces for both Site A and Site C and in the car parking area for Site B, for the attenuation of rainfall runoff prior to discharge. Typical poly-tunnel storage systems comprise plastic arch-units with open-graded crushed rock bedding and surround. These units are arranged in rows, with an isolator row for efficient operation and maintenance. These systems also allow for interception of initial rainfall to be provided at the base of the system, by elevating the outlet relative to the systems base. The attenuation systems are to be installed in either the open spaces or the parking areas and was calculated to support a runoff rate that is less than the natural greenfield runoff rate.

*Plate 2-3. Typical Poly-Tunnel Installation Arrangement*

### 2.3.7.3 Limiting Discharge

The discharge rate from the catchments are to be restricted to a maximum discharge rate of 5.5 l/s/ha, which is less than the equivalent greenfield runoff. The Proposed Development discharge rates are to be restricted by using a flow control device, in a chamber upstream of the outfalls, such as Hydro-Brake Optimum Vortex Flow control unit, or similar approved by Meath and Kildare County Councils, downstream of the proposed attenuation systems as outlined above.

### 2.3.7.4 Permeable Paving

Permeable Paving is to be provided for all in-curtilage car parking space within the Residential Development (Site C), which will have a layer of drainage stone underneath. This will provide at-source treatment, interception, and attenuate rainfall runoff throughout the site, prior to entering the main surface water drainage network. A **Type B** porous asphalt, with a 300mm depth of open graded crushed rock as base course, is to be provided in all car parking spaces that serve the Apartments and Duplex homes in Site C and the Primary Care and Nursing Home in Site B

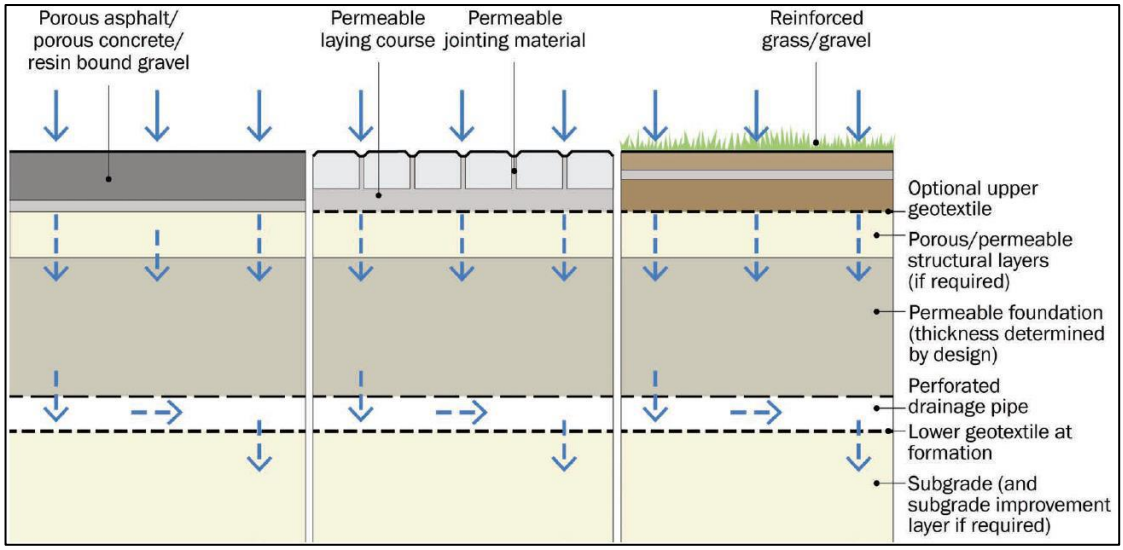



*Plate 2-4. Detail of Type B Pervious Paving (CIRIA C753)*

### 2.3.7.5 Trapped Road Gullies

**Trapped Road Gullies** will be provided for all road gullies serving the Proposed Development, to help prevent sediment and gross pollutants from entering the surface water network, and thus improving the water quality discharging from site. The road gullies will have grated covers with a minimum load classification of D400, for frequent vehicular traffic, and shall be lockable, as required by MCC.

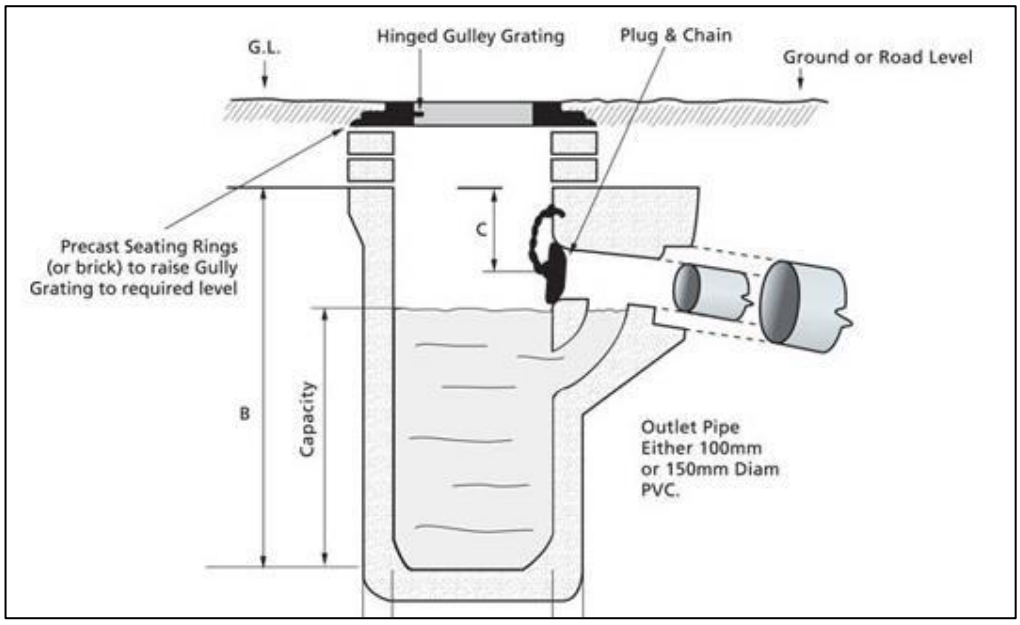



*Plate 2-5: Trapped Road Gully (Typical Detail)*

### 2.3.7.6 Measures to avoid water pollution

A number of measures are proposed as part of the project design to ensure that water leaving the site is not polluted. Whilst these measures are an integral part of the project design and are listed below for completeness, they have not been considered in this AA screening assessment, as they could be considered to be mitigation.

Water quality of the surface water, discharging from site, is to be improved with the following provisions:

Permeable Paving in all private house driveways, as described above;

Intensive landscaping, where practical;
Trapped road gullies on all road carriageways, to trap silt and gross pollutants;
Traditional gravity pipe and manhole network will be provided, to convey the collected rainfall runoff as far as the development's outfall. Manholes are provided for maintenance access at branched connections, change in pipe size and gradient, and at intervals no greater than 90m distance.
Silt traps to be provided on manholes immediately upstream of attenuation systems, as a further preventative measure to trap silt and other gross pollutants;
Surface water attenuation storage in the form of poly-tunnel installation at both Site A and Site C (green spaces) and Site B (car parking area);
A Class 1 Bypass Fuel/Oil Separator is to be provided as an additional and final mitigation measure, prior to surface water discharge from the Proposed Development sites.

## 2.4 Proposed Wastewater Infrastructure

### 2.4.1 Site A, Site B and Site C

It is proposed to provide an onsite underground wastewater pumping station constructed to IW standards and specifications to the west of the proposed nursing home building at Site B within the Proposed Development. Both Site A to the north and Site B to the east and Site C to the west of the proposed pumping station, will drain by gravity to the Pumping Station where it will then be pumped along the R157 and L1013 Local Road towards the existing Irish Water network at Maynooth Municipal Wastewater Pumping Station in County Kildare, approximately 1km south of the proposed pumping station. All wastewater is to discharge to the public infrastructure, this is subject to agreement with Irish Water through the PCE process. In order to achieve this, a new gravity wastewater network is to be installed across the River Ryewater, as part of the proposed bridge structure. The wastewater from the proposed crèche facility is to discharge to the main wastewater network that is to be provided within the residential development, via independent packaged pump system.

Individual buildings will connect to the 225mm diameter foul drains via individual 100mm diameter connections, as per Irish Water Code of Practice for Wastewater Infrastructure. The wastewater discharge from each dwelling is to connect, via a private outfall chamber, to the new development's gravity wastewater network, which is to be designed in accordance with the Irish Water Code of Practice for Wastewater Infrastructure. A Pre-Connection Enquiry Form has been submitted to Irish Water for review, for both the Proposed Development, as well as the masterplan development for the LAP lands. Irish Water (IW) issued a Confirmation of Feasibility Letter (Refer to Appendix 4-9 in Volumes 3a, 3b & 3c of this EIAR) for the Proposed Development, subject to upgrade works being carried out.

The foul sewers will be sealed and there will be no discharge of wastewater to ground within the Proposed Development. Wastewater will be pumped from the Proposed Development to the Maynooth pumping station, and onwards from Maynooth pumping station to the Leixlip Wastewater Treatment Plant.

## 2.5 Proposed Water Supply

### 2.5.1 Site A and Site B

A proposed new connection to one of the existing watermains local to **Site A** and **Site B** will be made for the Proposed Development. There is an existing 200mm watermain to the south of the **Site B**, in County Kildare, just south of the Kildare bridge. An extension from the existing 200mm watermain will be provided along/within the existing R157 Regional Road, to the connection point at the Proposed

Development. It is anticipated that a metered 150mm high density polyethylene connection will be required. Internal distribution network of 150mm HDPE watermain will be provided to serve the proposed Nursing Home and Primary Care Centre and Biotechnology & Life Sciences Campus.

The Proposed Development will be subject to a New Connection Agreement with Irish Water, with all details in accordance with their requirements.

There is no proposed extraction of groundwater at the site for drinking water purposes.

### 2.5.2 Site C

A proposed new connection to one of the existing watermains local to Site C (SHD) will be made for the Proposed Development. It is proposed to provide an extension to the existing 200mm ductile iron watermain at Moyglare Close, with a metered 200mm high density polyethylene connection provided to serve the Proposed Development. Internal distribution networks of 100mm and 150mm HDPE watermain will be provided to serve the proposed residential units. An extension from the Proposed Development's watermain will be provided to serve the proposed crèche facility, adjacent.

The Proposed Development will be subject to a New Connection Agreement with Irish Water, with all details in accordance with their requirements.

There is no proposed extraction of groundwater at the site for drinking water purposes.

# 2.6 Description of the Baseline Ecological Environment

A dedicated habitat survey of the proposed development site was undertaken on the 6th of July 2021 by Julie O'Sullivan and Colin Murphy, with follow up surveys carried out in July 2022. All habitats within the development site were readily identifiable during the site visit. The habitat classifications and codes correspond to those described in '*A Guide to Habitats in Ireland*' (Fossitt, 2000).

The following section describes the habitats found within the 6 separates planning application sites (Site, A, Site B, Site C, MOOR, Kildare bridge and Moyglare Bridge).

## 2.6.1.1 Site A- Strategic Employment Zone

*Table 2-1. Habitats recorded in site A*

| Habitat (Fossitt) | Code |
|---|---|
| Improved Agricultural Grassland | *GA1* |
| Hedgerows | *WL1* |
| Treeline | WL2 |
| Buildings and Artificial Surfaces | *BL3* |

***Improved Agricultural Grassland (GA1)*** is the dominant habitat within the development site. This habitat had a low species diversity and a low sward height, and during the survey was being grazed by sheep and horses. Species recorded in this habitat included abundant perennial rye-grass (*Lolium perenne*), clovers (*Trifolium* spp.), broadleaved plantain (*Plantago major*), frequent ribwort plantain (*Plantago lanceolata*). creeping buttercup (*Ranunculus repens*), annual meadow grass (*Poa annua*), daisy (*Bellis perennis*), cock's-foot (*Dactylis glomerata*), crested dogs tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*), nettle (*Urtica dioica*), dandelion (*Taraxacum officinale* agg.), broad-leaved dock (*Rumex obtusifolius*), mouse-ear chickweed (*Cerastium fontanum*), creeping thistle (*Cirsium arvense*) and germander speedwell (*Veronica chamaedrys*). See Plate 2.6.

Field boundaries are delineated by mature ***Treelines (WL2)*** and ***Hedgerows (WL1).*** Species recorded in the treelines (WL2) include oak, ash, sycamore, hawthorn and beech and was recorded along the southern boundary of the site. Species recorded in the hedgerows (WL1) and hedgerow understory included elder (*Sambucus nigra)*, hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus fructicosus*), willows (*Salix* spp.), holly (*Ilex aquilifolium*), ash (*Fraxinus excelsior*) and ivy (*Hedera helix*). Species recorded in the field margins and hedgerow understory included common sorrel (*Rumex acetosa*), meadow buttercup (*Ranunculus acris*), herb Robert (*Geranium robertianum*), *harts tongue fern (Asplenium scolopendrium*), dandelion (*Taraxacum officinale* agg.), primrose (*Primula vulgaris*), vetch (*Vicia* spp.), lesser celandine (*Ficaria verna*), lords and ladies (*Arum maculatum*) and creeping cinquefoil (*Potentilla reptans).* See plate 2.7.

Remnant dried up former drainage ditches occur in parts of the site bordering hedgerows and treelines in the north-west of the site. These former drainage ditches had dried up, had no flow and were heavily vegetated with dense bramble and nettles.

The R157 located along the eastern boundary of the proposed development site is categorized as Buildings and Artificial Surfaces (BL3). See Plate 2.8.

There are no Annex I habitats listed under the EU Habitats Directive present within the Proposed development site boundary. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape.

*Plate 2-6.Agricultural grassland recorded within development site A.*

*Plate 2-7. Hedgerow habitat along the eastern boundary of site A*

*Plate 2-8. R157 located along the eastern boundary of Site A.*

### 2.6.1.2 Site B- Healthcare Facilities

*Table 2-2. Habitats recorded within development site B.*

| Habitat (Fossitt) | Code |
|---|---|
| Improved Agricultural Grassland | *GA1* |
| Hedgerows | *WL1* |
| Treeline | WL2 |
| Eroding/upland Rivers | *FL2* |
| Buildings and Artificial Surfaces | *BL3* |

***Improved Agricultural Grassland (GA1)*** is the dominant habitat within the development site. This habitat had a low species diversity and a low sward height, and during the survey was being grazed by sheep and horses. Species recorded in this habitat included abundant perennial rye-grass (*Lolium perenne*), clovers (*Trifolium* spp.), broadleaved plantain (*Plantago major*), frequent ribwort plantain (*Plantago lanceolata*). creeping buttercup (*Ranunculus repens*), annual meadow grass (*Poa annua*), daisy (*Bellis perennis*), cock's-foot (*Dactylis glomerata*), crested dogs tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*), nettle (*Urtica dioica*), dandelion (*Taraxacum officinale* agg.), broad-leaved dock (*Rumex obtusifolius*), mouse-ear chickweed (*Cerastium fontanum*), creeping thistle (*Cirsium arvense*) and germander speedwell (*Veronica chamaedrys*). See Plate 2.9.

Field boundaries are delineated by mature ***Treelines (WL2)*** and ***Hedgerows (WL1).*** Species recorded in the treelines (WL2) include oak, ash, sycamore, hawthorn and beech and was recorded along the southern boundary of the site. Species recorded in the hedgerows (WL1) and hedgerow understory included elder (*Sambucus nigra)*, hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus fructicosus*), willows (*Salix* spp.), holly (*Ilex aquilifolium*), ash (*Fraxinus excelsior*) and ivy (*Hedera helix*). Species recorded in the field margins and hedgerow understory included common sorrel (*Rumex acetosa*), meadow buttercup (*Ranunculus acris*), herb Robert (*Geranium robertianum*), *harts tongue fern (Asplenium scolopendrium*), dandelion (*Taraxacum officinale* agg.), primrose (*Primula vulgaris*), vetch (*Vicia* spp.), lesser celandine (*Ficaria verna*), lords and ladies (*Arum maculatum*) and creeping cinquefoil (*Potentilla reptans).* See plate 2.10.

Remnant dried up former drainage ditches occur in parts of the site bordering hedgerows and treelines in the north-west of the site. These former drainage ditches had dried up, had no flow and were heavily vegetated with dense bramble and nettles.

The Rye Water River flows along the southern boundary of the site and is categorised as Eroding/upland River. The river is fringed by a mature treeline on its northern banks, which also forms part of the development boundary. See plate 2.11.

The R157 located along the eastern boundary of the proposed development site is categorized as Buildings and Artificial Surfaces (BL3).

There are no Annex I habitats listed under the EU Habitats Directive present within the Proposed development site boundary. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape.

*Plate 2-9. Agricultural grassland recorded in site B.*

*Plate 2-10. Hedgerow recorded in eastern section of site B.*

*Plate 2-11. Rye Water River along recorded along the southern boundary of site B.*

### 2.6.1.3 Site C- Strategic Housing Development

*Table 2-3. Habitats recorded within site C*

| Habitat (Fossitt) | Code |
|---|---|
| Improved Agricultural Grassland | *GA1* |
| Buildings and Artificial Surfaces | BL3 |
| Mixed broadleaved woodland | *WD1* |
| Eroding upland River | FW1 |
| Hedgerows | *WL1* |
| Treeline | *WL2* |

***Improved Agricultural Grassland (GA1)*** is the dominant habitat within the site C. This habitat had a low species diversity and a low sward height, and during the survey was being grazed by sheep and horses. Species recorded in this habitat included abundant perennial rye-grass (*Lolium perenne*), clovers (*Trifolium* spp.), broadleaved plantain (*Plantago major*), frequent ribwort plantain (*Plantago lanceolata*). creeping buttercup (*Ranunculus repens*), annual meadow grass (*Poa annua*), daisy (*Bellis perennis*), cock's-foot (*Dactylis glomerata*), crested dogs tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*), nettle (*Urtica dioica*), dandelion (*Taraxacum officinale* agg.), broad-leaved dock (*Rumex obtusifolius*), mouse-ear chickweed (*Cerastium fontanum*), creeping thistle (*Cirsium arvense*) and germander speedwell (*Veronica chamaedrys*). See Plate 2.12.

Moygaddy castle in the northern section of the site is classified as ***Buildings and Artificial Surfaces (BL3)***. See plate 2.13.

Field boundaries are delineated by mature ***Treelines (WL2)*** and ***Hedgerows (WL1).*** Species recorded in the treelines (WL2) include oak (*Quercus sp.*), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus),* hawthorn (*Crataegus monogyna*) and beech (*Fagus sylvatica*) and was recorded along the southern boundary of the site. Species recorded in the hedgerows (WL1) and hedgerow understory included elder (*Sambucus nigra)*, hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus fruticosus*), willows (*Salix* spp.), holly (*Ilex aquilifolium*), ash (*Fraxinus excelsior*) and ivy (*Hedera helix*). Species recorded in the field margins and hedgerow understory included common sorrel (*Rumex acetosa*), meadow buttercup (*Ranunculus acris*), herb Robert (*Geranium robertianum*), *harts tongue fern (Asplenium scolopendrium*), dandelion (*Taraxacum officinale* agg.), primrose (*Primula vulgaris*), vetch (*Vicia* spp.), lesser celandine (*Ficaria verna*), lords and ladies (*Arum maculatum*) and creeping cinquefoil (*Potentilla reptans).* See plate 2.14.

Remnant dried up former drainage ditches occur in parts of the site bordering hedgerows and treelines in the north-west of the site. These former drainage ditches had dried up, had no flow and were heavily vegetated with dense bramble and nettles.

The Blackhall Little River, classified as **Eroding/upland river (FW1)** flows through the site, in a southerly direction ((See plate 2-15), discharging to the Rye Water River which flows in an easterly direction outside the southern site boundary. The Rye Water River is designated as part of the Rye Water Valley/Carton SAC, downstream of the proposed development site.

The Blackhall Little is characterized by a rocky substrate, with some pool, riffle and glide areas. The river is approximately 1-2m in the southern section of the site. At the time of the field survey, the river had a low flow and the water was slightly turbid. The river is fringed by mature treeline/hedgerow on its eastern bank and improved agricultural grassland on is western bank. The western embankment of the river had a low profile and had evidence of cattle poaching in places. Emergent vegetation included watercress (*Nasturtium officinale),* wild angelica (*Angelica sylvestris)*, marsh marigold (*Caltha palustris*), meadow buttercup (*Ranunculus acris*) and fools water cress (*Apium nodiflorum). Willow* (*Salix* spp.) and bramble (*Rubus fructicosus)* occur along the embankment.

**Mixed broadleaved woodland (WD1**) occurs on either side of the Blackhall Little River in the centre of the site. This woodland has been planted and is approximately 20-25 years old. The topography of the wooded area, slope down toward the river. See plate 2.16.

The mixed broadleaved woodland (WD1) on the eastern shore of the river, is dominated by mature beech trees, and had a low diversity of species in the ground flora. The woodland on the western shoreline of the watercourse was recently planted with ash, beech and oak, with sycamore also present. The ground flora included abundant nettle, hogweed, herb Robert, ground elder, ivy and wood avens with frequent *poa trivialis*, goosegrass, *ranunculus repens*, foxtail, dock, and cow parsley.

There are no Annex I habitats listed under the EU Habitats Directive present within the Proposed development site boundary. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape.

*Plate 2-12. Improved agricultural grassland in centre of site C.*

*Plate 2-13.Moygaddy castle, categorized as Buildings and Artificial surfaces in the north section of site C.*

*Plate 2-14.Hedgerow habitat delineating improved agricultural grassland (GA1) in the centre of the site.*

*Plate 2-15.Blackhall Little River categorised as eroding upland river in the centre of site C.*

*Plate 2-16.Mixed Broadleaved woodland planted with Ash, Beech and Sycamore located in the centre of site C.*

### 2.6.1.4 MOOR (Maynooth Outer Orbital Road) Site

*Table 2-4. Habitats recorded within the MOOR application site.*

| Habitat (Fossitt) | Code |
|---|---|
| Improved Agricultural Grassland | *GA1* |
| Buildings and Artificial Surfaces | BL3 |
| Eroding upland River | FW1 |
| Hedgerows | *WL1* |
| Treeline | *WL2* |

***Improved Agricultural Grassland (GA1)*** is the dominant habitat within the MOOR application site boundary. This habitat had a low species diversity and a low sward height, and during the survey was being grazed by sheep and horses. Species recorded in this habitat included abundant perennial rye-grass (*Lolium perenne*), clovers (*Trifolium* spp.), broadleaved plantain (*Plantago major*), frequent ribwort plantain (*Plantago lanceolata*). creeping buttercup (*Ranunculus repens*), annual meadow grass (*Poa annua*), daisy (*Bellis perennis*), cock's-foot (*Dactylis glomerata*), crested dogs tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*), nettle (*Urtica dioica*), dandelion (*Taraxacum officinale* agg.), broad-leaved dock (*Rumex obtusifolius*), mouse-ear chickweed (*Cerastium fontanum*), creeping thistle (*Cirsium arvense*) and germander speedwell (*Veronica chamaedrys*). See Plate 2-17.

The R157 located to the east of the site and the L2214 located within the centre of the site are both categorized as **Buildings and Artificial Surfaces (BL3).** See plate 2.18.

The MOOR application intersects multiple fields that are delineated by mature **Treelines (WL2)** and **Hedgerows (WL1).** Species recorded in the treelines (WL2) include oak (*Quercus sp.*), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), hawthorn (*Crataegus monogyna*) and beech (*Fagus sylvatica*) and was recorded along the southern boundary of the site. Species recorded in the hedgerows (WL1) and hedgerow understory included elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus fruticosus*), willows (*Salix spp.*), holly (*Ilex aquilifolium*), ash (*Fraxinus excelsior*) and ivy (*Hedera helix*). Species recorded in the field margins and hedgerow understory included common sorrel (*Rumex acetosa*), meadow buttercup (*Ranunculus acris*), herb Robert (*Geranium robertianum*), harts tongue fern (*Asplenium scolopendrium*), dandelion (*Taraxacum officinale agg.*), primrose (*Primula vulgaris*), vetch (*Vicia spp.*), lesser celandine (*Ficaria verna*), lords and ladies (*Arum maculatum)* and creeping cinquefoil (*Potentilla reptans*). See plate 2.19.

The proposed MOOR route intersects the Rye Water River to the east of the route and the Blackhall Little stream to the north of the route. Both watercourses are categorized as **Eroding Upland River (FW1)**. It should be noted that during the 2022 site survey, the Blackhall Little stream had largely dried up and there was no flowing water present. See plate 2-20 and 2-21.

*Plate 2-17. Improved agricultural grassland located within the route of the MOOR application.*

*Plate 2-18. L2214 categorized as Buildings and Artificial surfaces located within route of the proposed MOOR fringes by mature Treeline habitat*

*Plate 2-19. Treeline recorded along the Blackwater Little River within the centre of the MOOR route*

*Plate 2-20. Blackhall Little Rive with no flowing water located to the north of the MOOR route*

*Plate 2-21. Rye Water River located to the western boundary of the MOOR route*

### 2.6.1.5 Kildare Bridge

The habitats described below refer to the habitats recorded within the boundary of the Kildare bridge application.

*Table 2-5. Habitats recorded within the Kildare bridge application site.*

| Habitat (Fossitt) | Code |
|---|---|
| Buildings and Artificial Surfaces | BL3 |
| Treeline | *WL2* |
| Eroding upland River | |

The Kildare bridge, R157 and the Dunboyne Road are all categorized as Buildings and artificial (BL3). See plate 2-22.


*Plate 2-22. Kildare bridge and R157*

The Rye River located at the bridge is categorized as Eroding upland River (FW1) and is fringed by riparian Treeline (WL1) with Sycamore (*Acer pseodoplatanus*), Ash (*Fraxinus excelsior*), Willow (*Salix sp.)* and *Leyandii cypress* occurring here. See Plate 2-23.

*Plate 2-23. Rye River (FW1) fringed by riparian Treeline (WL1).*

### 2.6.1.6 Moyglare Bridge

The habitats described below refer to the habitats recorded with the Moyglare hall application site.

*Table 2-6. Habitats recorded within the Moyglare bridge site*

| Habitat (Fossitt) | Code |
|---|---|
| Spoil and Bare ground | *ED2* |
| Dry Meadows and grassy verges | *GS2* |
| Eroding upland River | *FW1* |

The area to the south of the Rye Water River is dominated by rank grassland categorised as Dry Meadows and grassy verges (GS2). The species diversity here was low and dominated by tussocky vegetation composing of Broad-leaved dock (*Rumex obtusifolius*), Ragwort (*Jacobaea vulgaris*), Creeping thistle (*Cirsium arvense*), Yorkshire fog (*Holcus lanatus*) and Cock's foot (*Dactylis glomerata*). See Plate 2-24. A small section of Spoil and bare ground (ED2) habitat was recorded to the south of the Moyglare Bridge-Kildare application boundary, in the area adjacent to the Moyglare Hall Estate. See Plate 2-25.

The Rye Water River occurs at the northern boundary of the Moyglare Bridge-Kildare application site and is categorised as Eroding upland River (FW1). See Plate 2-26.

*Plate 2-24. Dry meadows and grassy Verges habitat recorded south of the Rye Water River within Moyglare site*

*Plate 2-25. Spoil and bare ground fringed by dry meadows and grassy verges within Moyglare site*

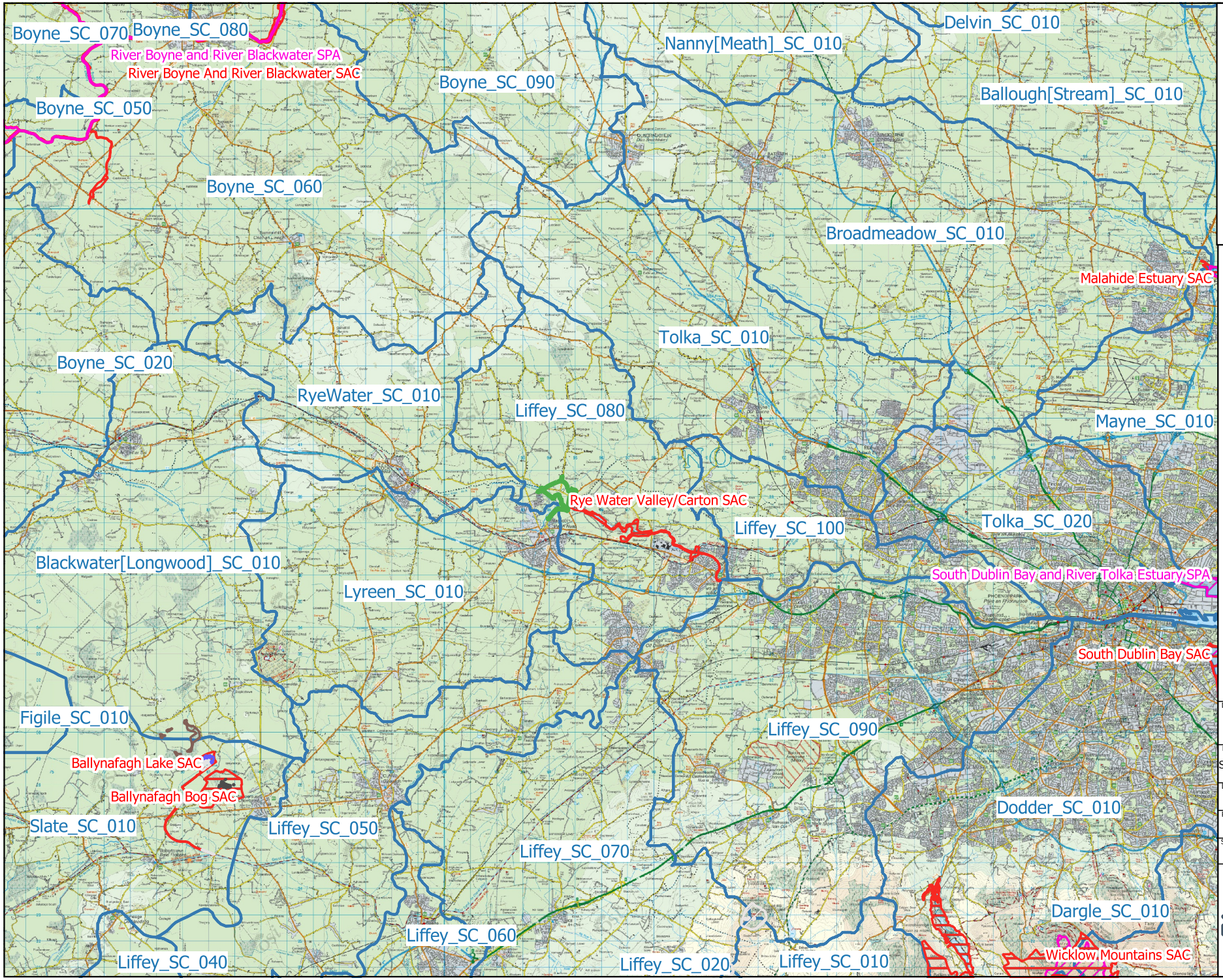
*Plate 2-26. Rye Water River categorised as Eroding upland river within Moyglare site.*

# 3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

## 3.1 Identification of the European Sites within the Likely Zone of Impact

The following methodology was used to establish which European Sites are within the Likely Zone of Impact 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) on the 01/12/2021. The datasets were utilized to identify European Sites which could feasibly be affected by the Proposed Development.
- All European Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, European Sites within a distance of 15km surrounding the development site are shown on Figure 3.1. Information on these sites according to the site-specific conservation objectives is provided in Table 3-1. Sites that were further away from the proposed development were also considered and in this case a potential source-pathway-receptor chain for European Sites that are further than 15km from the proposed development was identified and these sites have been fully considered in this assessment.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the Proposed Development and any European Sites. The hydrological catchments are also shown in Figure 3-1.
- 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 3-1 provides details of all relevant European Sites as identified in the preceding steps and assesses which are within the likely Zone of Impact. 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 the following criteria: 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 and operation were considered in this screening 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 01/12/2021.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and further assessment is required.




## Map Legend

- EIAR Site Boundary
- EPA Hydrological Sub Catchments
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)



N

Drawing Title
European Sites within Zone of Impact

Project Title
Sky Castle Ltd – Moygaddy Mixed Use Scheme, Co. Meath & Co. Kildare

| Drawn By | Checked By |
|---|---|
| CM | CM |
| Project No. | Drawing No. |
| 210414 | Figure 3-1 |
| Scale | Date |
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*Table 3-1 Identification of Designated sites within the Likely Zone of Impact*

| European Sites and distance from proposed development | Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/09/2021 | Conservation Objectives | Likely Zone of Impact Determination |
|---|---|---|---|
| **Special Areas of Conservation (SAC)** | | | |
| Rye Water Valley/Carton SAC [001398]<br><br>**Distance:** 0m (directly adjacent to southern section of development boundary) | › [7220] Petrifying springs with tufa formation (*Cratoneurion*)*<br>› [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)<br>› [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) | Detailed conservation objectives for this site, (Version 1, December 2021), were reviewed as part of the assessment and are available at www.npws.ie | The River Rye Water flows along southern boundary of the development site. A potential pathway for indirect effects on water dependent Qualifying Interests (QIs) was identified in the form of deterioration of surface water and groundwater quality resulting from pollution, associated with the construction and operational phases of the development. The River Rye water flows into this SAC, Pollution of surface water and groundwater may result in adverse impacts on the following downstream aquatic or groundwater influenced QI habitats within the SAC in the absence of mitigation:<br><br>› [7220] Petrifying springs with tufa formation (*Cratoneurion*)*<br>› [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)<br>› [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)<br><br>**The SAC is in the Likely Zone of Impact and further assessment is required.** |
| South Dublin Bay SAC [000210]<br><br>**Distance:** 25km<br><br>31km (Surface water distance) | › Mudflats and sandflats not covered by seawater at low tide [1140] | Detailed conservation objectives for this site, (Version 1, August 2013), were reviewed as part of the assessment and are available at www.npws.ie | This site is 25km west of the Proposed Development site, therefore direct impacts upon this SAC can be excluded.<br><br>Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Qualifying Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the development via the Rye Water River and the River Liffey. The SAC is located approx. 31km downstream of the proposed development site. On an extremely precautionary basis effects on the following aquatic receptors are considered:<br><br>Mudflats and sandflats not covered by seawater at low tide [1140] |

| European Sites and distance from proposed development | Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/09/2021 | Conservation Objectives | Likely Zone of Impact Determination |
|---|---|---|---|
| **Special Areas of Conservation (SAC)** | | | |
| | | | This SAC is therefore **within the likely zone of impact**, due to the potential for pollutants to be transmitted to it indirectly via surface water. |
| North Dublin Bay SAC [000206]<br><br>**Distance**: 25km<br><br>31km (Surface water distance) | › Mudflats and sandflats not covered by seawater at low tide [1140]<br>› Annual vegetation of drift lines [1210]<br>› salicornia and other annuals colonising mud and sand [1310]<br>› Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]<br>› Mediterranean salt meadows (*Juncetalia maritimi)* [1410]<br>› Embryonic shifting dunes [2110]<br>› Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]<br>› Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]<br>› Humid dune slacks [2190]<br>› *Petalophyllum ralfsii* (Petalwort) [1395] | Detailed conservation objectives for this site, (Version 1, 6th November 2013) were reviewed as part of the assessment and are available at www.npws.ie | This European Site is located 25km west of the Proposed Development. Given the distance between the site of Proposed Development and this SAC, direct effects upon the SAC can be excluded.<br><br>No potential pathway for effect on any of the terrestrial habitats for which the SAC is designated was identified,<br><br>› Embryonic shifting dunes [2110]<br>› Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]<br>› Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]<br>› Humid dune slacks [2190]<br><br>Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Qualifying Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the development via the Rye Water River and the River Liffey. The SAC is located approx. 31km downstream of the Proposed Development. On an extremely precautionary basis effects on the following aquatic receptors are considered:<br><br>› Mudflats and sandflats not covered by seawater at low tide [1140]<br>› Annual vegetation of drift lines [1210]<br>› Salicornia and other annuals colonising mud and sand [1310]<br>› Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]<br>› Mediterranean salt meadows (*Juncetalia maritimi)* [1410] |

| European Sites and distance from proposed development | Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/09/2021 | Conservation Objectives | Likely Zone of Impact Determination |
|---|---|---|---|
| **Special Areas of Conservation (SAC)** | | | |
| | | | This SAC is therefore **within the likely zone of impact**, due to the potential for pollutants to be transmitted to it indirectly via surface water. |
| Special Protection Areas (SPAs) | | | |
| South Dublin Bay and River Tolka Estuary SPA [004024]<br><br>**Distance**: 25km<br><br>31km (Surface water distance) | › Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]<br>› Oystercatcher (*Haematopus ostralegus)* [A130]<br>› Ringed Plover (*Charadrius hiaticula*) [A137]<br>› Grey Plover (*Pluvialis squatarola*) [A141]<br>› Knot (*Calidris canutus*) [A143]<br>› Sanderling (*Calidris alba*) [A144]<br>› Dunlin (*Calidris alpina*) [A149]<br>› Bar-tailed Godwit (*Limosa lapponica*) [A157]<br>› Redshank (*Tringa totanus*) [A162]<br>› Black-headed Gull (*Chroicocephalus ridibundus*) [A179]<br>› Roseate Tern (*Sterna dougallii*) [A192]<br>› Common Tern (*Sterna hirundo*) [A193]<br>› Arctic Tern (*Sterna paradisaea*) [A194]<br>› Wetland and Waterbirds [A999] | Detailed conservation objectives for this site, (Version 1, 9th March 2015) were reviewed as part of the assessment and are available at www.npws.ie | This site is 25km west of the Proposed Development, therefore direct impacts upon this SPA can be excluded.<br><br>Disturbance to SCI species can be ruled out due to the distance of 25km between the development and this SPA.<br><br>Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Special Conservation Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the development via the Rye Water River and the River Liffey. The SPA is located approx. 31km downstream of the proposed development site. Potential effects on all SCI species are considered under Wetland and waterbirds [A999].<br><br>This SPA is **within the likely zone of impact**, due to the potential for pollutants to be transmitted to it indirectly via surface water. |
| North Bull Island SPA [004006]. | › Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] | Detailed conservation objectives for this site, | This site is 23km west of the Proposed Development, therefore direct impacts upon this SPA can be excluded. |

| European Sites and distance from proposed development | Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/09/2021 | Conservation Objectives | Likely Zone of Impact Determination |
|---|---|---|---|
| **Special Areas of Conservation (SAC)** | | | |
| **Distance**: 23km<br><br>31km (Surface water distance) | › Shelduck (*Tadorna tadorna*) [A048]<br>› Teal (*Anas crecca*) [A052]<br>› Pintail (*Anas acuta*) [A054]<br>› Shoveler (*Anas clypeata*) [A056]<br>› Oystercatcher (*Haematopus ostralegus*) [A130]<br>› Golden Plover (*Pluvialis apricaria*) [A140]<br>› Grey Plover (*Pluvialis squatarola*) [A141]<br>› Knot (*Calidris canutus)* [A143]<br>› Sanderling (*Calidris alba*) [A144]<br>› Dunlin (*Calidris alpina*) [A149]<br>› Black-tailed Godwit (*Limosa limosa*) [A156]<br>› Bar-tailed Godwit (*Limosa lapponica*) [A157]<br>› lew (*Numenius arquata*) [A160]<br>› Redshank (*Tringa totanus*) [A162]<br>› Turnstone (*Arenaria interpres*) [A169]<br>› Black-headed Gull (*Chroicocephalus ridibundus)* [A179]<br>› Wetland and Waterbirds [A999] | (Version 1, 9th March 2015) were reviewed as part of the assessment and are available at www.npws.ie | Disturbance to SCI species can be ruled out due to the distance of 23km between the development and this SPA.<br><br>Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Special Conservation Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the development via the Rye Water River and the River Liffey. The SPA is located approx. 31km downstream of the proposed development site. Potential effects on all SCI species are considered under Wetland and waterbirds [A999].<br><br>This SPA is **within the likely zone of impact**, due to the potential for pollutants to be transmitted to it indirectly via surface water. |

## 3.2 European Sites with the Potential to be Significantly Affected by the Proposed Development

The European Sites within the likely zone of impact are:

- Rye Water Valley/Carton SAC [001398]
- South Dublin Bay SAC [000210]
- North Dublin Bay SAC [000206]
- South Dublin Bay and River Tolka Estuary SPA [004024]
- North Bull Island SPA [004006].

### 3.2.1 Rye Water Valley/Carton SAC [001398]

The River Rye Water flows along the southern boundary of the development Sites B, C and the MOOR and along the northern boundary of the Kildare Bridge and Moygaddy Bridge sites. A potential pathway for indirect effects on water dependent Qualifying Interests (QIs) was identified in the form of deterioration of water quality resulting from pollution, associated with the construction and operational phases of the Proposed Development. The Blackhall Little stream is a tributary of the River Rye and the River Rye water flows into this SAC, Pollution of surface water and groundwater may result in adverse impacts on the following downstream aquatic or groundwater influenced QI habitats within the SAC in the absence of mitigation:

- [7220] Petrifying springs with tufa formation (*Cratoneurion*)*
- [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)
- [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)

### 3.2.2 South Dublin Bay SAC [000210]

Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Qualifying Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the Proposed Development via the Rye Water River and the River Liffey. The SAC is located approx. 31km downstream of the Proposed Development. On an extremely precautionary basis effects on the following aquatic receptors are considered:

- Mudflats and sandflats not covered by seawater at low tide [1140]

### 3.2.3 North Dublin Bay SAC [000206]

Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Qualifying Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the Proposed Development via the Rye Water River and the River Liffey. The SAC is located approx. 31km downstream of the Proposed Development. On an extremely precautionary basis effects on the following aquatic receptors are considered:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Annual vegetation of drift lines [1210]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]

- Mediterranean salt meadows (*Juncetalia maritimi)* [1410]

### 3.2.4 South Dublin Bay and River Tolka Estuary SPA [004024]

Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Special Conservation Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the development via the Rye Water River and the River Liffey. The SPA is located approx. 31km downstream of the proposed development site. Potential effects on all SCI species are considered under Wetland and waterbirds [A999].

### 3.2.5 North Bull Island SPA [004006].

Taking a precautionary approach, a potential pathway for indirect effects on the aquatic Special Conservation Interests of this European Site has been identified in the form of deterioration in water quality due to the release of polluting materials during the construction and operational phases of the Proposed Development via the Rye Water River and the River Liffey. The SPA is located approximately 31km downstream of the Proposed Development. Potential effects on all SCI species are considered under Wetland and waterbirds [A999].

## 3.3 Likely Cumulative Impact of the Proposed Works on European Sites, in-combination with other plans and projects

Where potential pathways for effect have been identified in Table 3-1, the potential for cumulative effects resulting from the Proposed Development when considered in combination with other plans and projects, cannot be discounted at this stage and further assessment is required. Where no pathway for any effect on designated sites is identified, there is no potential for the Proposed Development to result in any cumulative effects. Cumulative effects are assessed in the NIS where potential pathways for effect have been identified.

# 4. ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the 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, 2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

## 4.1 Data Collected to Carry Out Assessment

In preparation of the report, the following sources were used to gather information:

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), EPA, Water Framework Directive (WFD), Geological Survey of Ireland (GSI).
- Review of OS maps and aerial photographs of the site of the proposed project.
- Review of relevant databases including National Biodiversity Ireland Database and available literature of previous surveys conducted in the area.
- Review of other plans and projects within the area.
- Site walkover survey conducted by Colin Murphy (B.Sc., M.Sc.) and Julie O Sullivan (B.Sc., M.Sc.) on the 6th of July 2021 with follow up surveys undertaken across 2022.

## 4.2 Concluding Statement

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 Rye Water Valley/Carton SAC, South Dublin Bay SAC [000210], North Dublin Bay SAC [000206], South Dublin Bay and River Tolka Estuary SPA [004024] and North Bull Island SPA [004006].

As a result, an Appropriate Assessment is required, and a Natura Impact Statement shall be prepared in respect of the proposed development.

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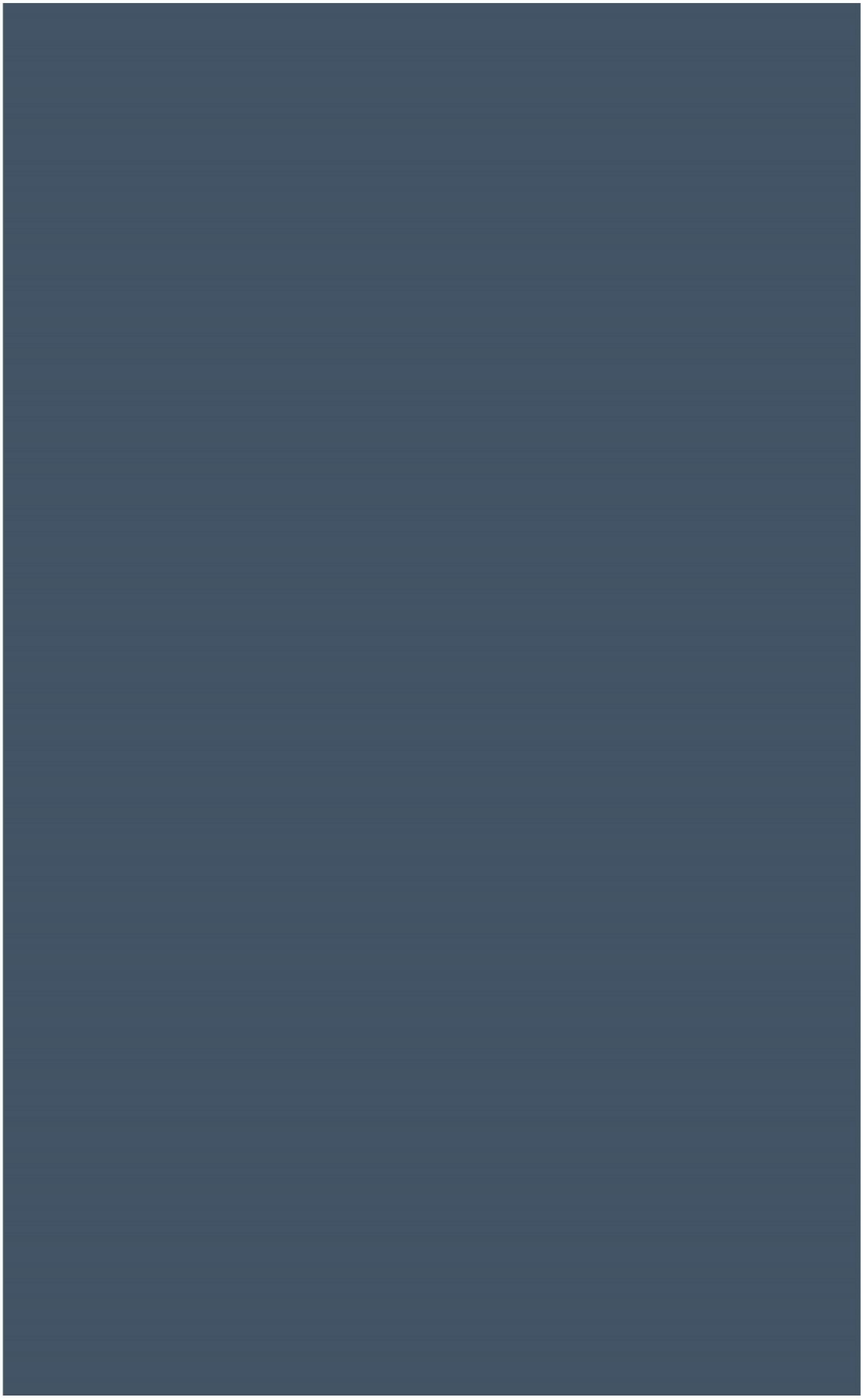

# APPENDIX 2

## SCHEDULE OF MITIGATION

# 15. SCHEDULE OF MITIGATION

## 15.1 Introduction

All mitigation measures relating to the pre-commencement, construction and operational phases of the proposed development are set out in the relevant chapters of the EIAR and associated documents submitted as part of this planning application.

All mitigation measures proposed for the project are outlined in Table 16-1 below. The mitigation measures have been grouped together according to their environmental field/topic and are presented under the following headings:

- Construction Management
- Drainage and Water Quality
- Biodiversity
- Subsoils
- Air Quality and Dust Control
- Noise and Vibration
- Material Assets including Traffic and Utilities
- Landscape and Visual
- Cultural Heritage
- Environmental Management

The mitigation proposals in the below format provides an easy to audit list that can be reviewed and reported on during the future phases of the project. The proposal for site inspections and environmental audits are set out in the Construction and Environmental Management Plans (CEMPs) which are included as Appendix 4-3 in Volumes 3a, 3b & 3c(i) and as Appendix 4-2 in Volumes 3d, 3e & 3f of this EIAR. The mitigation and monitoring proposals are set out in separate tables in the CEMP (Appendix 4-2) for clarity and tracking of the pre-commencement survey requirements. Where particular monitoring proposed is considered to be a measure of mitigation, it has been included in the consolidated table for all mitigation measures proposed (Table 16-1).

It is intended that the CEMP will be updated where required, prior to the commencement of the development, to include all mitigations measures, conditions and or alterations to the EIAR and application documents should they emerge during the course of the planning process and would be submitted to the Planning Authority for written approval.

## 15.2 Mitigation Measures

*Table 15-1 Mitigation Measures*

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | **Construction Phase** | | |
| **Land, Soils and Geology** | | | |
| MM1 | Excavated (existing) overburden and/or bedrock material will be reused on site, where possible; Excavated materials will be used at adjacent sites subject to Article 17 authorisations or other regulatory consents in order to minimise environmental effects. A minimal volume of topsoil and subsoil will be removed to allow for infrastructural work to take place due to optimisation of the layout by mitigation by design; and, Construction of service trenching, and surface water attenuation features will generate excess material, and excess material will be used locally within the site for achieving building formation levels and landscaping. Any spoil generated which will be removed offsite will be done so in accordance with the relevant regulations and best practice including waste management legislation if the material is considered a by-product or waste. | | |
| MM2 | All plant and machinery will be serviced before being mobilised to site; | | |
| MM4 | Refuelling will be completed in a controlled manner using drip trays at all times; | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM5 | Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water; | | |
| MM6 | Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores; | | |
| MM7 | Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored | | |
| MM8 | Ancillary equipment such as hoses and pipes will be contained within the bund; | | |
| MM9 | Taps, nozzles or valves will be fitted with a lock system; | | |
| MM10 | Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage; | | |
| MM11 | Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills | | |
| MM12 | Only designated trained operators will be authorised to refuel plant on site; | | |
| MM13 | Procedures and contingency plans will be set up to deal with emergency accidents or spills; | | |
| MM14 | An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment | | |
| MM15 | Highest standards of site management will be maintained, and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the site and surrounding environment during construction. A suitably qualified individual will be given the task of overseeing the pollution | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | 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. | | |
| MM16 | The underlying in-situ soils and subsoils will be subject to a certain amount of compaction, but this will be unavoidable | | |
| MM17 | Any infill material/landscaping that is required will be placed and levelled in appropriate lift thicknesses to ensure the material is not over compacted thereby retaining drainage properties. This will be relevant within the proposed landscaped and green areas of the site | | |
| **Material Assets** | | | |
| MM18 | The area where excavations are planned will be surveyed and all existing services will be identified. All relevant bodies i.e., ESB, Bord Gáis, Irish Water, Eircom, Meath County Council, Kildare County Council etc. will be contacted prior to construction works 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. | | |
| MM19 | Design stage Construction and Environmental Management Plans and Waste Management Plans have been prepared and will be updated prior to the commencement of construction works to take account of all requirements of the Planning Authority. The waste hierarchy will always be employed to ensure that the least possible amount of waste is produced during the construction phase, through reuse, recovering and recycling. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM20 | Water will be supplied on site by water tankers for general use. Unless a temporary water supply is secured from Irish Water, potable water will be provided in the form of bottled water for staff use during the construction phase (prior to connections to the municipal water supply). | | |
| MM21 | Portable toilets will be provided for those working on the construction sites throughout the Proposed Development. Wastewater arising on-site from these toilets is stored in a sealed tank located within the portable toilets, and these will be emptied periodically (as required) by permitted waste contractors and transported to municipal wastewater treatment plants for treatment. | | |
| **Air & Climate** | | | |
| MM22 | **Dust Emissions**<br><br>All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. | | |
| MM23 | Overburden will be progressively removed from the working area in advance of construction. | | |
| MM24 | Dampening down the dust at the source by the use of barriers such as debris netting on scaffolding around the buildings to block dust escaping where the building is within 10m of the site boundary where residential properties or public roads exist. | | |
| MM25 | Site roadways will be maintained in a stoned hard-core condition not allowing soil to accumulate which when dry can create dust. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM26 | Wheel wash equipment will be set up at the site exit gates for all construction vehicles to pass through prior to leaving the site thus ensuring that no dirt etc. is transported outside the site onto the roadways | | |
| MM27 | The roads adjacent the site will continue to be regularly inspected by the Site Manager for cleanliness and cleaned as necessary | | |
| MM28 | If necessary, sporadic wetting of loose stone and soil surface will be carried out during the construction phase to minimise movement of dust particles to the air | | |
| MM29 | 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 | | |
| MM30 | The transport of material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles | | |
| MM31 | Dust levels will be monitored visually, on a daily basis by the project Environmental Officer. If dust levels become an issue, then all dust generating activities on site will cease until such time as weather conditions improve (e.g., wind levels drop or rain falls) or mitigation measures such as damping down of the ground are completed. | | |
| MM32 | Plant and equipment that have the potential to create volumes of dust will have appropriate attachments to allow water source to dampen dust to not allow it to get airborne. | | |
| MM33 | Road Sweepers may be deployed as required on public roadways in the unlikely event that mud or dust be transported from the site. | | |
| MM34 | A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase. A CEMP is included with this application and includes further details of the above dust suppression measures and dust monitoring measures | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM35 | All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. | | |
| MM36 | All machinery will be switched off when not in use. | | |
| MM37 | Users of the site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants are kept to a minimum. | | |
| MM38 | The methods of working will comply with all relevant legislation and best practice guidelines in reducing the environmental impacts of the works. A detailed CEMP will be prepared and submitted to Meath County Council and Kildare County Council for approval in advance of the works. | | |
| MM39 | Aggregate materials for the construction of the proposed developments will be obtained from local quarries and batching facilities where needed. This will significantly reduce the distance that delivery vehicles will need to travel to access the site. | | |
| **Noise** | | | |
| MM40 | Construction operations will in general be confined to the period Monday-Friday 0700-1900 h, and Saturday 0800-1600 h. | | |
| MM41 | Where it is proposed to operate plant during the period 0700-0800 h at locations within 100 m of offsite receptors, standard 'beeper' reversing alarms will be replaced with flat spectrum alarms | | |
| MM42 | Hooting will be prohibited onsite. Drivers of plant and vehicles will be instructed to avoiding hooting at all times | | |
| MM43 | 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 | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM44 | Queuing of trucks near offsite receptors will be prohibited | | |
| MM45 | Machinery not in active use will be shut down. | | |
| MM46 | A site representative will be appointed as a liaison officer with the local community. | | |
| MM47 | Where evening or night-time operations are required, local residents will be notified through the liaison officer | | |
| MM48 | 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 | | |
| MM49 | Where it is proposed to import potentially noisy plant to the site, the potential impact of noise emissions will be assessed in advance. | | |
| MM50 | Where generators or compressors are required within 100 m of offsite receptors, or previously completed receptors onsite, these will be fitted with manufacturers' acoustic enclosures, or alternatively will be screened by a local acoustic screen or subsoil stockpile. | | |
| MM51 | Guidance set out in British Standard BS 5228-1:2009+A1:2014 with respect to noise control will be applied throughout the construction phase | | |
| **Landscape and Visual** | | | |
| MM52 | The mitigation measures proposed include the implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials and appropriate car parking. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM53 | Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures, work practices and a waste management plan to ensure the site is kept tidy, dust is kept to a minimum and that public areas are kept free from building material and site rubbish. | | |
| **Cultural Heritage** | | | |
| MM54 | Pre-development targeted archaeological test trenching under licence from the National Monuments Service should take place to ascertain if the sub-surface features identified in the geophysical survey are archaeological in nature. Test trenching should also take place in areas of the site not covered by the geophysical survey, if development is proposed in these areas. A report on the results of targeted test trenching and a detailed archaeological impact assessment shall be compiled and submitted to the relevant authorities. If any archaeological sites or features are identified during the pre-construction test trenching, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same. | | |
| MM55 | The development footprint of the project has been mitigated by design to avoid removal of townland and field boundaries wherever possible. Where it is not possible to maintain by design, an archaeological record (written and photographic) will be made of them prior to their removal. | | |
| **Flora & Fauna** | | | |
| MM56 | **Site A**<br><br>**Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat**<br><br>Hedgerow habitat along the northern boundary will be retained, ensuring ecological connectivity to the wider landscape is maintained. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM57 | 157 semi mature trees will be planted within the development site. New treeline habitat will be created along the western and southern boundaries | | |
| MM58 | An additional 165 whip trees are proposed | | |
| MM59 | Native species to be used for planting include Alder (Alnus glutinosa), Pedunculate oak (Quercus robur), Scots Pine (Pinus sylvestris), Silver Birch (betula pendula) and Rowan (Sorbus aucuparia). | | |
| MM60 | The plan includes for the planting of a new native hedgerow along the eastern boundary of Site A, mainly along the R157. The planting of new native hedgerows will ameliorate any hedgerow loss and to maintain connectivity to the wider area. | | |
| MM61 | Native hedgerow species to be planted include such as Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa) and Holly (Ilex aquifolium) | | |
| MM62 | Large sections of grasslands throughout the site will be management as Wildflower meadows and planted with native wildflowers, including Common knapweed (Centaura nigra), Ribwort Plantain (Plantago lanceolata), Red clover (Trifolium pratense) and Birds foot trefoil (Lotus comiculatus). | | |
| MM63 | The creation of swales will also add new wetland habitat to the landscape, provide new habitat for various invertebrates and amphibians. | | |
| MM64 | The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site. | | |
| MM65 | A tree protection plan is included in this application. This will ensure that any trees or tree lines that are to be retained within the site are fully protected in accordance with the British Standard BS 5837: Trees in Relation to Construction | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM66 | **Assessment of potential effects on water quality and aquatic faunal species and habitats during construction**<br><br>Silt fencing will be constructed around the construction footprint, where there is a surface water receptor, in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint (other than operational surface water outfall installations which are described below) and surface water receptors and associated riparian habitats | | |
| MM67 | A silt fence will also be attached to solid boundary fencing where it is in place and where there is a surface water receptor. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities. | | |
| MM68 | The silt fence will comprise a geotextile membrane that will buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated | | |
| MM69 | 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; | | |
| MM70 | Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing | | |
| MM71 | A suitably sized detention basin or settlement area will be installed at the lowest point before discharge to ground where excess run- off must leave the site. Silt curtains or earth berms will be used to channel run-off to locations where it can be controlled. These may take the form of an open detention area or, where the need arises, a portable skip/s, or similar, where inflow passes through straw bales, gravel etc | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM72 | Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present. | | |
| MM73 | Daily monitoring and inspections of site drainage during construction will be completed. | | |
| MM74 | Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Rye Water River | | |
| MM75 | The necessary pipelaying works will be undertaken within this defined area | | |
| MM76 | Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Rye Water River will be removed to facilitate the construction of the outfall | | |
| MM77 | No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters | | |
| MM78 | Cofferdams will be constructed using one tonne sandbags at the edge of the Rye Water River at the outfall point to create dry working areas. | | |
| MM79 | A submersible pump will be used to dewater inside the coffer dammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag | | |
| MM80 | The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included). | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM81 | The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed | | |
| MM82 | The surface water discharge point is likely to take less than one day to install. | | |
| MM83 | Sondes will be put in place in the Rye Water River upstream and downstream of the works area. These will continuously measure turbidity throughout the construction period. If there is a 10% or greater difference between upstream and downstream turbidity, an alarm will sound and a message will be sent to the site foreman and the ECoW. Works will be ceased until the cause of the difference is identified and (if it is associated with the works) rectified | | |
| MM84 | Biotic and abiotic baseline data will be gathered on the Rye Water River both close to the development site and at a distance away from the site. Gathering this data will allow for a comparison between the current situation and that which may develop during the construction or operational phase | | |
| MM85 | **Fauna- Disturbance/Habitat loss**<br><br>All works will be completed during daylight hours and there will be no requirement for artificial lighting at any stage of the proposed construction works. This will avoid any potential impacts on crespular or nocturnal species, including bat species | | |
| MM86 | Hoarding will be placed around the construction site. This will screen the site and minimise any disturbance impacts on fauna in the wider surroundings. | | |
| MM87 | 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”. | | |
| MM88 | Plant machinery will be turned off when not in use | | |
| MM89 | Operating machinery will be restricted to the proposed works site area. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM90 | **Assessment on the potential impacts on bats during construction**<br><br>Habitat Loss:<br><br>Following the precautionary principle, a pre-construction survey will be undertaken on the two ash trees in the east of the site with 'Low to Moderate' suitability for bats to be felled, by a qualified ecologist prior to any works, to ensure there are no roosting bats. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the bat survey in July 2021.If bats are found to be roosting in any of the trees, a bat derogation licence must be obtained, and further mitigation prescribed by a licenced ecologist. Tree felling will follow guidelines set out in National Roads Authority, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. 2006.Tree felling will follow guidelines set out in National Roads Authority, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. 2006 | | |
| MM91 | Tree felling will follow guidelines set out in National Roads Authority, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. 2006. | | |
| MM92 | **Disturbance**<br><br>The majority of works, during the construction phase, will occur during daylight hours. Therefore, there will be no requirement for exterior lighting within the site. Where lighting is unavoidable (i.e. health and safety), low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the proposed development, and consequently on bats i.e. Lighting will be directed away from mature trees/hedgerows/treelines around the periphery of the site boundary to minimize disturbance to bats | | |
| MM93 | **Assessment on the potential impacts on birds during construction** | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | **Disturbance:**<br><br>Where possible, all cutting of trees, scrub and tall vegetation will be undertaken outside the bird nesting season which runs from the 1st March to the 31st August. Any cutting of vegetation that may be required outside the season described above will be supervised by a suitably qualified ecologist to ensure that no birds nests are present. Should nesting birds be encountered, the trees will be left until nesting activity has concluded. | | |
| MM94 | **Site B**<br><br>**Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat**<br><br>The landscaping plan has also been designed to retain the mature treeline along the southern boundary of the site and hedgerow habitat at the northern boundary | | |
| MM95 | 100 new trees will be planted within the application site | | |
| MM96 | This will significantly increase the tree coverage throughout the entire site, improving connectivity to the wider landscape and providing new nesting, foraging and commuting habitat for local biodiversity. | | |
| MM97 | Native species to be used for planting include Alder (Alnus glutinosa), Pedunculate oak (Quercus robur), Scots Pine (Pinus sylvestris), Silver Birch (betula pendula) and Rowan (Sorbus aucuparia). | | |
| MM98 | The plan includes for the additional planting of new native hedgerow throughout the site. This will be located along the eastern boundary where the existing hedgerow will be removed. Additional hedgerow s will also be planting throughout the centre of the development. The planting of new native hedgerows will greatly increase the hedgerow habitat coverage within the area and increase ecological connectivity to the wider landscape | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM99 | Native hedgerows will be planting with Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa) and Holly (Ilex aquifolium). | | |
| MM100 | Native hedgerows will be maintained and managed for wildlife, this includes allowing hedgerows to grow wide and dense at the base, with a wide, uncultivated grassy margin. Hedgerows should be allowed to mature before the first cut and future cutting should happen on a 3/5-year rotation. Hedgerows should be kept as dark spaces to allow commuting and foraging habitat for local wildlife. | | |
| MM101 | The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site. | | |
| MM102 | A tree protection plan is included in this application. This will ensure that any trees or tree lines that are to be retained within the site are fully protected in accordance with the British Standard BS 5837: Trees in Relation to Construction. | | |
| MM103 | Assessment of potential effects on water quality and aquatic faunal species and habitats during construction<br><br>Mitigation measures outlined to protect water quality during the construction of the main development areas have been outlined in section 8.6.3.5 of Chapter 8 of this EIAR and are fully described in the CEMP located in Volume 3.b, Appendix 4-3. The mitigation measures are the same as Site A<br><br>The measures are the same as Site A, please see above. | | |
| MM104 | Fauna- Disturbance/Habitat loss<br><br>Same as Site A. | | |
| MM105 | Assessment on the potential impacts on bats during construction | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | See Mitigation for Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat for Site B. | | |
| MM106 | **Assessment on the potential impacts on birds during construction**<br><br>See Mitigation for Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat for Site B. | | |
| MM107 | **Disturbance**<br><br>Where possible, all cutting of trees, scrub and tall vegetation will be undertaken outside the bird nesting season which runs from the 1st March to the 31st August. Any cutting of vegetation that may be required outside the season described above will be supervised by a suitably qualified ecologist to ensure that no birds nests are present. Should nesting birds be encountered, the trees will be left until nesting activity has concluded. | | |
| MM108 | **Site C**<br><br>**Assessment of the potential effects on the loss of Treeline (WL2) and Hedgerow (WL1) habitat**<br><br>The development has been designed to retain approximately 590m of mature treeline habitat along the southern boundary of the project area and hedgerow habitat along the eastern boundary, maintaining connectivity to wider environment. Approx. 888m of hedgerow will be retained within the site. | | |
| MM109 | A landscaping plan has been prepared for the proposed development and is available in Appendix 4-7.<br><br>The tree survey report accompanying this application outlined the removal of 29 trees at the site, many of which have been highlighted for removal due to poor condition. A total of 125 trees will be retained at the site | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM110 | In addition to this, 591 new trees will be planted within the site | | |
| MM111 | This will significantly increase the tree coverage throughout the entire site, improving connectivity to the wider landscape and providing new nesting, foraging and commuting habitat for local biodiversity | | |
| MM112 | The plan includes for the planting of a new native treeline along the southern boundary of the site. To ameliorate any tree loss and to maintain connectivity to the wider area. | | |
| MM113 | Approximately 364m$^2$ of native hedgerow is proposed for planting along the northern and western boundaries. This will ensure habitat connectivity is maintained to the wider landscape | | |
| MM114 | Native tree species to be used for planting include Alder (*Alnus glutinosa*), Pedunculate oak (*Quercus robur),* Scots Pine (Pinus sylvestris), Silver Birch (*18pprox pendula*) and Rowan (Sorbus aucuparia). | | |
| MM115 | Native hedgerows will be planting with Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Holly (*Ilex aquifolium*). | | |
| MM116 | In addition to native hedgerow and tree planting, approximately 11,492m$^2$ of shrub planting is proposed throughout the development site. Pollinator friendly species such as *Lavandula angustifolia* and *Hypericum Hidcote* will provide a large increase in food source availability in the proposed shrub planting areas. | | |
| MM117 | Large sections of grasslands throughout the site will be management as Wildflower meadows and planted with native wildflowers, including Common knapweed (*Centaura nigra*), Ribwort Plantain (*Plantago lanceolata*), Red clover (*Trifolium pratense*) and Birds foot trefoil (*Lotus comiculatus*). | | |
| MM118 | The creation of swales will also add new wetland habitat to the landscape, provide new habitat for various invertebrates and amphibians. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site | | |
| MM119 | A tree protection plan is included in this application This will ensure that any trees or tree lines that are to be retained within the site are fully protected in accordance with the British Standard BS 5837: Trees in Relation to Construction. | | |
| MM120 | **Assessment of the potential effects on the loss of Mixed Broadleaved Woodland (WD4)**<br><br>The development has been designed to retain the vast majority of the woodland within the site boundary, with only a very small section (4.5%) of the woodland being lost to the development. Whilst no significant loss of woodland will occur, a landscaping plan has been prepared for the proposed development which provides for the replanting of native woodland habitat within the development site to ameliorate any tree loss and to maintain connectivity with the wider. For Mitigation measures please see above | | |
| MM121 | **Assessment of the potential impacts on water quality and aquatic faunal species and habitats during construction**<br><br>Mitigation measures outlined to protect water quality during the construction of the main development areas have been outlined in section 8.6.3.6 of Chapter 8 of this EIAR and are fully described in the CEMP located in Volume 3.c, Appendix 4-3. The mitigation measures are summarised in Site A. Exception is The following best practice construction measures will be followed to ensure that there are no significant effects on the Rye Water River or the Blackhall Little River as a result of the in-stream construction works related to the outfall pipes . | | |
| MM122 | Aquatic species-White Clawed Crayfish<br><br>The following section described the mitigation measures that will ensure there is no significant effect on white clawed crayfish as a result of the in-stream construction works proposed. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM123 | Prior to any construction works carried out within the Rye Water River or Blackhall Little River, a pre-commencement white clawed crayfish survey will be undertaken to ensure no crayfish occur within the works areas. | | |
| MM124 | The survey will be carried out by a qualified professional under licence from the National Parks and Wildlife Services (NPWS). | | |
| MM125 | All works within this area will be subject to strict biosecurity protocols to prevent the spread of the crayfish plague which is caused by the fungal-like organism, Aphanomyces astaci. | | |
| MM126 | The following best practice construction measures will be followed to ensure that there are no significant effects on the Blackhall Little River as a result of the construction of the two pedestrian and cycle bridges. | | |
| MM127 | The proposed design for water course crossings and culverts, which minimises interactions with water courses, ensures that there will be no perceptible effects on the morphology of those watercourses. | | |
| MM128 | Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Blackhall Little Stream | | |
| MM129 | The necessary pipelaying works will be undertaken within this defined area. | | |
| MM130 | Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Blackhall Little Stream will be removed to facilitate the construction of the outfall. | | |
| MM131 | No instream works will take place outside the period July 31st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM132 | Cofferdams will be constructed using one tonne sandbags at the edge of the Blackhall Little Stream at the outfall point to create dry working areas. | | |
| MM133 | A submersible pump will be used to dewater inside the cofferdammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag. | | |
| MM134 | The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included). | | |
| MM135 | The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed. | | |
| MM136 | The surface water discharge point is likely to take less than one day to install. During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas | | |
| MM137 | The Kildare Bridge upgrade works will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer.<br><br>Prior to entering the works area, all machinery and personnel entering the works area will be thoroughly disinfected. | | |
| | **Fauna- Disturbance/habitat loss** | | |
| MM138 | Assessment on the potential impacts on bats during construction | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | Following the precautionary principle, a pre-construction survey will be undertaken on two trees to be felled in the east of the site, by a qualified ecologist prior to any works, to ensure there are no roosting bats. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the surveys in July and August 2021. If bats are found to be roosting in any of the structures, a bat derogation licence must be obtained, and further mitigation prescribed by a licenced ecologist | | |
| MM139 | **Disturbance**<br><br>The majority of works, during the construction phase, will occur during daylight hours. Therefore, there will be no requirement for exterior lighting within the site. Where lighting is unavoidable (i.e. health and safety), low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the proposed development, and consequently on bats i.e. Lighting will be directed away from mature trees/hedgerows/treelines around the periphery of the site boundary to minimize disturbance to bats | | |
| MM140 | **Assessment of the potential impacts on birds during construction**<br><br>**Habitat Loss**<br><br>In order to mitigate for the loss of a small area of woodland, trees and hedgerow it is proposed to plant and maintain additional areas of native woodland and trees within the site boundary. | | |
| MM141 | **Disturbance**<br><br>Where possible, all cutting of trees, scrub and tall vegetation will be undertaken outside the bird nesting season which runs from the 1st March to the 31st August. Any cutting of vegetation that may be required outside the season described above will be supervised by a suitably qualified ecologist to ensure that no | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | birds nests are present. Should nesting birds be encountered, the trees will be left until nesting activity has concluded. | | |
| MM142 | Although no barn owls were recorded during the dedicated barn owl survey carried out in 2021, a pre-construction Survey will be undertaken on Moygaddy castle to ensure no barns owls are nesting there. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the barn owl survey in July 2021. | | |
| MM143 | **Assessment of the potential impact on badgers during construction**<br><br>**Habitat loss/Fragmentation:**<br><br>The retention of the hedgerow, woodland habitat and grassland within the southern section of the site will ensure that badger foraging habitat remains available. Areas seeded with wildflower meadow mix will establish a species rich grassland which is likely to provide higher quality foraging habitat locally than the existing improved agricultural grassland habitat | | |
| MM144 | **Disturbance**<br><br>A section of footpath is proposed within 22 metres of the identified badger sett along the Blackhall Little River. As such, the following mitigation is prescribed during the construction phase to avoid impacts on badgers: | | |
| MM145 | **Mitigation**<br><br>Badger sett tunnel systems can extend up to c. 20m from sett entrances. Therefore, no heavy machinery will be used within 30m of badger setts (unless carried out under licence); lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
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| MM146 | During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts. | | |
| MM147 | If construction works are required closer to the active sett during the breeding season, consultation with the NPWS will be carried out and appropriate mitigation measures will be put in place, e.g. sett screening, restricted working hours, etc. | | |
| MM148 | Although no badger activity was recorded at the outlier sett along the hedgerow within the site, taking a precautionary approach, the following mitigation is prescribed during the construction phase to avoid impacts on badgers. | | |
| MM149 | Mitigation<br><br>It is recommended that a pre-construction badger survey be carried out in order to assess activity levels at the outlier sett and to identify any additional sett entrances that may have been excavated in the intervening period. All badger survey work will be undertaken in line with current NRA best practice guidance. | | |
| MM150 | Should this sett found to be in use by badgers during the pre-construction badger monitoring, it will be necessary to apply to NPWS for a licence for the temporary closure of the sett during the construction phase only. | | |
| MM151 | Construction activities within the vicinity of affected setts may commence once these setts have been evacuated and destroyed under licence from the NPWS. | | |
| MM152 | Where survey indicates that suitable alternative natural setts are not present, a badger expert may recommend the construction of an artificial sett to replace the sett that will be affected | | |
| MM153 | Assessment on the potential impacts on Otter during construction | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | Prior to the commencement of construction works associated with the installation of the new pedestrian bridge and outfall, the following measures will be undertaken for the avoidance of disturbance/displacement and direct mortality and to ensure that no otter holts/breeding sites have been established since the original surveys undertaken (TII, 2007). | | |
| MM154 | From a precautionary basis, a pre-commencement otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of the construction of the proposed bridge construction and the construction of the outfall. In the unlikely event that an otter holt is identified within or immediately adjacent to the proposed development footprint, consultation will be undertaken with the National Parks and Wildlife Service and a derogation licence applied for. All conditions of a derogation licence will be implemented in full. No works should be undertaken within 150m of any holts at which breeding females or cubs are present. No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence (TII, 2006). | | |
| MM155 | All of the above works will be undertaken or supervised by an appropriately qualified ecologist. | | |
| MM156 | The MOOR<br><br>Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat<br><br>In order to mitigate for the significant loss of hedgerow habitat associated with the MOOR, approximately 6,208m of new hedgerow will be planting along the extend off the MOOR boundary | | |
| MM157 | Native hedgerow species such as Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa) and Holly (Ilex aquifolium) will in the replanting schedule | | |
| MM158 | In addition to the 6,208m of new hedgerow proposed, 373 semi mature new trees will also be planted along the extent of the MOOR | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM159 | Native species to be used for planting include Alder (Alnus glutinosa), Pedunculate oak (Quercus robur), Scots Pine (Pinus sylvestris), Silver Birch (betula pendula) and Rowan (Sorbus aucuparia). | | |
| MM160 | The planting of 6,208m of hedgerow habitat and 373 semi mature trees will increase the coverage of linear habitat on the overall proposed development site. | | |
| MM161 | This will significantly increase the nesting, foraging and commuting habitat for wildlife while maintaining ecological connectivity to the wider landscape | | |
| MM162 | The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site | | |
| MM163 | A tree protection plan is included in this application. This will ensure that any trees or tree lines that are to be retained within the site are fully protected in accordance with the British Standard BS 5837: Trees in Relation to Construction | | |
| MM164 | Assessment of potential effects on water quality and aquatic faunal species and habitats during construction<br><br>Silt fencing will be constructed around the construction footprint, where there is a surface water receptor, in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint (other than operational surface water outfall installations which are described below) and surface water receptors and associated riparian habitats | | |
| MM165 | A silt fence will also be attached to solid boundary fencing where it is in place and where there is a surface water receptor. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities | | |
| MM166 | The silt fence will comprise a geotextile membrane that will buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
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| | proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated. | | |
| MM167 | 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. | | |
| MM168 | Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing | | |
| MM169 | A suitably sized detention basin or settlement area will be installed at the lowest point before discharge to ground where excess run- off must leave the site. Silt curtains or earth berms will be used to channel run-off to locations where it can be controlled. These may take the form of an open detention area or, where the need arises, a portable skip/s, or similar, where inflow passes through straw bales, gravel etc | | |
| MM169 | Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present; | | |
| MM170 | Daily monitoring and inspections of site drainage during construction will be completed; | | |
| MM171 | No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters | | |
| MM172 | All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed Kildare Bridge pedestrian/cycle structure upgrade works, the Blackhall Little Bridge and the Moyglare Bridge. | | |
| MM173 | Surface water outfalls will be constructed in accordance with the measures described in 8.6.3.4.4 and subject to agreement with IFI | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM174 | Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance, which will be implemented, will ensure minimal risk. 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', CIRlA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment | | |
| MM175 | During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas | | |
| MM176 | The MOOR stream crossing upgrade works, the Moyglare Bridge and the Kildare Bridge Works will all require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer | | |
| MM177 | Preventative measures during construction have been incorporated into the Construction and Environmental Management Plan, 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 | | |
| MM178 | The following best practice construction measures will be followed to ensure that there are no significant effects on the Rye Water River as a result of the construction of the two pedestrian and cycle bridges:<br><br>The proposed design for water course crossings and culverts, which minimises interactions with water courses, ensures that there will be no perceptible effects on the morphology of those watercourses | | |
| MM179 | Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
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| | attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Rye Water River | | |
| MM180 | The necessary pipelaying works will be undertaken within this defined area. | | |
| MM181 | Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Rye Water River will be removed to facilitate the construction of the outfall | | |
| MM182 | No instream works will take place outside the period July 31st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters | | |
| MM183 | Cofferdams will be constructed using one tonne sandbags at the edge of the Rye Water River at the outfall point to create dry working areas. | | |
| MM184 | A submersible pump will be used to dewater inside the cofferdammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag | | |
| MM185 | The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included). | | |
| MM186 | The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed. | | |
| MM187 | The surface water discharge point is likely to take less than one day to install | | |
| MM188 | The bridge works will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM189 | Prior to entering the works area, all machinery and personnel entering the works area will be thoroughly disinfected. | | |
| MM190 | As part of the application process, Inland Fisheries Ireland were consulted regarding the proximity of the works to the Blackhall Little and the River Rye Water. | | |
| MM191 | **Fauna- Disturbance/Habitat loss**<br>› Same as Site A | | |
| MM192 | **Assessment on the potential impacts on bats during construction**<br>**Habitat Loss**<br>› Following the precautionary principle, a pre-construction survey will be undertaken on the individual tree adjacent to the Blackhall Little stream with 'Low to Moderate' suitability for bats to be felled, by a qualified ecologist prior to any works, to ensure there are no roosting bats. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the bat survey in July 2021 | | |
| MM193 | › If bats are found to be roosting in any of the trees, a bat derogation licence must be obtained, and further mitigation prescribed by a licenced ecologist. | | |
| MM194 | › Tree felling will follow guidelines set out in National Roads Authority, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. 2006. | | |
| MM195 | **Fragmentation** | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | › See mitigation measures in Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat for the MOOR. | | |
| MM196 | **Disturbance**<br>› The majority of works, during the construction phase, will occur during daylight hours. Therefore, there will be no requirement for exterior lighting within the site. Where lighting is unavoidable (i.e. health and safety), low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the proposed development, and consequently on bats i.e. Lighting will be directed away from mature trees/hedgerows/treelines around the periphery of the site boundary to minimize disturbance to bats | | |
| MM197 | **Assessment on the potential impacts on birds during construction**<br>See Mitigation measures for Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat for the MOOR<br>**Disturbance**<br>Where possible, all cutting of trees, scrub and tall vegetation will be undertaken outside the bird nesting season which runs from the 1st March to the 31st August. Any cutting of vegetation that may be required outside the season described above will be supervised by a suitably qualified ecologist to ensure that no birds nests are present. Should nesting birds be encountered, the trees will be left until nesting activity has concluded. | | |
| **Human Beings** | | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM198 | **Site A, B, C , the MOOR, Kildare and Moyglare Bridges** will be constructed and operated in accordance with all relevant Health and Safety Legislation, including:<br><br>Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);<br><br>Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007), as amended;<br><br>Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. 291 of 2013), as amended; and<br><br>Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). | | |
| MM199 | During construction of **Site A, B, C, the MOOR, Kildare and Moyglare Bridges**, all staff will be made aware of and adhere to the Health & Safety Authority's '*Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2006'*. This will encompass the use of all necessary Personal Protective Equipment, Risk Assessment and Method Statements and adherence to the site Health and Safety Plan | | |
| MM200 | Fencing will be erected in areas of the site where uncontrolled access is not permitted. Appropriate health and safety signage will also be erected on this fencing and at locations around the site. Only appropriately qualified and trained personnel will be permitted to operate machinery onsite. **Site A, B, C , the MOOR, Kildare and Moyglare Bridges** will not be accessible to members of the public during the construction phase. A Construction and Environmental Management Plan (CEMP) has been prepared for each site and submitted with the relevant planning applications, and if planning permission is granted, it is envisaged that the Developer will engage with the local authority to agree an appropriate Traffic Management plan for the purposes of the Construction phase so as to minimise the impact of the construction works on the local road network | | |
| MM201 | A Traffic Management Plan and the CEMP will be developed and implemented to ensure any impact is short term in duration and slight in significance during the construction of Site A, B, C, the MOOR, the | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
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| | Kildare and Moyglare Bridge. Prior to commencement of any works, the occupants of dwellings in the vicinity of the proposed works will be contacted and the scheduling of works will be made clear. Local access to properties will also be maintained throughout any construction works and local residents will also be supplied with the number of the works supervisor in order to ensure that disruption will be kept to a minimum. The construction and environmental management plans (CEMP) include mitigation measures related to noise, dust and landscaping which will be in place to protect residential amenity. Construction operations will also in general be confined to the period Monday-Friday 0700-1900 h, and Saturday 0800-1600 h, reducing noise emissions in the local area during social hours. | | |
| **Hydrology & Hydrogeology** | | | |
| MM202 | Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work as follows:<br><br>Silt fencing will be constructed around the construction footprint, where there is a surface water receptor, in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint (other than operational surface water outfall installations which are described below) and surface water receptors and associated riparian habitats. | | |
| MM203 | A silt fence will also be attached to solid boundary fencing where it is in place and where there is a surface water receptor. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities. | | |
| MM204 | The silt fence will comprise a geotextile membrane that will buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated | | |
| MM205 | 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 | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | required water will be pumped from the swales into sediment bags prior to overland discharge allowing water to percolate naturally to ground; | | |
| MM206 | Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing | | |
| MM207 | A suitably sized detention basin or settlement area will be installed at the lowest point before discharge to ground where excess run- off must leave the site. Silt curtains or earth berms will be used to channel run-off to locations where it can be controlled. These may take the form of an open detention area or, where the need arises, a portable skip/s, or similar, where inflow passes through straw bales, gravel etc | | |
| MM208 | Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present | | |
| MM209 | Daily monitoring and inspections of site drainage during construction will be completed | | |
| MM210 | No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters | | |
| MM211 | All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed works | | |
| MM212 | All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed Kildare Bridge pedestrian/cycle structure upgrade works, the Blackhall Little Bridge and the Moyglare Bridge | | |
| MM213 | Surface water outfalls will be constructed in accordance with the measures described in Chapter 6 and 8.6.3.4.4 and subject to agreement with IFI | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM214 | Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance, which will be implemented, will ensure minimal risk. 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', CIRlA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment | | |
| MM215 | During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas | | |
| MM216 | The MOOR stream crossing upgrade works, the Moyglare Bridge and the Kildare Bridge Works will all require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer | | |
| MM217 | Preventative measures during construction have been incorporated into the Construction and Environmental Management Plan, 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 | | |
| MM218 | For directional drilling the area around the bentonite batching, pumping and recycling plant will be bunded using terram (as it will clog) and sandbags in order to contain any spillages. | | |
| MM219 | Drilling fluid returns will be contained within a sealed tank / sump to prevent migration from the works area | | |
| MM220 | Spills of drilling fluid will be clean up immediately and stored in an adequately sized skip before been taken off-site | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM221 | The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e., Clear Bore Drilling Fluid or similar will be used | | |
| MM222 | The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse | | |
| MM223 | This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur then drilling will be immediately stopped | | |
| MM224 | Any frac-out material will be contained and removed off-site | | |
| MM225 | Management of groundwater seepages and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:<br><br>Silt fencing measures as described above will be installed | | |
| MM226 | Appropriate temporary interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place, as required | | |
| MM227 | If required, pumping of excavation inflows will prevent build-up of water in the excavation | | |
| MM228 | The pumped water volumes will be discharged to ground within the site through a silt bag at a distance of over 30m from nearby watercourses (Rye Water River and Blackhall Little Stream) | | |
| MM229 | There will be no direct discharge to any water body, and therefore no risk of hydraulic loading or contamination will occur | | |
| MM230 | Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows:<br><br>All plant and machinery will be serviced before being mobilised to site | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM231 | No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed | | |
| MM232 | Refuelling will be completed in a controlled manner using drip trays at all times | | |
| MM233 | Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water | | |
| MM234 | Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores | | |
| MM235 | Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored | | |
| MM236 | Ancillary equipment such as hoses and pipes will be contained within the bund | | |
| MM237 | Taps, nozzles or valves will be fitted with a lock system | | |
| MM238 | Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage | | |
| MM239 | Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills | | |
| MM240 | Only designated trained operators will be authorised to refuel plant on site | | |
| MM241 | Procedures and contingency plans will be set up to deal with emergency accidents or spills | | |
| MM242 | An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM243 | Mitigation measures proposed for wastewater disposal:<br><br>A self-contained port-a-loo 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 | | |
| M244 | No wastewater will be discharged on-site during either the construction or operational phase | | |
| MM245 | Mitigation measures proposed for cement based products:<br><br>No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place | | |
| MM246 | No washing out of any plant used in concrete transport or concreting operations will be allowed on-site | | |
| MM247 | Where possible pre-cast elements for culverts and concrete works will be used | | |
| MM248 | 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 phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined cement washout ponds | | |
| MM249 | Weather forecasting will be used to plan dry days for pouring concrete | | |
| MM250 | The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event | | |
| MM251 | Morphological Changes to Surface Water Courses & Drainage Patterns & Water Quality:<br><br>The proposed design for water course crossings and culverts, which minimises interactions with water courses, ensures that there will be no perceptible effects on the morphology of those watercourses | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM252 | Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Rye Water River. | | |
| MM253 | The necessary pipelaying works will be undertaken within this defined area | | |
| MM254 | Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Rye Water River will be removed to facilitate the construction of the outfall | | |
| MM255 | No instream works will take place outside the period July 31st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters | | |
| MM256 | Cofferdams will be constructed using one tonne sandbags at the edge of the Rye Water River at the outfall point to create dry working areas. | | |
| MM257 | A submersible pump will be used to dewater inside the cofferdammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag | | |
| MM258 | The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included). | | |
| MM259 | The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed | | |
| MM260 | The surface water discharge point is likely to take less than one day to install | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM261 | Subject to agreement with IFI, short sections of the Rye Water River may be temporarily dammed with sandbags at times of low water. One dam will be constructed immediately downstream of the outfall point and the other, immediately upstream | | |
| MM262 | Machinery will not enter the water, the construction of the outfall will only occur after the dry working area is created | | |
| MM263 | Biosecurity measures will be strictly adhered to throughout the proposed works. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work. Where staff are working instream, staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkron Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Sand bags placed instream will not be re-used in other watercourses | | |
| MM264 | All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland will be incorporated into the proposed works | | |
| MM265 | As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI | | |
| MM366 | During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM267 | The Kildare Bridge and Moyglare Bridge upgrade works will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer. | | |
| MM268 | Potential Water Impacts on Designated Sites and Habitats;<br><br>The proposed mitigation measures for protection of surface water and groundwater quality which will include on site drainage control measures (i.e., silt fences, silt bags etc.) will ensure that the quality of runoff from Site A, B, C, the MOOR, the Kildare Bridge areas will be good. All mitigation measures outlined throughout Section 8.6.3.1, 8.6.3.4 (the MOOR), 8.6.3.5 (the Kildare Bridge and Moyglare Bridge) above provides controls which will be put in place to manage risks associated with sediment, hydrocarbons/chemicals and cement-based products used during construction phase. | | |
| MM269 | The standard drainage design controls will ensure the development will not give rise to any significant surface water or groundwater impacts at or downstream of the site or in the SAC. The majority of runoff from the existing site discharges to the river and stream via shallow subsurface flows as shown by the results of the SI investigations and the ground water level data. The drainage design ensures that these discharges will continue at the existing greenfield rates and therefore the hydrological regime locally and regionally will not be affected by Sites A, B, C, the MOOR, the Kildare Bridge and Moyglare Bridge | | |
| **Operational Phase** | | | |
| **Flora and Fauna** | | | |
| MM270 | **Assessment of potential impacts on bats during the operational phase associated with site A, B, C**<br><br>**Mitigation** | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | › The lighting plan for the operational phase of the proposed development, has been designed with consideration of the following guidelines: Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) and the Bat Conservation Trust (Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2018), Dark Sky Ireland, to minimise light spillage, thus reducing any potential disturbance to bats. | | |
| MM271 | › The lighting plan has been designed to maintain a dark corridor along the hedgerow on the northern boundary of the site. This will ensure commuting and foraging habitat is maintained to habitats west of the site | | |
| MM272 | › All luminaires are fitted with photocells which automatically switch luminaires on during night time and off during daytime. Additionally, all luminaires are to automatically dim by 75% 00:00 – 06:00 (U14 profile). If required and with agreement of the local authority additional dimming is available | | |
| MM273 | › The proposed lighting design uses warmest available LEDs for chosen luminaires (colour temperature set by worst case luminaires, all luminaires same colour temperature for consistency), the peak wave length is 600nm | | |
| MM274 | › For Site A and C: The proposed lamps have limited backward light properties thus assisting in reducing backward light spill. Lamps have also been specified with 0 Degree tilt (where possible) to ensure limited unwanted light spill | | |
| MM275 | › For Site B and C: Bat surveys carried out in 2021 indicate the Treeline along the southern boundary of the site is the most important commuting habitat for bats. This linear feature will remain in darkness and not have any artificial lighting | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM276 | › For Site C: No lighting is proposed in proximity to the Moygaddy castle and surrounding woodland habitat | | |
| MM277 | › For Site C: Pedestrian footpaths which are located in close proximity to the Blackhall Little Stream and River Rye Water have been specified to a colour temperature of 2200k | | |
| MM278 | **Assessment of the potential impact on bats during the operational phase the MOOR**<br><br>Bat surveys carried out in identified the treeline along the southern boundary of the MOOR to be the most important commuting habitat for bats across both sites. This habitat is being retained and will not be subject to artificial lighting. A lighting plan has been prepared as part of the MOOR application.<br><br>› The lighting plan for the operational phase of the proposed development, has been designed with consideration of the following guidelines: Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) and the Bat Conservation Trust (Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2018), Dark Sky Ireland, to minimise light spillage, thus reducing any potential disturbance to bats. | | |
| MM279 | › The proposed lamps have limited backward light properties thus assisting in reducing backward light spill. Lamps have also been specified with 0 Degree tilt (where possible) to ensure limited unwanted light spill | | |
| MM280 | › Bat survey results from 2021 indicate the most important commuting habitat for bats within the proposed development site is the treeline along the southern boundary with high levels of activity also recorded at Moygaddy castle. These areas will not be subject to artificial lighting and will remain in darkness | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM281 | › All luminaires are fitted with photocells which automatically switch luminaires on during night time and off during daytime. Additionally, all luminaires are to automatically dim by 75% 00:00 – 06:00 (U14 profile). If required and with agreement of the local authority additional dimming is available | | |
| MM282 | › The proposed lighting design uses warmest available LEDs for chosen luminaires (colour temperature set by worst case luminaires, all luminaires same colour temperature for consistency), the peak wavelength is 600nm | | |
| MM283 | **Impacts on water quality during the operational phase for Site A and B**<br>› The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Rye Water River via, attenuation tanks, filter drains and petrol/oil interceptors. It is also proposed to retain the existing riparian zone which will act as a buffer between the development and the Rye Water River | | |
| MM284 | › Wastewater from the Proposed Development will be directed to an EPA regulated wastewater treatment plant via a proposed onsite pumping station | | |
| MM285 | **Impacts on water quality during the operational phase for Site C**<br>› The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Rye Water River and the Blackhall Little Stream via, attenuation tanks, filter drains and petrol/oil interceptors. It is also proposed to retain the existing riparian zone which will act as a buffer between the development and the two watercourses. | | |
| MM286 | › Wastewater from the Proposed Development will be directed to an EPA regulated wastewater treatment plant via a proposed onsite pumping station | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM287 | **Impacts on water quality during the operational phase for the MOOR**<br>› The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Rye Water River and Blackhall Little via, attenuation tanks, filter drains and petrol/oil interceptors. It is also proposed to retain the existing riparian zone which will act as a buffer between the development and that stream. | | |
| MM288 | **Potential Impacts on Rye Water Valley/Carton SAC for Site A, B, C, the MOOR**<br>› The proposed mitigation measures for protection of surface water and groundwater quality which will include on site drainage control measures (i.e., silt fences, silt bags etc.) will ensure that the quality of runoff from Proposed Development areas will be good. All mitigation measures outlined throughout Section 8.6.3 of Chapter 8 provides controls which will be put in place to manage risks associated with sediment, hydrocarbons/chemicals and cement-based products used during construction phase | | |
| MM289 | › The standard drainage design controls will ensure the development will not give rise to any significant surface water or groundwater impacts at or downstream of the site or in the SAC. The majority of runoff from the existing site discharges to the river and stream via shallow subsurface flows as shown by the results of the SI investigations and the ground water level data. The drainage design ensures that these discharges will continue at the existing greenfield rates and therefore the hydrological regime locally and regionally will not be affected by the Proposed Development | | |
| **Material Assets** | | | |
| MM290 | **Site A, B, C** | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | The below measures have been incorporated into the design of the proposed development and will be used to avoid any negative impacts on utilities or services during the operational phase of the proposed development:<br>› An operational phase Waste Management Plan has been prepared (Appendix 4-5) and will be updated prior to operation to take account of all requirements of the Planning Authority. | | |
| MM291 | › The Engineering Services Reports in Appendix 4-9 of this EIAR present the proposals for the proposed development with regard to Surface Water Drainage, Wastewater Drainage and Potable Water Supply. These elements have been taken into consideration throughout the design of the proposed development and will be implemented in line with all required legislation and relevant best-practice guidelines. | | |
| MM292 | › Solar PV panels have been incorporated into building design throughout the development where appropriate, to facilitate the supply of renewable electricity for the energy demands of the buildings. | | |
| **Hydrology & Hydrogeology** | | | |
| MM293 | **Site A, B, C, Moyglare Bridge:**<br>› The risk of pluvial and or fluvial flooding is minimised by the incorporation of a properly designed surface drainage and gravity sewer network, and by using underground attenuation tanks and flow restrictors for drainage management which will control discharge to the Rye Water River at pre-development greenfield rates. Water quality risks are mitigated by the use of hydrocarbon interceptors and silt traps. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM294 | › The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Rye Water River via, attenuation tanks, filter drain and petrol/oil interceptors as described above. For Sites A, B & C it is also proposed to retain the existing riparian zone which will act as a buffer between the development and that stream. Wastewater from Site A, B & C will be directed to an EPA regulated wastewater treatment plant via a proposed onsite pumping station | | |
| MM295 | › During the operational phase all surface water arising on site will drain to attenuation tanks, hydrocarbon interceptor and filter drain before discharge to Rye Water River at controlled greenfield rates. Groundwater quality risks are reduced during the operational phase by use of hydrocarbon interceptors and silt traps prior to discharge to the watercourse. | | |
| MM296 | **The MOOR:**<br>› The risk of pluvial and or fluvial flooding is minimised by the incorporation of a properly designed surface drainage network, and by using attenuation areas and flow restrictors for drainage management which will control discharge to pre-development greenfield rates. Water quality risks are mitigated by the use of hydrocarbon interceptors and silt traps as described in Chapter 4 | | |
| MM297 | › The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water via, attenuation systems, filter drains and petrol/oil interceptors as described above | | |
| MM298 | **Kildare Bridge:**<br>› The risk of pluvial and or fluvial flooding is minimised by the incorporation of a properly designed surface drainage proposals and the nature of the proposed works in this area.. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| **Noise** | | | |
| MM299 | › No mitigation measures are required in relation to the completed Site C, apart from those relating to inward noise impacts as discussed in Section 10.4.4. | | |
| **Landscape and Visual** | | | |
| MM300 | › The designated landscape plan also includes planting of trees, shrubs and other vegetation. The planting will naturally mitigate the effects of the Proposed Development through replacement of green spaces and biodiversity which will be lost during the construction phase, as well as providing some additional visual screening of the Proposed Development from visual receptors. It is noted that this mitigation will improve over time as vegetation establishes following the commencement of the operational phase | | |
| **Cultural Heritage** | | | |
| MM301 | **Site A, B, C**<br>› Pre-development targeted archaeological test trenching under licence from the National Monuments Service will take place to ascertain if the sub-surface features identified in the geophysical survey are archaeological in nature. Test trenching should also take place in areas of the site not covered by the geophysical survey, if development is proposed in these areas. A report on the results of targeted test trenching and a detailed archaeological impact assessment shall be compiled and submitted to the relevant authorities. If any archaeological sites or features are identified during the pre-construction test trenching, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same. | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| MM302 | › The development footprint of the project has been mitigated by design to avoid removal of field boundaries wherever possible. Where it is not possible to maintain by design, an archaeological record (written and photographic) will be made of them prior to their removal. | | |
| MM303 | **The MOOR**<br>› Pre-development targeted archaeological test trenching under licence from the National Monuments Service should take place to ascertain if the sub-surface features identified in the geophysical survey are archaeological in nature. Test trenching should also take place in areas of the site not covered by the geophysical survey, if development is proposed in these areas. A dive survey, undertaken under licence from the National Monuments Service should be undertaken at the location of the proposed bridge (s). A report on the results of test trenching shall be compiled and submitted to the relevant authorities detailing the results of the test trenching. If any sites are identified during the pre-construction test trenching, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same | | |
| MM304 | › The development footprint of the project has been mitigated by design to avoid removal of field boundaries wherever possible. Where it is not possible to maintain by design, an archaeological record (written and photographic) will be made of them prior to their removal | | |
| MM305 | › No mitigations are proposed. The closest Recorded Monument is Moygaddy Castle. It is partially surrounded by a growth of mature trees, which lessens the visual impact of the proposed MOOR development | | |
| MM306 | **Kildare and Moyglare Bridge** | | |

| Ref. No. | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|
| | › Pre-development archaeological dive survey, and test trenching under license from National Monuments Service will take place to ascertain if sub-surface archaeological features are present at the location of the construction works for the proposed bridge. A report on the results of dive survey and test trenching shall be compiled and submitted to the relevant authorities detailing the results of the test trenching. If any sites are identified during the pre-construction test trenching, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same. It is not possible to carry out pre-development test trenching along the route of the rising main. Excavation works should be archaeologically monitored under licence from the National Monuments Service. A report on the results of the monitoring shall be compiled and submitted to the relevant authorities detailing the results of the monitoring. If any sites are identified during the archaeological monitoring, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same. | | |