CHAPTER 06:

HYDROLOGY

06

CHAPTER CONTENTS

6.0 HYDROLOGY

6.1 INTRODUCTION

This chapter evaluates the likely significant effects, if any, which the Proposed Development will have on Hydrology as defined in the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022).

The chapter initially provides a description of the receiving environment of the site and the potential impacts of the development. When assessing the potential impacts, this assessment considers the significance of the environmental attributes, and the predicted scale, and duration of the likely effects.

The chapter also outlines the proposed mitigation measures that will reduce or eliminate the identified potential impacts, and define the residual effects of the Proposed Development (the effect after the implementation of mitigation measures).

6.2 METHODOLOGY

6.2.1 Criteria for Rating of Effects

The section establishes the criteria, and guidance used to rate the significance of the potential impacts of the Proposed Development project on the hydrological aspects of the site and surrounding area.

The document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the Transport Infrastructure Ireland (TII, 2009, previously NRA) is referenced where the methodology for assessment of impact is appropriate.

Furthermore, in line with this TII Guidelines, an assessment of the attribute importance has been undertaken in order to provide a basis for the assessment of impact provided. The attribute importance considers the potential as well as the existing use of the surface water features as a water resource (i.e., water supply, fisheries and other uses) as well as ecological habitat requirements. The TII criteria for rating the hydrological related attributes are presented in Appendix 6.1 of this EIAR.

The quality, significance, and duration of the potential impacts, residual effects, and cumulative effects are described using standard EIA descriptive terminology set out in Table 1.2, Chapter 1 of this EIAR.

The principal attributes (and effects) to be assessed include the following:

- Water Framework Directive (WFD) Status and potential for increased risk of deterioration of this status due to the activities of the site;
- River and stream water quality in the vicinity of the site (where available);
- Surface watercourses near the site and potential impact on surface water quality arising from Proposed Development related works including any discharge of surface water run-off;
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site.

6.2.2 Water Framework Directive (WFD) Status

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy; commonly known as the Water Framework Directive (WFD) establishes a framework for community action in the field of water policy.

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'. In 2009 the first River Basin Management Plan (RBMP) 2009-2015 was published. The second cycle river basin management plan was carried out between 2018-2021 with the previous management districts now merged into one Ireland River Basin District (Ireland RBD). The third cycle (2022-2027) is currently being undertaken.

During the development of this Plan, a prioritisation exercise was undertaken by the local authorities, the EPA and other stakeholders to identify those water bodies that require immediate action within this plan cycle to 2021. During the catchment characterisation, the EPA identified those water bodies either *'At Risk'* of not achieving their objectives or *'Under Review'*. The outcome of this prioritisation process was the selection of 190 Areas for Action across the 5 Local Authority regions. Within these 190 areas, a total of 726 water bodies were selected for initial actions during this RBMP cycle. There are 832 water bodies identified as being '*At Risk'* of not achieving their environmental objectives under this Plan that have not been included in the Areas for Action. For most of these water bodies, targeted actions will be undertaken in the third cycle RBMP from 2022-2027. The draft 3rd cycle RBMP has been reviewed in the context of ensuring mitigation measures comply with current and expected future measures required to be implemented for protection of water body status within the context of the Proposed Development.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010); and
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011)
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988
- Local Government (Water Pollution) Acts 1977-1990
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998
- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board);
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers;

- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors;
- CIRIA C648 Control of Water Pollution from Constructional Sites;
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA/TII, 2006).

AWN Consulting have prepared a Water Framework Directive (WFD) Screening Report that is included with the planning application documentation (Appendix 6.2 of the EIAR). This EIA Chapter in combination with the WFD Screening Report and this considers potential for increased risk of deterioration of this status due to the activities of the site.

6.2.3 Sources of Information

Desk-based hydrological information in the vicinity of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- River Basin Management Plan for Ireland 2018-2021.
- Draft River Basin Management Plan for Ireland 2022-2027.
- Dublin City Development Plan 2022-2028.
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001); and
- National Parks and Wildlife Services (NPWS) – Protected Site Register.

Site specific data was derived from the following sources:

- Engineering Services Report – Proposed Office Development at 1 North Wall Quay, Dublin 1. CS Consulting Group (CS, 2024);
- Site-Specific Flood Risk Assessment- Proposed Office Development at 1 North Wall Quay, Dublin 1. CS Consulting Group (CS, 2024);
- Surface Water Management Plan- Proposed Office Development at 1 Noth Wall Quay, Dublin 1. CS Consulting Group (CS, 2024)
- Outline Construction Management Plan- Proposed Office Development at 1 North Wall Quay, Dublin 1. CS Consulting Group (CS, 2024);
- Basement Impact Assessment Proposed Office Development at 1 North Wall Quay, Dublin 1. CS Consulting Group (CS, 2024);
- The Proposed Development design site plans and drawings; and
- Consultation with the project design engineers.

6.2.4 Difficulties Encountered

There were no difficulties encountered in the preparation of this EIAR report.

6.3 RECEIVING ENVIRONMENT

The site of the Proposed Development is contained within Dublin's North Quays in the eastern city centre, approximately 200m to the west of the Samual Beckett Bridge and c. 400m to the east of the Custom House. The site is bound by North Wall Quay to the south and Commons Street to the west. Existing commercial and residential buildings adjoin the site to the north and east. Clarion Quay runs immediately adjacent to the northern boundary of the site. The River Liffey is located immediately south of the Proposed Development site (refer to Figure 6.1 below).

The Site is presently occupied by Citigroup Building, a six-storey, over-one-storey-basement office building (total Gross Internal Area of 35,649 m^2), which is due to be demolished as part of the Proposed Development enabling works. The development site covers an area of approx. 0.9 ha and is located in the operational area of Dublin City Council. The site topography can be described as generally flat / level with slight falls in elevation from a maximum of approx. 3.52m AOD (meters above ordnance datum) along the south-eastern corner of the site to a minimum of c. 3.32m AOD to the south-western boundary of the site, where the access of the existing building is located.

Figure 6.1 *Site Location and Surrounding Land Use Map (Source: Google Earth Pro, 2024)*

6.3.1 Hydrology

The Proposed Development site is located within the former Eastern River Basin District (ERBD) (now the Irish River Basin District), as defined under the WFD.

The Proposed Development site as defined by the EPA nomenclature (EPA, 2024) is situated in Hydrometric Area No. 09 of the Irish River Network, and lies within the Liffey

and Dublin Bay Catchment (Catchment ID: 09), and the Tolka_SC_020 Sub-Catchment.

The Liffey Estuary Lower transitional waterbody (IE_EA_090_0300) is approximately 4.8km downstream (hydrological distance) from the River Liffey surface waterbody (IE_EA_09L012360, Liffey_190) and is located approximately 25 m south of the development site boundary at the point of closest proximity and flows in an easterly direction before ultimately discharging to Dublin Bay and the Irish Sea. The Liffey Estuary Upper (IE_EA_090_0400) is located a further 350 m upstream of the site. There are no water courses identified within the Proposed Development site.

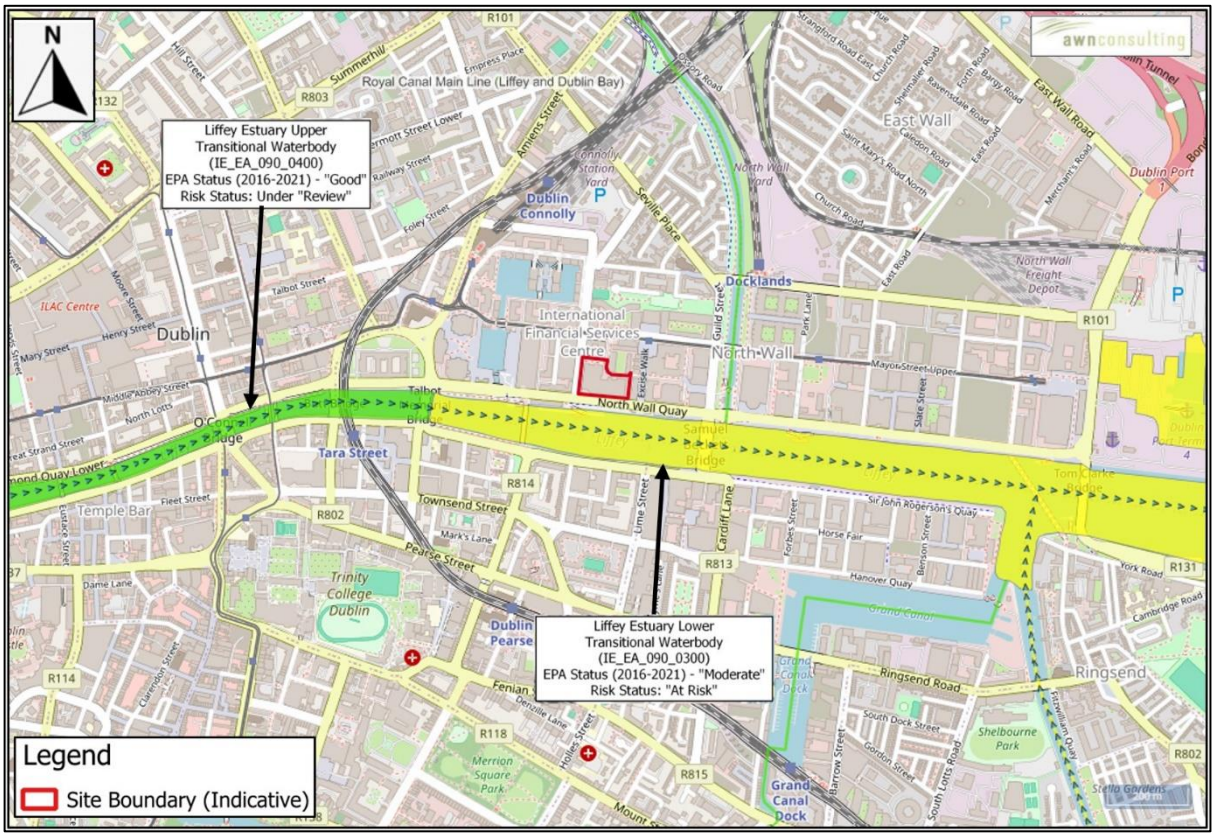

Figure 6.2 Local Surface Water Environment, site location indicated by the redline boundary (EPA, 2024).

6.3.2 Surface Water Quality

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. The EPA assess the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality.

In relation to the Proposed Development site, the nearest (active) surface waterbody EPA monitoring station is:

- '*LIFFEY - 0.2 km d/s Chapelizon Br (Lynch's Lane)*' (EPA Code: RS09L012360), which is located in the LIFFEY_190 waterbody adjacent to

Chapelizod Industrial Estate c. 6.35 km upstream (west) of the Proposed Development site.

The most recent water quality status recorded by the EPA (2022) at this monitoring station (EPA Code: RS09L012360) is classified as Q3 Poor which denotes a moderately polluted waterbody. This Value is based primarily on the relative proportions of pollution sensitive to tolerant macroinvertebrates (the young stages of insects primarily but also snails, worms, shrimps etc.) resident at a river site.

Refer to Figure 6.3 below for locations of these EPA quality monitoring points in the context of the site.

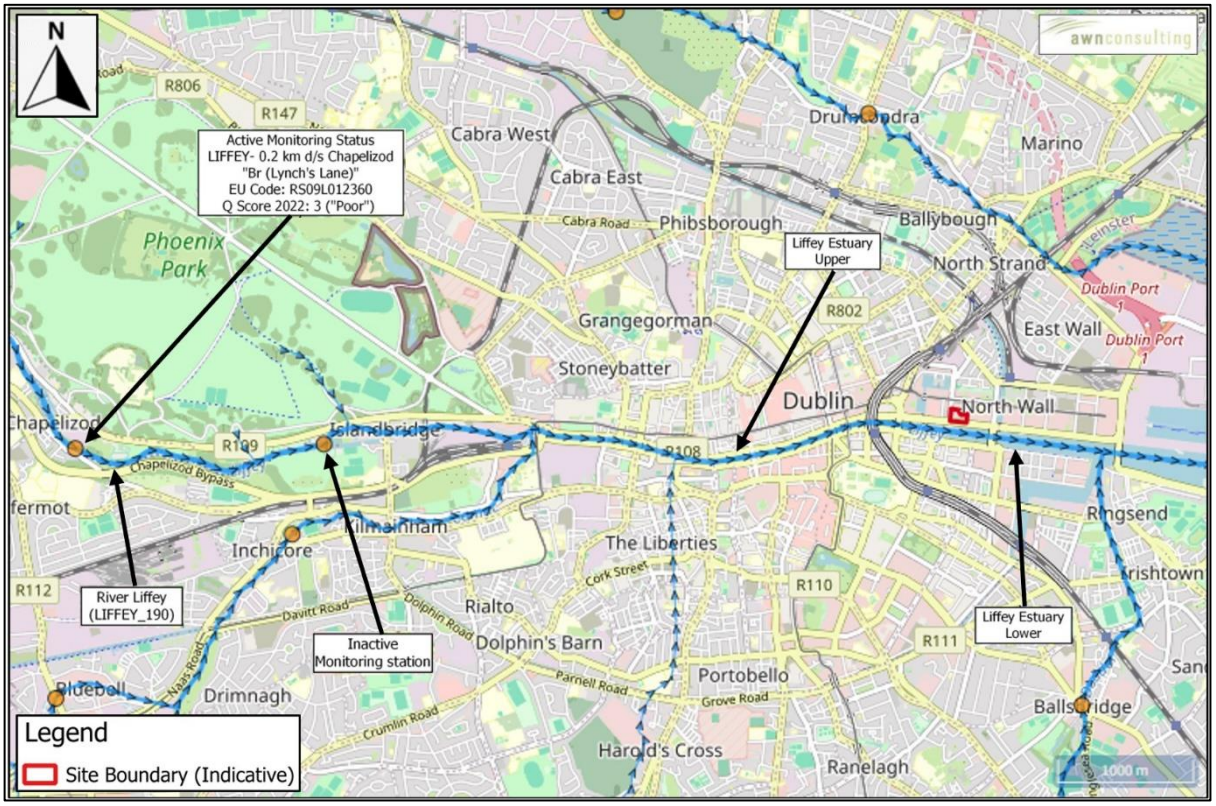

Figure 6.3 EPA Surface Water Quality Stations, site location indicated by the redline boundary (Source: EPA, 2024).

In addition to the biological assessment method outlined above the EPA also classified water bodies in accordance with the WFD water quality status. Rivers, lakes, estuaries and coastal waters can be awarded one of five statuses: High, Good, Moderate, Poor, Bad. Groundwater has just two statuses – Good and Poor.

The River Liffey belongs to the LIFFEY_190 WFD surface waterbody (European code: IE_EA_09L012360) and is currently classified by the EPA as having *'Poor'* WFD water quality status (2016-2021 period) and is '*At risk of not achieving good status*'. The main pressures identified on the LIFFEY_190 are associated with the presently 'poor' ecological (and biological invertebrate) status or potential.

The Liffey Estuary Upper transitional waterbody (European Code: IE_EA_090_0400) is currently classified by the EPA as having '*Good*' WFD water quality status (2016-2021 period) and is under '*Review*' in relation to the Risk WFD score (refer to figure 6.2). The main pressures identified on the Liffey Estuary Upper are associated with the presently 'Moderate' hydromorphological and biological conditions.

The Liffey Estuary Lower transitional waterbody (European Code: IE_EA_090_0300) is currently classified by the EPA as having '*Moderate*' WFD water quality status (2016-2021 period) and is '*At risk*' of not achieving good status (refer to Figure 6.2). The main pressures identified on the Liffey Estuary lower are associated with the presently '*Moderate*' ecological and biological status or potential in relation to phytoplankton and invertebrates.

6.3.3 Bathing Waters and Recreational Waterbodies

The local environment also includes areas of natural resources that relate to populations and human health that may be impacted by the Proposed Development, this includes economic resources, recreational and bathing waters, and drinking water resources.

A review of Environmental Sensitivity Mapping online maps that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Liffey Estuary.

It should be noted that Dollymount Strand and Sandymount Strand bathing water areas may be indirectly hydrologically connected to the Proposed Development site but are located further away than the Liffey Estuary (c. 5.3 km and 2.6 km from the subject site, respectively); therefore, they were excluded from the assessment due to their distance from the development and significant dilution through its pathway.

It should be noted that the bathing status has no direct relevance to the water quality status of the coastal waterbodies and Natura 2000 sites due to rapid mixing and large dilution factor in Dublin Bay resulting in no measurable change in water quality within the overall water body.

6.3.4 Existing Utilities and Drainage Infrastructure

Foul Wastewater

As outlined in the CS Consulting Engineering Services Report (2024) (included with the planning application documentation) Uisce Éireann drainage and supply records indicate that the following relevant existing drainage infrastructure elements are in place surrounding the development site:

(A) An existing 375mm vitrified clay combined sewer running east to west in North Wall Quay, along the development site's southern boundary. This combined sewer turns north at the junction of North Wall Quay and Commons Street and continues to flow northward along the development's western boundary.
(B) An existing 225mm concrete foul sewer to the east and north of the development's site boundary. The foul sewer is located in Clarion Quay, running westward and then northward at the development site's north-eastern boundary.
(C) The foul sewer in Clarion Quay joins a 375mm diameter foul sewer flowing east to west in Mayor Street Lower, which in turn joins the combined sewer in North Wall Quay. This discharges to the Mayor Street Wastewater Pumping Station (WwPS), from which all effluent ultimately reaches the Ringsend Wastewater Treatment Plant (WwTP).

For further details on the existing foul wastewater infrastructure see the CS Consulting Engineering Services Report (2024) included with the planning application

documentation. As the site is currently in use as a functioning office building, there is regular wastewater drainage from the site. The Uisce Éireann Code of Practice for Wastewater Infrastructure specifies an average foul effluent flow rate of 50 litres per person per day for offices (excluding canteens).

Potable Water Supply

As outlined in the CS Consulting Engineering Services Report (2024) (included with the planning application documentation), Uisce Éireann drainage and supply records indicate that an existing 200mm ductile iron and an existing 600mm cast-iron watermains in North Wall Quay runs along the development site's southern boundary.

The records also indicate an existing 6-inch (150mm approx.) diameter cast-iron watermain is in place in Commons Street and an existing 150mm ductile iron watermain is in place in Clarion Quay at the development site's north-eastern boundary.

For further details on the existing potable water infrastructure see the CS Consulting Engineering Services Report (2024) included with the planning application documentation.

As the site is currently in use as a functioning office building, there is regular potable water demand from the site. The Uisce Éireann Code of Practice for Water Infrastructure does not specify potable water consumption rates for non-domestic uses. On the principle that the development's water consumption shall not exceed its foul effluent generation, the foul generation rates of 50 litres per person per day for offices have therefore also been employed for calculating average potable water demand.

Stormwater Drainage

As outlined in the CS Consulting Engineering Services Report (2024) (included with the planning application documentation) Uisce Éireann drainage and supply records provided by DCC which are corroborated by topographical survey, indicate that the following relevant existing dedicated surface water drainage infrastructure elements are in place surrounding the development site:

(A) An existing 375mm vitrified clay combined sewer running east to west in North Wall Quay, along the development site's southern boundary. This combined sewer turns north at the junction of North Wall Quay and Commons Street and continues to flow northward along the development's western boundary.
(B) A concrete stormwater sewer (between 525mm and 600mm in diameter) in Clarion Quay, at the development site's north-eastern boundary.
(C) A brick stormwater sewer (between 1820mm and 2030mm in diameter) running north to south in Commons Street.
(D) The existing 375mm stormwater sewer running east to west in North Wall Quay (site southern boundary) discharges / connects to the existing 1870 brick stormwater sewer running north to south in Commons Street, which then outfalls to the River Liffey. The stormwater sewer in Clarion Quay discharges to a 1700mm diameter stormwater sewer running west to east in Mayor Street Lower; this ultimately outfalls to either the River Liffey or the Royal Canal, in proximity to the Samuel Beckett Bridge.

(E) In addition, there is also an existing 525mm concrete storm sewer running east to west and then turning northwards in Clarion Quay along development site's northern boundary.

For further details on the existing stormwater infrastructure see the CS Consulting Engineering Services Report (2024) included with the planning application documentation.

6.3.5 Site Flood Risk

CS Consulting Group (2024) have carried out and prepared a Flood Risk Assessment that is included with the planning application documentation. This Flood Risk Assessment was undertaken in accordance with 'The Planning System and Flood Risk Management Guidelines', the requirements of the national flood guidelines and Dublin City Council's Development Plan, and is in agreement with the core principles contained within.

A review of flood risk mapping (composite) contained within the *Dublin City Development Plan 2022*–2028 Strategic Flood Risk Assessment, shows the development site to be almost entirely within Flood Zone C. A minor a portion of the application area (along Clarion Quay, at the site's north-eastern boundary) is within Flood Zone B, but this is generally outside the development site.

A review of the Office of Public Works flood maps database (at www.floodinfo.ie) does not indicate any recorded historical instances of flooding on or near the development site, from any source, as noted in the OPW's historical flood maps.

Recent modelling and predicted flood hazard mapping for fluvial flood events of the surrounding area as part of the *Liffey Catchment Flood Risk Assessment and Management Study* (CFRAMS) project indicates that the development site is at low risk of fluvial flooding from this source (i.e., Flood Zone C), whereby the subject site is outside of the area at risk from a 0.1% AEP fluvial flooding event. The risk of fluvial flooding impacting upon the subject development is therefore negligible, even during a 1-in-1000-year flooding event, and no mitigation measures are required.

Predicted flood hazard mapping for fluvial flood events shows that the development site is at low risk of flooding from this source (i.e., Flood Zone C).

Recent modelling of the surrounding area as part of the Liffey Catchment Flood Risk Assessment and Management Study (CFRAMS) project indicates that the subject site is located largely within the area Flood Zone C for tidal flooding event (i.e., whereby at risk of the 0.1% AEP tidal flooding event, a 1-in-1000-year occurrence).

The *Dublin City Development Plan 2022*–2028 Strategic Flood Risk Assessment includes a map of modelled pluvial flooding (originated from overland flow resulting from high intensity rainfall) depths for a 3-hour duration rainfall event with 1% AEP. For such a rainfall event, this model indicates that the development site may experience pluvial flooding up to a depth of approximately 0.5m. However, from a review of OPW flood maps there are no records of flood events due to high rainfall events in the area and assessing the local topography we understand the risk of pluvial flooding to the site is negligible and the development site is deemed not to be at risk from pluvial flooding.

6.3.6 Areas of Conservation

The NPWS (2024) on-line database have been reviewed to determine the location of areas of conservation within proximity to the propose development site, and there are no Special Protected Areas (SPA) established under the EU Birds Directive (79/409/EEC), or Special Areas of Conservation (SAC) established under the Habitats Directive on or within the boundary of the Proposed Development site. Furthermore, there are no Natural Heritage Areas (NHA), or proposed Natural Heritage Areas (pNHA) established under the Wildlife Acts, 1976 and 2000 (as amended) on or within the boundary of the Proposed Development site.

The European sites in closest proximity to the Proposed Development are as follows:

- The South Dublin Bay SAC (000210) – circa 2.5 km to the east of the site.
- The South Dublin Bay & River Tolka (0004024) SPA – circa 1.6 km to the northeast of the site.
- North Bull Island (004006) SPA – circa 4.5 km to the northeast of the site.
- North Dublin Bay (000206) pNHA/SAC – circa 4.5 km to the northeast of the site.
- North-West Irish Sea (004236) SPA – circa 6.5 km to the east of the site.

The River Liffey is located immediately south (c. 25 m) of the Proposed Development site.

Figure 6.4 below presents the location of these protected areas in the context of the subject site.

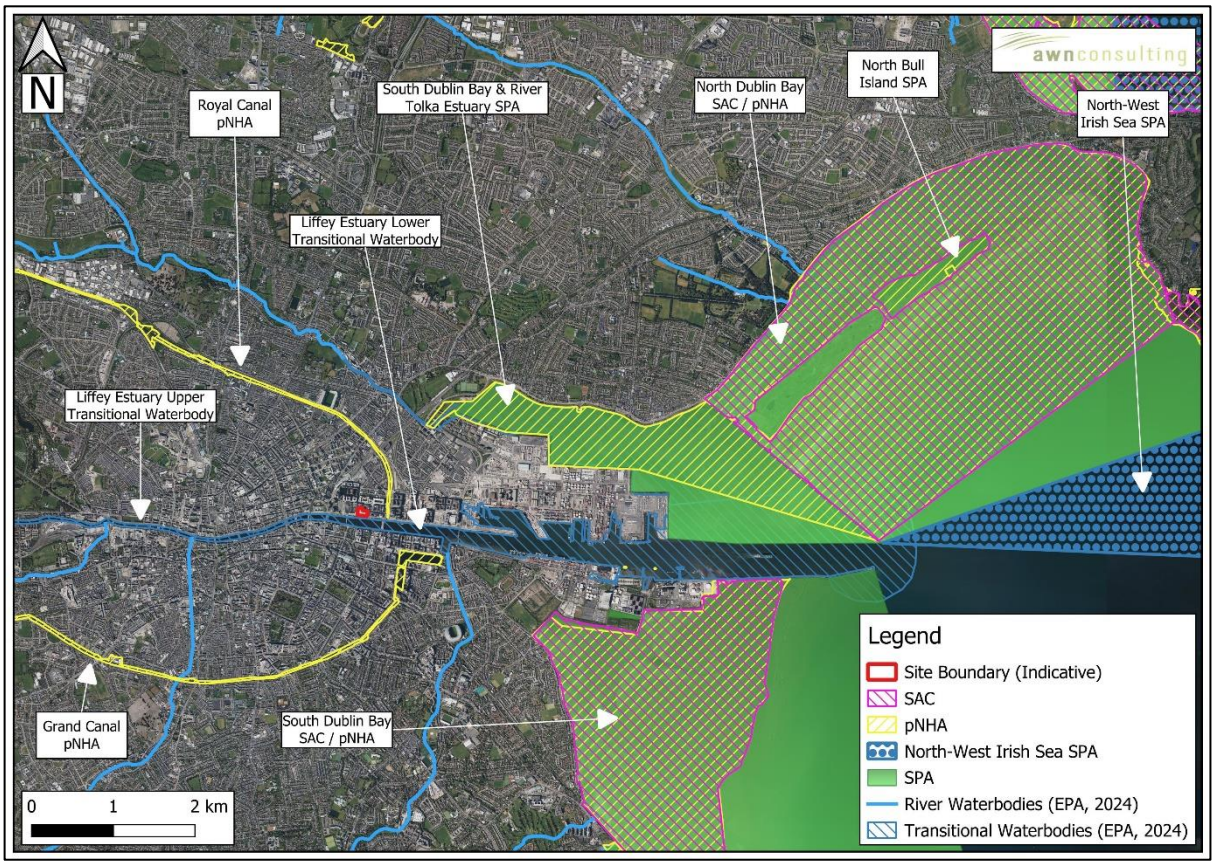

Figure 6.4 Natura 2000 Conservation Sites in the Context of the Subject Site

6.3.7 Rating of Importance of Hydrological Attributes

The review of the receiving environment undertaken (Section 6.3.1 through Section 6.3.6) and based on the TII methodology (2009) (See Appendix 6.1) the importance of the hydrological features at this site can be rated as '*Medium Importance'*. This is based on the assessment that the attribute has a medium-quality significance or value on a local scale, due to the River Liffey has a Quality Class (Q3).

6.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The purpose of this section is to provide an overview of the key relevant details of the construction phase and operational phase of the Proposed Development particularly in areas where potential impacts to hydrology may occur. The information presented in this section is informed by the project design, but it is not a complete description of the Proposed Development. Therefore, it should be read in conjunction with the full development package. For a more comprehensive understanding of the Proposed Development, please refer to Chapter 2 of the EIA Report. Chapter 2 provides a detailed overview of the lifecycle of the project, including reference to technical specifications, plans, and other relevant documents.

The details of the construction and operation of the Proposed Development in terms of Hydrology are detailed in the subsections below.

6.4.1 Construction Phase

Storage of soils/aggregates

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles in a secure compound area within the contractors' compound on site.

Temporary storage of spoil will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment and solid matter. Any excavated material temporarily stockpiled onsite for re-use during reinstatement will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment etc.

Storage of hazardous material

Temporary storage of fuel is required on site for construction traffic. Liquid materials i.e., fuel storage will be located within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS8007-1987) to prevent spillage.

Construction activities will necessitate storage of cement and concrete materials, temporary oils, and fuels on site. Small localised accidental releases of contaminating substances including hydrocarbons have the potential to occur from construction traffic and vehicles operating on site.

Collection and disposal of collected water (rainfall run-off and perched groundwater)

Given the nature of the proposed construction works and the subject site's proximity to the River Liffey (25m), due to the risk of surface water and dust entering the River Liffey directly, out of an abundance of caution it is considered that there is an indirect hydrological pathway to designated conservation sites located within Dublin Bay,

downstream of the River Liffey, namely, South Dublin Bay (SAC & pNHA), South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay (SAC & pNHA), and North Bull Island SPA.

Subject to consultation with DCC and Uisce Éireann, the Proposed Development site may also have an indirect hydrological pathway or connection with through the stormwater drainage network to the River Liffey / Liffey Estuary, and ultimately discharging downstream into Dublin Bay.

There will be therefore an indirect (subject to consultation with DCC and Uisce Éireann) hydrological pathway or connection with the designated conservation sites and designated Natura 2000 sites located downstream within the Dublin Bay, during the construction phase via the River Liffey (25m south of Proposed Development), namely, South Dublin Bay (SAC & pNHA), South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay (SAC & pNHA), North-West Irish Sea SPA and North Bull Island SPA, the potential impact on these sites need to be considered.

A secant pile wall will be installed around the perimeter of the development site. This will be socketed into unbroken bedrock to provide a barrier to lateral groundwater ingress. Localised perched groundwater within the gravel deposits/ weathered bedrock or surface water run-off during and after heavy rainfall events may be necessary to pump out during the excavation of the proposed basement and other excavation works. There may also be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavation is kept relatively dry.

Dewatering and removal of surface run-off is necessary to create a dry working environment and prevent water from seeping into the excavation and flooding the construction site.

Depending on the quality of the construction water, the discharge will occur to either; surface water (via the storm water network to the River Liffey); or Ringsend WWTP (via the combined foul wastewater network). Where required, a wastewater discharge licence will be applied for to manage surface water on site during the construction phase. This shall permit the discharge of trade effluent arising from groundwater/surface water ingress on the construction site. Effluent is proposed to be discharged to the existing combined sewer on Commons Street and the existing stormwater sewers in Clarion Quay, at the development site's western and northeastern boundary, respectively.

The discharge to surface water sewer is subject to agreement with Dublin City Council (DCC). It will not be permitted to discharge into any newly constructed storm water systems or existing watercourse without adhering to the conditions of the discharge licence and agreeing the same with the Design Team, Site Manager and Local Authority Area Engineer. Any discharge will first pass through an appropriately-designed silt trap so that only silt-free water leaves the site.

In case of any exceedances of discharge permit conditions, water will be retreated on site, or disposed of to a licenced facility. The treatment and monitoring of this water prior to disposal will occur within the construction site (See Section 6.6.1 for further details).

Disposal of foul wastewater

Foul wastewater drainage from site offices and compounds, where not directed to the existing combined sewer network, shall be contained and disposed of off-site in an

appropriate manner and in accordance with the relevant statutory regulations, to prevent the pollution of watercourses.

6.4.2 Operational Phase

The Proposed Development characteristics which relate to the water and hydrological environment during operation of the Proposed Development are summarised below:

Surface Water Drainage

All surface water from the Proposed Development will be collected and diverted to the public network during the operational phase which outfalls to the River Liffey (25m t the south of the Porposed Development site). It is therefore considered that there is an indirect hydrological path way via the surface water network to the River Liffey and hence an indirect hydrological pathway to the designated conservation sites located within Dublin Bay, namely, South Dublin Bay (SAC & pNHA), South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay (SAC & pNHA), and North Bull Island SPA.

The Proposed Development site also has an indirect hydrological pathway or connection with through the stormwater drainage network to the River Liffey / Liffey Estuary, and ultimately discharging downstream into Dublin Bay.There is therefore an indirect hydrological pathway or connection with the designated conservation sites and designated Natura 2000 sites located downstream within the Dublin Bay, namely, South Dublin Bay (SAC & pNHA), South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay (SAC & pNHA), North-West Irish Sea SPA, and North Bull Island SPA.

The existing office building on the development site has surface water drainage connections to the stormwater sewers in Clarion Quay and Commons Street. At the request of Uisce Éireann, It is proposed to retain these and use them for the Proposed Development; these comprise 3 no. connections to the stormwater sewer in Clarion Quay and 3 no. connections to the stormwater sewer in Commons Street.

The proposed stormwater drainage arrangements have been designed in accordance with *Part H of the Building Regulations 2010 (building Drainage)*, the *Greater Dublin Regional Code of Practice for Drainage Works (Version 6)*, British Standard BS EN 752:2008 (Drains and Sewer Systems Outside Buildings), and the *Greater Dublin Strategic Drainage Study (GDSDS)* Volume 2. The stormwater drainage design has also taken consideration of high tide events, due to the site's proximity to the River Liffey and Dublin Bay Area.

Green and blue roofs shall be provided on the proposed building's flat roof areas and terraces, mostly in the form of combined green/blue roof systems. These consist of a green roof element, beneath which is a blue roof storage element. The Proposed Development shall be provided with Blue Roofs (at levels 9, 10, 11, 15, 16), which provide a total Blue Roof area of 1,389m2, equating to an attenuation storage volume of approx. 139m3. These features have the function of reducing the volumes of rainwater discharging to the public sewer network, as well as mitigating peaks in run-off and reducing the potential for contaminants to be washed from the roof, decreasing the development's impact on the receiving environment. Green roofs also have secondary environmental benefits, providing a temperature control effect by absorbing less solar radiation and improving air quality by trapping airborne particulate matter.

The proposed stormwater drainage arrangements have been designed in accordance with Part H of the Building Regulations 2010, the Greater Dublin Regional Code of

Practice for Drainage Works (Version 6), and the Greater Dublin Strategic Drainage Study (GDSDS).

The Proposed Development shall compromise the construction of a number of Sustainable Drainage Systems (SuDS) measures, in accordance with the requirements of Dublin City Council and the DCC Development Plan Policies in order to limit post-development surface water run-off to the greenfield discharge rate of the site and providing on-site first stage interception of surface water run-off, improving its overall quality prior to ultimate discharge.

The development is required to retain stormwater volumes predicted to be experienced during extreme rainfall events. This is defined as the volume of storm water generated during a 1-in-100-year storm event, increased by 30% for the predicted effects of climate change. It is proposed to limit the surface water run-off volume and discharge into the existing 375mm diameter storm sewer along North Wall Quay.

Stormwater run-off from the Proposed Development shall be controlled during intense rainfall events by means of an on-site attenuation storage system (comprising Green Blue Roof on the proposed building's flat roof areas and terraces, and associated flow control device, which shall limit and restrict stormwater water run-off from the Proposed Development to the greenfield run-off rate for the subject development site (to a maximum of 2.0 l/sec/ha.)

The relevant Q-Bar value (greenfield run-off rate) for the subject development site has been established as 2.0 l/sec/ha. As the development site proper has an area of 0.9ha, the resultant maximum greenfield stormwater runoff for all rainfall events is 1.8 l/sec. The Proposed Development will restrict outflow from the onsite surface network to the greenfield runoff rate.

Green roofs will be provided on the proposed building's flat roof areas and terraces. During typical low-intensity rainfall events, these will collect and retain most rainwater falling on the roof areas until it subsequently evaporates.

For further information refer to the Engineering Services Report, prepared by CS Consulting and Drawing set 1NWQ-CSC-ZZ-00-DR-C-0104 and 1NWQCSC-ZZ-00-DR-C-0107. included with the planning application for the proposed surface water drainage network layout.

Foul Water Drainage

It is proposed to discharge all foul effluent from the Proposed Development's ground floor and upper storeys by gravity to the existing 375mm combined sewer on Commons Street, as recommended by Uisce Éireann in its Confirmation of Feasibility.

All water drained from the development's basement levels, including car park runoff, shall drain to 2 no. internal pumping chambers at lower basement level (level -2). From these, it shall be pumped via 2 no. rising mains to the development's standoff foul manhole at ground level, and subsequently discharge by gravity via / into the existing 375mm combined sewer on Commons Street.

An oil separator shall be installed at the inlet of the internal pumping chamber that collects runoff from the internal car parking areas.

The proposed foul drainage arrangements have been designed in accordance with Part H of the Building Regulations 2010, the Greater Dublin Regional Code of Practice

for Drainage Works (Version 6), the Greater Dublin Strategic Drainage Study (GDSDS), the Uisce Eireann Code of Practice for Wastewater Infrastructure, and the Regional Code of Practice for Drainage Works.

A Pre-Connection Enquiry (PCE) was submitted to Uisce Éireann on the basis of an office development on the subject development site, with a design population of 4,923 people (figure / value used previously for the subject enquiry). A Confirmation of Feasibility (CoF) (CDS23006147) was subsequently received in response, stating that wastewater connection of such a development to the public wastewater network would be feasible subject to the following:

- Connection to be made into the 375 combined sewer on Commons Street.
- Mayor St. Pumping Station (PS) to be upgraded (flow rate to be increased).
- Completion of an Uisce Éireann Project: Diversion of the existing rising main (RM) from the PS up to the existing 375mm gravity sever on Spencer Dock.
- Extension of the new RM for approx. 200m up to the existing 1000mm Brick sewer or upgrade of the 375mm sewer.

The foul wastewater collected on site will ultimately discharge to the local foul (combined) drainage network which ultimately discharges to Ringsend Wastewater Treatment Plant (WWTP). Based on the development's calculated office staff population of 4,723 people, at full occupancy, the maximum average effluent flow (dry weather flow or DWF) to be generated by the Proposed Development's office element has been calculated by CS Consulting to be 2.553 l/s and the corresponding peak effluent flow (Design Flow) has been calculated to be 11.489 l/s.

Water Supply

It is proposed to supply the development with potable water via a new 150mm diameter connection to the existing 150mm diameter ductile iron watermain in Clarion Quay, at the development site's north-eastern boundary, as recommended by Uisce Éireann in its Confirmation of Feasibility (CoF).. Refer to CS Consulting drawing no. T1NWQ-CSC-ZZ-00-DRC-0107 for details of the development's proposed water supply connection. This has been designed in accordance with building regulations and the Uisce Éireann *Code of Practice for Water Infrastructure.*

A Pre-Connection Enquiry (PCE) was submitted to Uisce Éireann on the basis of an office development on the subject site, with a design population of 4,923 people (figure / value used previously for the subject enquiry). A Confirmation of Feasibility (CoF) (CDS23006147) was subsequently received in response, stating that connection of such a development to the public water supply network would be feasible without infrastructure upgrade by Uisce Éireann.

Based on the development's calculated operational design population of 4,411 no. people, the maximum average potable water demand to be generated by the Proposed Development's office element has been calculated to be 220,550 l/day or 2.553 l/s. The average daily water demand for the Proposed Development space is 2.553 l/s (220,550 l/day), with a corresponding peak water demand of 12.765l/s (CS Consulting, 2024).

For further information refer to the Engineering Services Report and drawings pack accompanying the planning application, prepared by CS Consulting .

6.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

6.5.1 Construction Phase

6.5.1.1 Potential Impacts on Surface Water Quality

There is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. In absence of mitigation contaminated water which arises from construction sites can pose a significant, and short-term risk to the River Liffey / Liffey Estuary and the downstream Protected conservation areas located at North Dublin Bay (SAC), South Dublin Bay (SAC) and the Irish Sea.

During construction of the development, there is a risk of accidental pollution incidences from the following sources:

- Suspended solids (muddy water with increase turbidity) – arising from exposed ground, stockpiles and access roads and ground disturbance.
- Cement/concrete (increase turbidity and pH) – arising from construction materials.
- Hydrocarbons and other construction chemicals (ecotoxic) – accidental spillages from construction plant or onsite storage.
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

In the absence of mitigation, rainfall run-off and dewatering water during the construction phase may contain increased silt levels or otherwise become polluted from construction activities. Suspended solids in runoff water may result in an increase in suspended sediment load, resulting in increased turbidity, which may in turn impact on local infiltration capacity, or downstream infrastructure or watercourses. Concreting operations pose a potential risk of discharging concrete materials into exposed surfaces and percolate to the underlying groundwater. Concrete, especially the cement component, has a high alkalinity level. There is also the potential risk of unintentional discharge of stored materials like fuels, oils, and paints, which could have negative impacts on surface waters on-site and downstream from the site. It is necessary for the measures (set out in Section 6.6.1) to be implemented to reduce and prevent accidental discharges from occurring during construction, including the implementation of effective containment and monitoring procedures.

Accidental discharges can also occur from welfare facilities during construction activities. Wastewater can contain high levels of bacteria, chemicals and organic matter, which could contaminate nearby water sources if discharged incorrectly. The establishment and use of welfare facilities and connection to the existing combined foul sewer, ensures that there are no potential significant impacts; therefore, no additional mitigation is required.

In addition to the unintentional spillages of the primary sources of contaminants mentioned above, there is also a risk that rainfall run-off and dewatering water from excavation activities becoming contaminated by these sources. If not appropriately mitigated through containment, management, and monitoring, this could result in the mobilisation of these contaminants, leading to more widespread impacts on the surrounding environment. It is the intent to take necessary measures (set out in Section 6.6.1) to prevent such accidental discharges from occurring during construction, including the implementation of effective containment and monitoring procedures.

The Basement Impact Assessment undertaken by CS Consulting Group (2024) demonstrates that the construction of the proposed basement development will not adversely / unduly impact on the underlying groundwater conditions, groundwater or surface water flow, existing patterns of surface water drainage (including infiltration into groundwater), and that groundwater quality, quantity and classification will be protected. The Basement Impact Assessment concludes that Proposed basement construction will have negligible impact on the surrounding protected structures. The proposed basement will have no negative impact on the biodiversity of the surrounding area, and a negligible impact on vertical groundwater movement and lateral groundwater movement. Cumulative impact of the proposed basement on the groundwater regime in the wider area has been reviewed the risk of negative cumulative impact is deemed negligible.

Given all of the above listed, the Proposed Developments basement is deemed to be suitable for the site location, as relevant impacts have been assessed, mitigation measures implemented where required, and as such the likelihood of the negative impact of the Proposed Developments basement on the surrounding area is negligible. However, site investigations are necessary to understand the ground stratigraphy, soil properties, and groundwater levels. Site investigations will take place post-demolition of the existing development.

Welfare facilities will be provided for the contractors on site during the construction works. These facilities will be connected to the proposed foul drainage system on site or portable sanitary facilities will be provided with waste collected and disposed of appropriately.

The potential impacts on surface water quality may also have a potential impact on protected areas of conservation located downstream, specifically the South Dublin Bay SAC, North Dublin Bay pNHA / SAC, North-West Irish Sea SPA, and North Bull Island SPA. The potential impacts on Natura 2000 sites are further explained in Chapter 7 (Biodiversity) and in the separate AA Screening and Natura Impact Statement submitted with the planning application.

This contaminated water which arises from construction sites can pose a significant, and short-term risk to the Liffey Estuary and downstream Dublin Bay and Irish Sea.

It should be noted that Dollymount Strand and Sandymount Strand bathing water areas may be indirectly hydrologically connected to the proposed development site but are located further away than the Liffey Estuary (c. 5.3 km and 2.6 km from the subject site, respectively); therefore, they were excluded from the assessment due to their distance from the development and significant dilution through its pathway. It should be noted that the bathing status has no direct relevance to the water quality status of the coastal waterbodies and Natura 2000 sites due to rapid mixing and dilution resulting in no measurable change in water quality within the overall water body.

In the absence of mitigation measures the potential impacts during the construction phase on surface water quality are ***negative***, ***significant*** and ***short term***.

6.5.1.2 Potential Impacts on Surface Water Flow and Quantity

Earthworks and excavations will be required for construction phase operations to facilitate site levelling, foundations, construction of the basement and the new building and installation of services.

Once demolition is complete, the gradual reintroduction of impermeable surfaces and the compaction of soils across the construction site as a result of the earthworks will reduce the infiltration capacity and increase the rate and volume of direct surface run-off to be discharged to the public stormwater sewer. The potential impact of this is a possible increase in surface water run-off and sediment loading, which could potentially impact local drainage if not adequately mitigated.

This increase in the rate and volume of surface run-off can result in increased sediment loading, scouring impacts on the local sewer network and the Liffey Estuary transitional waterbody / watercourse, and downstream impacts.

Where required, a wastewater discharge licence will be applied for to manage surface water on site during the construction phase.

There are no proposed diversions of any drainage ditches or waterbodies as part of the Proposed Development.

These potential impacts on surface water flow and quantity may also have a potential impact on areas of conservation located downstream, specifically the South Dublin Bay SAC, North Dublin Bay pNHA / SAC, North-West Irish Sea SPA, and North Bull Island SPA. The potential impacts on Natura 2000 conservation sites are further explained in Chapter 7 (Biodiversity) and in the separate AA Screening and Natura Impact Statement submitted with the planning application.

In the absence of mitigation measures the potential impacts during the construction phase on surface water flow and quantity are ***negative***, ***significant*** and ***short term***.

6.5.1.3 Potential Impacts on Human Health and Populations

A reduction in water quality via unmitigated pollutants entering the Liffey Estuary (as set out in Section 6.5.1.2) has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. A review of Environmental Sensitivity Mapping online maps that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Liffey Estuary.

The Dollymount Strand and Sandymount Strand bathing water areas may be indirectly hydrologically connected to the Proposed Development site but are located further away than the Liffey Estuary (c. 5.3 km and 2.6 km from the subject site, respectively); therefore, they were excluded from the assessment due to their distance from the development and significant dilution factor through its pathway.

Therefore, on this basis in the absence of mitigation measures the potential impacts during the construction phase on human health and populations due to changes to the hydrological environment are ***negative***, ***imperceptible*** and ***short term***.

6.5.1.4 Potential Impacts on Water Framework Directive Status

The WFD assessment (Appendix 6.2 of the EIAR) indicates that, based on the existing design and characteristics of the Proposed Development, there is no potential for adverse or minor temporary/ long-term or localised effects on the Liffey Estuary surface water body. Therefore, it has been assessed that the Proposed Development will not cause any significant deterioration or change in water body status or prevent

attainment, or potential to achieve, future good status or to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

No further assessment of WFD is required given that no significant deterioration or change in water body status is expected based on the current understanding of the Proposed Development during construction.

There is a potential of accidental discharges during the construction phase (as set out in Section 6.5.1.2), however these are temporary short-lived events that will not impact on the surface water status of the Liffey Estuary transitional waterbody long-term and as such will not impact on trends in water quality and overall WFD status assessment.

6.5.2 Operational Phase

6.5.2.1 Potential Impacts on Surface Water Quality

Surface Water Drainage

Surface water runoff from roads, car parking, and hardstanding areas, can potentially contain elevated levels of contaminants such as hydrocarbons. These pollutants such as hydrocarbons that are a known carcinogen (cause cancer) in many animals and suspected to be carcinogenic to humans and changes in water pH in runoff water may result in adverse changes in water chemistry (dissolved oxygen content, biological oxygen demand etc).

Surface water drainage strategy includes the Proposed Development to be served by a sustainable drainage system that is to be integrated with the developments landscaping features and is typically to comprise hydrobrakes (or equivalent) and green blue roofs. All surface water runoff is to be attenuated and treated within the new development site boundary, before ultimately discharging to the existing surface water drainage connections to the stormwater sewers in Commons Street and Clarion Quay, both of which ultimately outfall to the River Liffey and to either the River Liffey or the Royal Canal, in proximity to the Samuel Beckett Bridge, respectively. It is proposed to retain these and use them for the Proposed Development; these comprise 3no. connections to the stormwater sewer in Clarion Quay and 3no. connections to the stormwater sewer in Commons Street. All surface water from the Proposed Development shall drain by gravity to these existing sewers, before ultimately discharging to the Liffey Estuary. There is therefore an indirect hydrological connection, via the proposed stormwater network, to the Liffey Estuary during the operational phase. This surface water runoff during the operational phase due to the hardstand and drainage infrastructure proposed has potential impacts to the site stormwater drainage, and potential indirect impacts to the Liffey Estuary (in the absence of the standard design measures). Refer to the Engineering Services Report, prepared by CS Consulting Group (2024) included with the planning application for the location of the details of the proposed stormwater network.

These potential indirect impacts on surface water quality may also have a potential impact on protected areas of conservation located downstream, specifically the South Dublin Bay SAC, North Dublin Bay pNHA / SAC, North-West Irish Sea SPA, and North Bull Island SPA. The potential indirect impacts on Natura 2000 conservation sites are further explained in Chapter 7 (Biodiversity) and in the separate AA Screening and Natura Impact Statement submitted with the planning application.

In the absence of mitigation measures (or design measures) the potential impacts during the operational phase on surface water quality are ***negative***, ***not significant,*** and ***long-term***.

Foul Wastewater Drainage

Is proposed to discharge all foul effluent from the Proposed Development's ground floor and upper storeys by gravity to the existing concrete 225mm diameter foul sewer in Clarion Quay, at the development's north-eastern boundary. There is no onsite wastewater treatment included in the design, all wastewater will be collected on site and treated off site at Ringsend Wastewater Treatment Plant (WWTP) (D0034-01).

There is no direct connection from the Proposed Development to the nearby Liffey Estuary, however, there is an indirect hydrological connection to the European sites associated with Dublin Bay, via foul wastewater arising at the site that will discharge to Ringsend WWTP (D0034-01).

With regard to the Ringsend WWTP, as outlined in Section 6.3.4, upgrade works commenced in 2018 and are expected to be fully completed by 2025. The upgrade works will result in treatment of sewage to a higher quality than current, thereby ensuring effluent discharge to Dublin Bay will comply with the Urban Wastewater Treatment Directive for a population equivalent of 2.1 million by Q4 2023. The project is being progressed in stages to ensure that the plant continues to treat wastewater to the current treatment levels throughout the delivery of the upgrade.

On the basis of a grant of planning the estimated completion in 30 months, with an estimated completion in c. 2030, therefore it is likely that the Ringsend WWTP will be upgraded by the time the connection to the foul sewer is made.

However, it is worth noting that even without treatment at the Ringsend WWTP, the peak effluent discharge (Design Flow), estimated for the Proposed Development as 11.489 l/s (maximum capacity of the network according to CS Consulting, which would equate to 0.103% of the licensed discharge at Ringsend WWTP [peak hydraulic capacity]), would not have a measurable impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive). In addition, as the Proposed Development will not contribute any additional stormwater drainage to the WWTP, the development will therefore have no measurable impact on the water quality in any overflow situation from Ringsend to South Dublin Bay.

These potential indirect impacts on surface water quality may also have a potential impact on protected areas of conservation located downstream, specifically the South Dublin Bay SAC, North Dublin Bay pNHA / SAC, North-West Irish Sea SPA, and North Bull Island SPA. The potential indirect impacts on Natura 2000 conservation sites are further explained in Chapter 7 (Biodiversity) and in the separate AA Screening and Natura Impact Statement submitted with the application.

On the basis of the design characteristics of the Proposed Development, and feasibility of the connection with Uisce Éireann to Ringsend WWTP, there are ***neutral, imperceptible, long-term*** in respect of wastewater loading.

6.5.2.2 Potential Impacts on Surface Water Flow and Quantity

The surface water drainage from the Proposed Development site has been designed by CS Consulting Group (2024) to ensure that there is no increase in flow rates and

volumes, from the development site, being discharged to the receiving infrastructure and waterbodies; thus causing no adverse impact on adjoining and other downstream properties.

Stormwater flows during intense rainfall events shall be attenuated with the proposed Green Blue roof design and limited / restricted to a maximum outflow / discharge rate equivalent to the greenfield runoff rate of the site using flow control devices (hydrobrake or equivalent as required). There are no surface water abstractions proposed, therefore no potential impacts on the quantity of surface water.

In the absence of mitigation measures or the potential impacts during the operational phase on surface water flow and quantity are ***negative***, ***significant,*** and ***long-term***.

6.5.2.3 Potential Impacts on Human Health and Populations

A reduction in water quality via unmitigated pollutants entering the Liffey Estuary (as set out in Section 6.5.2.1) has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. However, it is noted that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Liffey Estuary.

The potential for unmitigated off-site flooding as a result of the increased hardstanding areas, and due to the flood risk at the site (as set out in section 6.5.2.2) the Proposed Development has the potential to impact on human health, populations, and material assets located downstream of the site.

In the absence of mitigation measures the potential impacts during the construction phase on human health and populations due to changes to the hydrological environment are ***negative***, ***not significant*** and ***long term***.

6.5.2.4 Potential Impacts on Water Framework Directive Status

There are no direct discharges during the operational phase to any to open waterbody/ watercourse from the Proposed Development, there are limited indirect discharges via the stormwater network to the Liffey Estuary. These stormwater discharges will be adequately treated via SuDS measures, hydrobrake (or equivalent) and oil/water interceptor to ensure there is no long-term negative impact to the WFD water quality status of the receiving watercourse (Liffey Estuary). The SuDS and proposed measures have been designed in detail with the ultimate aim of protecting the hydrological (& hydrogeological) environment. The SuDS and project design measures will be maintained correctly as per specifications to ensure long-term, and on-going integrity of same.

In the scenario of an accidental release (unmitigated leaks mentioned above in Section 6.5.2.1) there is potential for a temporary impact only which would not be of a sufficient magnitude to effect a change in the current water body status.

There is no potential impact on water framework directive status, therefore no specific mitigation measures are required.

6.6 REMEDIAL AND MITIGATION MEASURES

The design has taken account of the potential impacts of the development on the hydrological environment local to the area where construction is taking place and

containment of contaminant sources during operation. Measures have been incorporated in the design to mitigate the potential effects on the surrounding water bodies.

6.6.1 Construction Phase

6.6.1.1 Surface Water Quality

CS Consulting Group have prepared *Outline Construction Management Plan (OCMP)* (2024) in respect of the subject development that is included with the planning application documentation. It contains best practice measures and protocols to be implemented during the construction phase of the Proposed Development to avoid / minimise environmental impacts. This outline and explains the construction techniques and methodologies which will be implemented during construction of the Proposed Development.

Construction works and the proposed mitigation measures are informed and comply by best practice guidance from Inland Fisheries Ireland on the prevention of pollution during development projects including but not limited to:

- Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- Environmental Protection Agency (EPA) – Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects – April 2021.
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741); and
- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005).
- Local Government Water Pollution Act 1977.
- Environmental Protection Agency Act 2003.

The OCMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager, Resource Manager, and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The OCMP sets out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The mitigation and control measures outlined in the OCMP will be employed on site during the construction phase. All mitigation measures outlined here, and within the OCMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.

Suspended Solids

As there is potential for run-off to directly and indirectly discharge to a watercourse (Liffey Estuary) underlying the site and in order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase.

- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces

will be within the main excavation site which limits the potential for any offsite impacts.

- Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal.
- Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds).
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate,
- A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site.
- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m.
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- Construction materials, including aggregates etc. will be stored a minimum of 20-meter buffer distance from any surface water bodies and surface water drainage points.
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
- Any surface water run-off collecting in excavations will likely contain a high sediment load. This will be diverted to settlement ponds and will not be allowed to directly discharge to existing onsite concrete storm water sewer drains within the site boundary or the Liffey Estuary.

In addition to the measures above, a watching brief will be maintained throughout the excavation phase. All excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Any signs of potential contamination will be recorded within the watching brief. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary drainage system shall be established prior to the commencement of the initial infrastructure construction works to collect and discharge any treated construction water during construction.

Cement/concrete works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which

will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer subject to the grant of a discharge licence by Uisce Éireann / DCC.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Hydrocarbons and other construction chemicals

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground, of fuels and other construction chemicals, and prevent any discharges to surface water and groundwater systems:

- Designation of bunded refuelling areas on the Site.
- Provision of spill kit facilities across the Site.
- Where mobile fuel bowsers are used, the following measures will be taken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use.
    - The pump or valve will be fitted with a lock and will be secured when not in use.
    - All bowsers to carry a spill kit and operatives must have spill response training.
    - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage.
- All drums to be quality approved and manufactured to a recognised standard.
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from surface water gullies or drains

minimum 20 m buffer zone. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Disposal of collected water (rainfall run-off and perched water)

Rainfall at the construction site will be managed and controlled for the duration of the construction works until the permanently intercepted and attenuated surface water drainage system of the proposed site is complete. Dewatering water from excavation works within overburden deposits will be contained within the site, treated (if required) and discharged. This water will be discharged into the public storm water network subject to the grant of a discharge licence by DCC. Depending on the quality of this water the discharge of this treated water will occur to either; to surface water (via the storm water network to the River Liffey); or to Ringsend WWTP (via the combined foul wastewater network).

A staged treatment system (treatment-train) will be in place during construction works that will ensure the quality of the discharge water to foul sewer and storm sewer is maintained in accordance with discharge permit conditions. The dewatering will occur via suitably installed dewatering wells/sumps containing pumps to abstract groundwater and surface water (rainfall landing on the site). The treatment-train will ensure the quality of the discharge water is maintained and will comprise hydrocarbon interception for removal of petrol/diesel, settlement tanks for silt removal, and pH balancing.

The quality of discharged water to the foul and storm network is expected to be compliant with respective licence conditions following treatment and management. In case of any exceedances of parameters stipulated by discharge permit conditions, water will be retreated on site, or disposed of to a licenced facility. The discharges to storm water and combined foul water network shall comply with the requirements established in the discharge licence to Dublin City Council (for storm water network) and/or Uisce Éireann (for foul water network).

It will not be permitted to discharge into any newly constructed storm water systems or existing watercourse without adhering to the conditions of a discharge licence and agreeing the same with the Design Team, Site Manager and Local Authority Area Engineer. Any discharge will first pass through an appropriately-designed silt trap so that only silt-free water leaves the site.

Wastewater Management

Foul wastewater discharge from the site will be managed and controlled for the duration of the construction works.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will discharge into the existing sewer on site

(the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made).

The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.6.1.2 Surface Water Flow and Quantity

During construction a site drainage and protection system will be built to reduce the flow of run-off from the site, prevent soil erosion, and protect water quality in the Liffey Estuary. Temporary excavated channels, bunds, silt fences, or ridges or a combination of the three, may be constructed to manage sediment-laden water.

Silt traps and silt fences will be installed around the perimeter of the site where construction is proposed to detain flows from runoff so that deposition of transported sediment can occur through settlement. Inspection and maintenance of the silt fences during construction phase is crucial to ensuring that they work as intended. They will remain in place throughout the entire construction phase.

Temporary surface water management systems, and the treatment train described above will throttle runoff and allow suspended solids to be settled out and removed. All inlets to the settling basins will be 'riprapped' to prevent scour and erosion in the vicinity of the inlet.

Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary drainage system shall be established prior to the commencement of the initial infrastructure construction works to collect and discharge any treated construction water during construction. This is subject to the grant of a discharge licence by Uisce Éireann / DCC.

6.6.1.3 Human Health and Populations

It has been established (Section 6.5.1.3) that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Liffey Estuary. On a precautionary basis, the mitigation measures set out in Section 6.6.1.1, and Section 6.6.1.2 will be implemented during the construction works for the protection of human health and populations.

6.6.1.4 Potential Impacts on Water Framework Directive Status

It has been established (Section 6.5.1.4) that while, there is a potential of accidental discharges during the construction phase this will not impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures set out in Section 6.6.1.1, and Section 6.6.1.2 will be implemented during the construction works for the protection of surface water quality.

6.6.2 Operational Phase

6.6.2.1 Surface Water Quality

The design has taken account of the potential impacts of the development on surface water quality; measures have been incorporated in the design to mitigate these potential impacts.

The Proposed Development stormwater drainage network design includes sustainable drainage systems (SuDS) these measures by design ensure the stormwater leaving the site is to be attenuated and treated within the Proposed Development's site boundary to ensure suitable quality, before discharging to the existing public surface water network which subsequently outfalls to the nearby Liffey Estuary.

The purpose of the proposed design is to:

- Treat runoff and remove pollutants to improve quality.
- Restrict outflow and to control quantity.
- Increase amenity value.

The layout of the proposed surface water drainage network is shown on CS Consulting Drawing Set included with the planning application. It is proposed to separate the surface water and wastewater drainage networks, which will serve the Proposed Development, and provide independent connections to the local public surface water and wastewater sewer networks respectively.

In respect of the indirect hydrological link to the European conservation sites associated with Dublin Bay, via foul water – foul waste arising at the site that will discharge to Ringsend Wastewater Treatment Plant (D0034-01).

6.6.2.2 Surface Water Flow and Quantity

The design has taken account of the potential impacts of the development on surface water flow; measures have been incorporated in the design to mitigate these potential impacts. It is proposed to limit the surface water run-off volume and discharge into the existing 375mm diameter storm sewer along North Wall Quay.

The Proposed Development will include the employment of Green Blue Roofs which provides attenuation storage equating to a volume of approx. 139m^3 of water. These features have the function of reducing the volumes of rainwater discharging to the public sewer network, as well as mitigating peaks in run-off and reducing the potential for contaminants to be washed from the roof, decreasing the development's impact on the receiving environment. Green Blue roofs also have secondary environmental benefits, providing a temperature control effect by absorbing less solar radiation and improving air quality by trapping airborne particulate matter.

There are no direct discharges to any open water courses included in the design. As set out in the CS Consulting Group Engineering Services Report (2024) flow restriction is achieved by means of a flow restriction device (hydro-brake or similar) which shall be installed and incorporated into the design prior to outfall. The surface water network has been designed to provide sufficient capacity to contain and convey all surface water run-off associated with the 1-in-100-year event to the attenuation basins without any overland flooding including an additional allowance of 30% in rainfall intensities due to climate change. The layout of the proposed surface water drainage network is shown on CS Consulting Drawing Set included with the planning application.

The development is required to retain stormwater volumes predicted to be experienced during extreme rainfall events. This is defined as the volume of storm water generated during a 1-in-100-year storm event, increased by 30% for the predicted effects of climate change. The proposed development shall be provided with Blue Roofs at levels 9, 10, 11, 15, and 16.

It shall be the responsibility of the site management team to ensure the entire drainage system is well maintained. Maintenance and clearing of gullies drain manholes (including catch pits) shall ensure adequate performance. It is recommended that a maintenance check be carried out every 3-4 months and also immediately after a high intensity storm event.

With reference to CS Consulting Group (2024) Site Specific Flood Risk Assessment the following design mitigation are included within the project design in respect of flood risk. It has been demonstrated in the earlier sections that the site is not at risk of flooding from external sources, or as result of the Proposed Development. In order to minimise the risk of flooding within the development, all drainage infrastructure has been designed in accordance with the relevant standards. The Proposed Development includes a new surface water network which will mitigate the pluvial risk to the site in line with SuDS measures.

It should be noted that in the event of an extreme tidal level warning, tidal flooding is not instantaneous; advance warning of an elevated tidal surge shall allow suitable action to be taken to ensure no loss of life and minimum damage to property. It is proposed to provide demountable flood barriers at the entrance of the Proposed Development to mitigate the risk to an acceptable degree. Works have been completed to aid in the defence of the quays from tidal flooding; these flood defences extend up to the Loop Line Bridge. These defences shall defend North Wall Quay from a potential 1-in-200-year extreme high tide and provide an acceptable degree of tidal flooding risk mitigation. The nearest node point to the development site is 09LIFF00180 indicates the flood level for the 0.1% AEP is 3.12m AOD. Therefore, a freeboard of 500mm shall be provided above this level. The FFL of the Proposed Development shall therefore be 3.650m AOD.

The risk for tidal and pluvial flood events will be addressed to an acceptable degree by the implementation of appropriate active flood defence measures which will be included as part of the development design (refer to Section 6.4.2 below).

The development's basement shall be constructed to withstand groundwater ingress, mitigating the risk of flooding from this source.

Water conservation measures will be considered to reduce overall potable water demand and consumption, including: low volume flush / dual flush WC's, spray taps, draw off tap controls, leak detection measures – through the metering of supply.

6.6.2.3 Human Health and Populations

It has been established (Section 6.5.2.3) that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Liffey Estuary. On a precautionary basis, the mitigation measures set out in Section 6.6.2.1, and Section 6.6.2.2 will be implemented during the operational phase for the protection of human health and populations, and downstream material assets.

6.6.2.4 Potential Impacts on Water Framework Directive Status

It has been established (Section 6.5.2.4) that while, there is a potential of accidental discharges during the operational phase this will not impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures set out in Section 6.6.3.1, and Section 6.6.3.2 will be implemented during the construction works for the management of surface water flows the indirect discharges. The surface water discharges from the site are indirect, and will be

adequately attenuated via SuDS measures, hydro-brake (or equivalent) and oil/water separator / interceptor ensure there is no long-term negative impact to the WFD water quality status of the Liffey Estuary transitional waterbody.

6.7 MONITORING OR REINSTATEMENT

6.7.1 Construction Phase

During construction phase the following monitoring measures will be considered:

- Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 20 m from surface water receptors.
- Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) will be carried out during the construction phase. Inspection and maintenance of the silt fences during construction phase is crucial to ensuring that they work as intended. They will remain in place throughout the entire construction phase.
- Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life.
- Regular auditing of construction / mitigation measures will be undertaken, e.g. concrete pouring, refuelling in designated areas, etc.
- A log the regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.
- Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase.
- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off.
- Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.
- Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network.

6.7.2 Operational Phase

No future surface water monitoring is proposed for the Proposed Development due to the low hazard potential at the Site.

Oil separators will be maintained and cleaned out in accordance with the manufacturer's instructions.

Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

6.8 RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

6.8.1 Construction Phase

6.8.1.1 Surface Water Quality

The implementation of the mitigation and monitoring measures detailed in Section 6.6.1 and 6.7.1, will ensure that the potential impacts on surface water quality during the construction phase are adequately mitigated. The residual effect on surface water quality during the construction phase is considered to be ***neutral, imperceptible*** and ***short-term***.

6.8.1.2 Surface Water Flow and Quantity

The implementation of the mitigation and monitoring measures detailed in Section 6.6.1 and 6.7.1, will ensure that the potential impacts on surface water flow and quantity during the construction phase are adequately mitigated. The residual effect on surface water flow and quantity during the construction phase is considered to be ***neutral, imperceptible*** and ***short-term***.

6.8.1.3 Human Health and Populations

The implementation of the mitigation and monitoring measures detailed in Section 6.6.1 and 6.7.1, will ensure that the potential impacts on human health and populations (and material assets) during the construction phase are adequately mitigated. The residual effect on human health and populations during the construction phase is considered to be ***neutral, imperceptible*** and ***short-term***.

6.8.1.4 Water Framework Directive Status

Even in the absence of the mitigation and monitoring measures detailed in Section 6.6.1 and 6.7.1, there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the construction phase to protect the hydrological environment. There is a potential of accidental discharges during the construction phase, however these are temporary short-lived events that will not impact on the water status of waterbodies long-term and as such will not impact on trends in water quality and over all status assessment.

The residual effect on human health and populations during the construction phase is considered to be ***neutral, imperceptible*** and ***short-term***.

6.8.2 Operational Phase

6.8.2.1 Surface Water Quality

The implementation of the mitigation and monitoring measures detailed in Section 6.6.2 and 6.7.2, will ensure that the potential impacts on surface water quality once the Proposed Development is constructed and operational are adequately mitigated.

There will be no impact to the quality of downstream designated sites due to the lack of direct hydraulic connectivity and the mitigation measures cited. In addition, Overall, the SuDS, attenuation proposed for the project and installation of hydrocarbon interceptors / separators will improve flood management and water quality.

The residual effect on surface water quality during the operational phase is considered to be ***neutral, imperceptible*** and ***long-term***.

6.8.2.2 Surface Water Flow and Quantity

The implementation of the mitigation and monitoring measures detailed in Section 6.6.2 and 6.7.2, will ensure that the potential impacts on surface water flow and quantity once the Proposed Development is constructed and operational are adequately mitigated.

There will be no impact to the quality of downstream designated sites due to the lack of direct hydraulic connectivity and the mitigation measures cited. Overall, the attenuation proposed for the project and installation of interceptors will improve flood management and water quality.

The residual effect on surface water flow and quantity during the operational phase is considered to be ***neutral, imperceptible*** and ***long-term***.

6.8.2.3 Human Health and Populations

The implementation of the mitigation and monitoring measures detailed in Section 6.6.2 and 6.7.2, will ensure that the potential impacts on human health and populations (and material assets) once the Proposed Development is constructed and operational are adequately mitigated. The residual effect on human health and populations during the operational phase is considered to be ***neutral, imperceptible*** and ***long-term***.

6.8.2.4 Water Framework Assessment

Even in the absence of the mitigation and monitoring measures detailed in Section 6.6.2 and 6.7.2, there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the operational phase to protect the hydrological environment. There is a potential of accidental discharges during the operational phase, however these are temporary short-lived events that will not impact on the water status of waterbodies long-term and as such will not impact on trends in water quality and over all status assessment.

There are no untreated discharges of wastewater during the operational phase to any open waterbody / watercourse. The discharges to surface water will be adequately treated via SuDS measures, flow control devices / hydro-brake (or equivalent) and oil/water interceptor / separator to ensure there is no long-term negative impact to the WFD water quality status of the receiving watercourse. The SuDS and proposed measures have been designed in detail with the ultimate aim of protecting the hydrological (& hydrogeological) environment. The SuDS and project design measures will be maintained correctly as per specifications to ensure long-term / on-going integrity of same.

6.9 CUMULATIVE IMPACTS OF THE PROPOSED DEVELOPMENT

The cumulative impact of the Proposed Development with any/all relevant other planned or permitted developments are discussed below. For details on the developments considered refer to Chapter 2, Appendix 2.1 of this EIA Report.

Existing developments that are already built and in operation contribute to the characterisation of the baseline environment. As such any further environmental impacts that the Proposed Development may have in addition to these already constructed and operational developments has been assessed in the preceding sections of this chapter.

6.9.1 Construction Phase

In relation to the potential cumulative impact on hydrology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

- Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses.
- Stockpiled material will be stored on hardstand away from surface water drains, and gullies will be protected during works to ensure there is no discharge of silt-laden water into the surrounding surface water drainage system.
- Contamination of local water sources from accidental spillage and leakage from construction traffic and construction materials is possible unless project-specific measures are put in place for each development and complied with.

A review of the permitted and Proposed Developments set out in in Chapter 2, Appendix 2.1 of this EIA Report has been undertaken to identify any substantial projects that are concurrent with the construction phase of the Proposed Development that may result in cumulative effects in respect of hydrology. This is required to ensure that measures are in place to protect water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019).

This review identified the permitted developments outlined in Chapter 2, which are capable of combining with the Proposed Development and have the potential to result in significant cumulative effects due to their scale and close proximity to the Proposed Development site.

The implementation of mitigation and monitoring measures detailed in Section 6.6.1; and 6.7.1 as well as the compliance of the above permitted developments (Table 6.1) with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the hydrological environment during the construction phase of the Proposed Development.

It is also acknowledged that the works contractors for other planned or permitted developments will be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016)).

The works contractors for other planned or permitted developments as set out in Chapter 2, Appendix 2.1 of this EIA Report. will be obliged to ensure that measures are in place to protect water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019).

The residual cumulative impact of the Proposed Development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible*** and ***short-term***.

6.9.2 Operational Phase

In relation to the potential cumulative impact on hydrology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

- Increased risk of accidental discharge of hydrocarbons from car parking areas, and along roads is possible unless diverted to surface water system with oil separator.
- Additional foul discharges to be discharge to the foul sewer system.

Increase in wastewater loading and water supply requirement is an impact of all development. Each development will require approval from the Uisce Éireann confirming available capacity in the water and wastewater infrastructure.

The surface water and foul drainage infrastructure and water supply requirements for the Proposed Development have been designed to accommodate the Proposed Development. Uisce Éireann have confirmed connection to its water and foul network can be facilitated subject to a connection agreement.

Each permitted development is required by the Local Authority to provide suitable attenuation on-site and ensure that there is no increase in off-site flooding as a result of the development in question.

A review of the permitted and Proposed Developments set out in in Chapter 2, Section 2.8 and Appendix 2.1 of this EIA Report has been undertaken to identify any substantial projects that are concurrent with the operational phase of the Proposed Development that may result in cumulative effects in respect of hydrology.

This review identified the permitted developments outlined in Chapter 2, which are capable of combining. with the Proposed Development and have the potential to result in significant cumulative effects due to their scale and close proximity to the Proposed Development site. Chapter 2 also outlines a review of their relevant planning conditions / mitigation measures for the protection of the hydrological environment.

Furthermore, all developments listed in Chapter 2 and Appendix 2.1 of this EIA Report are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (Water Framework Directive and associated legislation) such that they would be required to manage run-off and fuel leakages.

The implementation of mitigation and monitoring measures detailed in Section 6.6.2; and 6.7.2 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change in surface water during the operational phase of the Proposed Development. The residual cumulative impact of the Proposed Development in

combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible*** and ***long-term***.

6.10 REFERENCES

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