Chapter 13
Water

Contents

13. Water

13.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) assesses the impact of the Ballymun / Finglas to City Centre Core Bus Corridor Scheme (hereafter referred to as the Proposed Scheme), on the surface water environment during the Construction and Operational Phases. The following attributes of each surface water body (receptor) are considered: hydrology, hydromorphology and water quality. Hydrogeology is dealt with specifically in Chapter 14 (Land, Soils, Geology & Hydrogeology).

During the Construction Phase, the potential surface water impacts associated with the development of the Proposed Scheme have been assessed (see Section 13.4.4), including potential impacts from construction runoff and watercourse disturbance due to utility diversions, road resurfacing and road realignments.

During the Operational Phase, the potential surface water impacts associated with changes in surface water runoff, increased hardstanding and watercourse disturbance have been assessed (see Section 13.4.5).

The assessment has been carried out according to best practice and guidelines relating to surface water assessment, and in the context of similar large-scale infrastructural projects.

An assessment of the Proposed Scheme's compliance with 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 (hereafter referred to as the Water Framework Directive (WFD)) requirements is provided in Appendix A13.1 Water Framework Directive (WFD) Assessment in Volume 4 of this EIAR. The status of WFD water bodies and protected areas within the study area are provided in Section 13.3.3 and a summary of the conclusions of the WFD assessment is provided in Section 13.6.3.

Flooding has been assessed within a Site-Specific Flood Risk Assessment (FRA) report in Appendix A13.2 in Volume 4 of this EIAR. The results of this assessment have been summarised in Section 13.3.10 and Section 13.4.5.6 of this Chapter.

The aim of the Proposed Scheme, when in operation, is to provide enhanced walking, cycling and bus infrastructure on this key access corridor in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor. The objectives of the Proposed Scheme are described in Chapter 1 (Introduction). The Proposed Scheme which is described in Chapter 4 (Proposed Scheme Description) has been designed to meet these objectives.

The design of the Proposed Scheme has evolved through comprehensive design iteration, with particular emphasis on minimising the potential for environmental impacts, where practicable, whilst ensuring the objectives of the Proposed Scheme are maintained. In addition, feedback received from the comprehensive consultation programme undertaken throughout the option selection and design development process have been incorporated, where appropriate.

13.2 Methodology

13.2.1 Study Area

The baseline study area for this assessment is 500m (metres) from the boundary of the Proposed Scheme. It is anticipated that any likely significant impacts from the Proposed Scheme would occur at local water bodies, and given the nature and extent of the Proposed Scheme, the 500m study area is considered appropriate to encompass all those water bodies that may be susceptible to significant impacts. Therefore, any identified surface water bodies within that area have been considered as receptors including those classified under the WFD, including riverine, transitional water bodies, lake (water) bodies and coastal water bodies, and also non-WFD classified water bodies. Artificial drainage features such as existing Sustainable Drainage Systems (SUDS) have not been considered as receptors within the baseline assessment.

The nearest surface water abstraction point is Leixlip Reservoir, which is approximately 15km (kilometres) west of the Proposed Scheme. This is a major public water supply abstraction point (approximately 195,000m^3/day (cubic metres per day)) which supplies approximately 600,000 people, serving Fingal, Kildare and North Dublin. However, due to separation from the Proposed Scheme and the fact that it is upstream of the study area, there is considered to be no potential for the Proposed Scheme to interact with this abstraction point and, accordingly, this abstraction point has not been considered further in the assessment.

13.2.2 Relevant Guidelines, Policy and Legislation

13.2.2.1 Water Framework Directive (WFD)

The WFD established a framework for the protection of both surface water bodies and groundwaters. The WFD provides a vehicle for establishing a system to improve and / or maintain the quality of water bodies across the European Union (EU). The WFD requires all water bodies (rivers, lakes, groundwater, transitional, coastal) to attain 'Good Water Status' (qualitative and quantitative) by 2027.

There are a number of WFD objectives under which the quality of water is protected. The key objectives at EU level are the general protection of aquatic ecology, specific protection of unique and valuable habitats, the protection of drinking water resources, and the protection of bathing water. The objective is to achieve this through a system of river basin management planning and extensive monitoring. 'Good Status' means both 'Good Ecological Status' and 'Good Chemical Status'.

The WFD was initially transposed into Irish law in by S.I. No. 722/2003 – European Communities (Water Policy) Regulations 2003, as amended (hereafter referred to as the Water Policy Regulations). The Water Policy Regulations outline the water protection and water management measures required to maintain high status of waters where it exists, prevent any deterioration in existing water status and achieve at least Good Status for all waters.

Subsequently, S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended (hereafter referred to as the Surface Waters Regulations), and S.I. No. 9/2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010, as amended (hereafter referred to as the Groundwater Regulations) were promulgated to regulate WFD characterisation, monitoring and status assessment programmes in terms of assigning responsibilities for the monitoring of different water categories, determining the quality elements and undertaking the characterisation and classification assessments.

The Water Policy Regulations require the assessment of permanent impacts of a scheme / project on WFD water bodies (rivers, lakes, estuaries, coastal waters and groundwater). Typically, the permanent impacts include all operational impacts, but can also include impacts from construction depending on the length and / or nature of the works, etc. of the Proposed Scheme, as some potential construction impacts could be considered permanent in the absence of mitigation. An assessment of the compliance of the Proposed Scheme with WFD requirements is provided in Appendix A13.1 WFD Assessment in Volume 4 of this EIAR. A statement of the status of WFD water bodies and protected areas within the study area is provided in Section 13.3 and a summary of the conclusions of the WFD assessment is provided in Section 13.6.3.

In the absence of WFD assessment guidance specific to Ireland, the assessment has been carried out using the United Kingdom (UK) Environment Agency's Water Framework Directive assessment: estuarine and coastal waters (updated 2017) (Environment Agency 2016). No specific guidance exists for freshwater water bodies, however this guidance was used as the basis of the UK Planning Inspectorate (PINS) Advisory Note Eighteen: The Water Framework Directive (PINS 2017) in which it sets out the stages of an assessment. On this basis it is considered appropriate to use for the assessment of the Proposed Scheme.

13.2.2.2 River Basin Management Plans

River Basin Management Plans (RBMPs) provide the mechanism for implementing an integrated approach to the protection, improvement and sustainable management of the water environment, and are published every six years.

The second cycle, River Basin Management Plan for Ireland 2018 – 2021 (hereafter referred to as the RBMP 2018 - 2021) was published by the Department of Housing, Planning and Local Government (DHPLG) in April 2018 and covers Ireland as a whole (DHPLG 2018). For the second cycle, the Eastern, South-Eastern, South-Western, Western and Shannon River Basin Districts have been merged to form one national River Basin District (RBD). For 'At Risk' water bodies, the RBMP 2018 - 2021 identified the frequency of significant pressures impacting these receptors as follows: agriculture (53%), hydromorphology (24%), urban wastewater (20%), forestry (16%), domestic wastewater (11%), urban runoff (9%), peat (8%), extractive industry (7%) and mines and quarries (6%).

In September 2021, the Minister for Housing, Local Government and Heritage (DHLGH), published the draft River Basin Management Plan for Ireland 2022 - 2027 (hereafter referred to as the draft RBMP) for public consultation (DHLGH 2021). The consultation period closed on 31 March 2022. The draft RBMP sets out at the outset that it is published in the context of a rapidly changing policy landscape at European and International levels and against a backdrop of '*widespread, rapid and intensifying climate change*'. In addition, Ireland is now experiencing a sustained decline in water quality following many years of improvements, therefore stronger measures are now required to achieve sustainable water management in order to address and adapt to the impacts of climate change and achieve the desired outcomes for biodiversity.

Image 13.1 presents the ecological status of water bodies in Ireland over the past two cycles of the RBMP and illustrates the reduction in water quality, particularly in relation to the reduced percentage of water bodies achieving high status and increased percentage achieving bad status. The reductions in water quality are especially notable for rivers, and for other water bodies, the changes are more mixed with some reductions and some improvements. The draft RBMP cites a 4.4% net decline in the status of water bodies, and notes that this is mostly driven by a decline in the status of river water bodies.

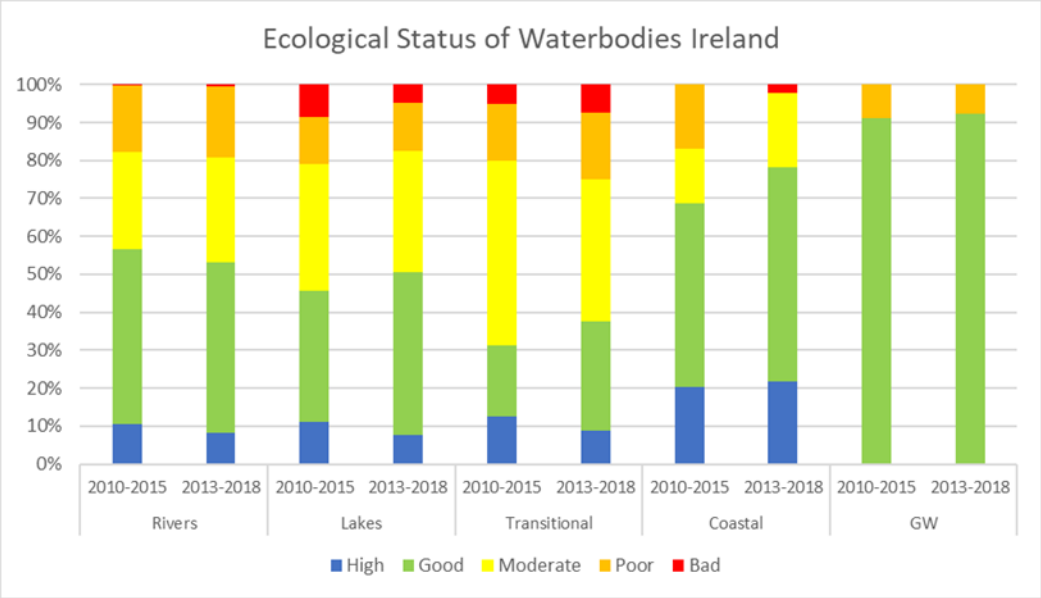

Image 13.1: Ecological Status of Water Bodies in Ireland

The characterisation and risk assessments carried out for the third cycle show that 33% of water bodies are 'At Risk' of not meeting their environmental objective of good or high status. Of these, 46% are impacted by a single significant pressure. Agriculture remains the most common pressure, followed by hydromorphology, forestry and urban wastewater. There has been an increase in water bodies impacted by agriculture since the second cycle RBMP.

The draft RBMP sets out a Programme of Measures (PoMs) necessary to deliver the objectives of the WFD in full and to contribute to other environmental priorities.

13.2.2.3 Guidelines

The guidance detailed in Table 13.1 has also been consulted during the preparation of this Chapter, where relevant.

Table 13.1: Guidelines

EIA Topic	Guidance
EIA / General	• Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022); and • Environmental Impact Assessment of Projects. Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission 2017).
Water	• Transport Infrastructure Ireland (TII) Road Drainage and the Water Environment (DN-DNG-03065) (TII 2015); • National Road Authority (NRA) Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (NRA 2005)*; • Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA 2009)*; and • The Department of the Environment, Heritage and Local Government (DEHLG) and the Office of Public Works (OPW) Planning System and Flood Risk Management Guidelines for Planning (DEHLG and OPW 2009).

*The NRA and Rail Procurement Agency merged to establish a new agency – Transport Infrastructure Ireland (TII). As a result, all previous NRA documents are now referred to as TII documents.

13.2.3 Data Collection and Collation

Information on the baseline environment including hydrology, hydromorphology and water quality of the receptors within the study area has been collected and collated by undertaking both a desk study and field surveys.

13.2.3.1 Data Sources Used to Undertake the Desk Study

Table 13.2 details the data sources consulted during the assessment.

Table 13.2: Data Sources Used to Undertake the Desk Study

Assessment Attribute	Title
General	• Ordnance Survey of Ireland (OSI) - current and historic mapping; and • Aerial photographs (i.e. Google Maps).
Surface Water Quality and Hydromorphology	• WFD Ireland Database; • EPA - water quality monitoring database and reports; • EPA Water Environment Maps (EPA 2020a); • EPA Environmental Data Maps; • National Parks and Wildlife Service (NPWS) - designated sites (NPWS 2020); and • Inland Fisheries Ireland (IFI) - fishery resources.
Hydrology	• Catchment Summaries; • RBMP 2018 – 2021 (DHPLG 2018); • The Eastern River Basin District (ERBD) River Basin Management Plan (ERBD 2009), which includes the River Liffey and its associated Water Management Unit Action Plans (various); and • EPA - flow and water level measurements.
Water / Flood Risk	• OPW National Flood Information Portal (OPW 2020)

13.2.3.2 Field Surveys

Field walkover assessments were carried out in March 2020 and March 2022. In March 2020, all watercourse crossings within the study area were visited to inform the determination of baseline conditions in order to identify the likely impacts of the Proposed Scheme. In March 2022, return visits were carried out at seven locations where the potential for impacts has been identified, to further inform the assessment (see Figure 13.2). Further details of the locations and the results of the survey are provided in Section 13.3.4.

Observations were made from bridges and from the top of riverbanks. The following observations were recorded at each survey location:

- Flow conditions (recording observations such as homogenous flow, low flow or high flow);
- Riverbed (recording observations such as the sediment type and whether there was any deposition);
- Water quality (recording any potential sources of pollution as well as visual indicators of poor quality (e.g. presence of sewage fungus, litter or foam lines));
- Bank stability (recording any instances of erosion and aggradation);
- Natural and manmade features of the river (including modifications, examples of structures could include culverts, weirs or bridges);
- Runoff pathway and risk (recording the pathway for any surface runoff to the watercourse and the likelihood of surface runoff reaching the river);
- Riparian vegetation (recording the surrounding vegetation); and
- Outfalls and discharges (recording any outfalls and discharges and whether these were active at the time of the survey).

No water quality sampling was carried out; information relating to the quality of the water bodies was drawn from the EPA's online mapping and information portals, as detailed in Section 13.2.3.1.

13.2.4 Appraisal Method for the Assessment of Impacts

13.2.4.1 General Approach

The method for the assessment of impacts has been adapted from the Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (hereafter referred to as the TII Assessment Guidelines) (NRA 2009), specifically Section 5.6. The assessment also took account of the guidance set out in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines) (EPA 2022). In addition, the relevant provisions of the EU's

Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (European Commission 2017) have been considered in preparing this Chapter of the EIAR

The surface water environment is intrinsically linked to flood risk, ecological receptors and groundwater, which are considered in Appendix A13.2 Site Specific Flood Risk Assessment in Volume 4 of this EIAR, Chapter 12 (Biodiversity) and Chapter 14 (Land, Soils, Geology & Hydrogeology), respectively. Commercial and recreational use of the water environment is not included in the scope of this Chapter, as commercial and recreational interests are considered and assessed in Chapter 10 (Population) and Chapter 19 (Material Assets).

The TII Assessment Guidelines outline how impact type, magnitude, and duration should be considered relative to the importance of the hydrological receptor and its sensitivity to change in order to determine significance of the impacts.

The overall impact on surface water receptors (i.e. rivers, canals, transitional water bodies, coastal water bodies and lakes) as a result of the Proposed Scheme will be determined based on two parameters:

1. The sensitivity of the water body attributes (hydrology, water quality and geomorphology) to change; and
2. The magnitude of the impacts on water body attributes.

13.2.4.2 Sensitivity of Receptors

The sensitivity of surface water attributes to changes, as a result of the Proposed Scheme, are determined by a set of criteria including their relative importance or ‘value’ (e.g. whether features are of national, regional or local value). Table 13.3 outlines the criteria for estimating the sensitivity of receptors and their attributes.

Table 13.3: Criteria Used to Evaluate the Sensitivity of Surface Water Receptors (NRA 2009 (Adapted to Include WFD Guidance (Environment Agency 2016))

Sensitivity	Criteria	Typical Example
Extremely High	Receptor (or receptor attribute) has a very high quality or value on an international scale	• Any WFD water body which is protected by EU legislation (e.g. Designated 'European Sites' (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)) or 'Salmonid Waters'; and • A water body that appears to be in natural equilibrium and exhibits a natural range of morphological features (such as pools and riffles). There is a diverse range of fluvial processes present, free from any modification or anthropogenic influence.
Very High	Receptor (or receptor attribute) has a high quality or value on an international scale or very high quality or value at a national scale	• Any WFD water body (specific EPA segment) which has a direct hydrological connection of <2km to European Sites or protected ecosystems of international status (SAC / SPA or Salmonid Waters); • WFD water body ecosystem protected by national legislation (Natural Heritage Area (NHA) status); • A water body that appears to be largely in natural equilibrium and exhibits a diverse range of morphological features (such as pools and riffles). There is a diverse range of fluvial processes present, with very limited modifications; and • Nutrient Sensitive Areas.
High	Receptor (or receptor attribute) has a moderate value at an international scale or high quality or value on a national scale	• A WFD water body with High or Good Status; • A Moderate WFD Status (2013 to 2018) water body with some hydrological connection (<2km) to European Sites or protected ecosystems of international status (SAC / SPA or Salmonid Waters) further downstream; • WFD water body which has a direct hydrological connection to sites / ecosystems protected by national legislation (NHA status); • A water body that appears to be in some natural equilibrium and exhibits some morphological features (such as pools and riffles). There is a diverse range of fluvial processes present, with very limited signs of modification or other anthropogenic influences; and • Direct hydrological connectivity to Nutrient Sensitive Areas.
Medium	Receptor (or receptor attribute) has some limited value at a national scale	• WFD water body with Moderate WFD Status (2013 to 2018); • A WFD water body with limited (>2km <5km) hydrological importance for sensitive or protected ecosystems (much further downstream); • A water body showing signs of modification or culverting, recovering to a natural equilibrium, and exhibiting a limited range of morphological features (such as pools and riffles). The watercourse is one with a limited range of fluvial processes and is affected by modification or other anthropogenic influences; • Evidence of historical channel change through artificial channel straightening and re-profiling; and • Some hydrological connection downstream Nutrient Sensitive Areas.
Low	Receptor (or receptor attribute) has a low quality or value on a local scale	• Water body with Bad to Poor WFD Status (2013 to 2018); and • A WFD water body with >5km hydrological connection to European Sites or national designated sites. or • A non-WFD water feature with minimal hydrological importance to sensitive or protected ecosystems; and / or economic and social uses; • A highly modified watercourse that has been changed by channel modification, culverting or other anthropogenic pressures. The watercourse exhibits no morphological diversity and has a uniform channel, showing no evidence of active fluvial processes and not likely to be affected by modification. Highly likely to be affected by anthropogenic factors. Heavily engineered or artificially modified and could dry up during summer months; and • Many existing pressures which are adversely affecting biodiversity.

13.2.4.3 Magnitude of Impact

The scale or magnitude of potential impacts (both beneficial and adverse) depends on both the degree and extent to which the Proposed Scheme may impact the surface water receptors during the Construction and Operational Phases.

Factors that have been considered to determine the magnitude of potential impacts include the following (EPA 2022):

- Nature of the impacts;
- Intensity and complexity of the impacts;
- Expected onset, duration, frequency and reversibility of the impacts;
- Cumulation of the impacts with other existing and / or approved projects impacts; and
- Possibility of effectively reducing the impacts.

Table 13.4: Criteria for Determining the Magnitude of Impact on Surface Water Receptors (NRA 2009)

Nature of Impact	Description	Scale and Nature of Impacts
Large Adverse	Results in loss of attribute and/or quality and integrity of the attribute	• Loss or extensive change to a fishery; • Loss of regionally important public water supply; • Loss or extensive change to a designated nature conservation site; • Reduction in water body WFD classification or quality elements; • Results in loss of receptor and / or quality and integrity of receptor; and • An impact, which has a high likelihood of occurrence and that has the potential to alter the character of a small part or element of the receptor in the medium-long term. This could be frequent or consistent in occurrence, and result impact which may alter the existing or emerging trends.
Medium Adverse	Results in effect on attribute and / or quality and integrity of the attribute	• Partial loss in productivity of a fishery; • Degradation of regionally important public water supply or loss of major commercial/industrial/agricultural supplies; • Contribution to reduction in water body WFD classification; • Results in impact on integrity of receptor or loss of part of receptor; and • An impact, which has reasonable likelihood of occurrence and that has the potential to alter the character of a small part or element of the receptor in the medium term. This could be intermittently or occasionally, and result impact which may be consistent with existing or emerging trends.
Small Adverse	Results in some measurable change in attributes, quality or vulnerability	• Measurable impact but with no change in overall WFD classification or the status of supporting quality elements; • Minor impacts on water supplies; • Results in minor impact on integrity of receptor or loss of small part of receptor; and • An impact, which has low likelihood of occurrence and that has some potential to alter the character of a small part or element of the receptor in the short term. This could be on a once-off occasion or rare occurrence, and result impact which may be consistent with existing or emerging trends.
Negligible	Results in effect on attribute, but of insufficient magnitude to affect the use or integrity	• No measurable impact on integrity of the attribute; and • Results in an impact on receptor but of insufficient magnitude to affect either use or integrity.
Small Beneficial	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring	• Has some potential to results in minor improvement WFD quality element(s).
Medium Beneficial	Results in moderate improvement of attribute quality	• Contribution to improvement in water body WFD classification.
Large Beneficial	Results in major improvement of attribute quality	• Improvement in water body WFD classification.

13.2.4.4 Significance of Impacts

The significance of an impact is determined by combining the sensitivity of the receptor with the predicted magnitude of impact, as shown in Table 13.5.

Table 13.5: Categories of Environmental Impacts (EPA 2022)

Importance of Attribute	Magnitude of Impact			
	Negligible	Small	Medium	Large
Extremely High	Imperceptible	Significant	Very Significant to Profound	Profound
Very High	Imperceptible	Significant / Moderate	Very Significant	Very Significant to Profound
High	Imperceptible	Moderate / Slight	Significant / Moderate	Very Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight / Moderate

13.2.4.5 Methodology for Operational Phase Traffic Impact Assessment

Traffic modelling (see Chapter 6 (Traffic & Transport)) has been carried out for two scenarios, the Do Minimum and Do Something (i.e. respectively without and with the Proposed Scheme) for 2028 and 2043. In addition to predicting how traffic on the main route of the Proposed Scheme could change, it also includes modelling for predicted traffic on side roads. This allows an understanding of whether the Proposed Scheme could result in increased traffic on those side roads via displacement.

This is important from a surface water perspective because, whilst the main route will continue to discharge to the same catchment as existing, there is the potential for displaced traffic on side roads which discharge to a different water body. This could lead to a change in pollutant loadings and consequent impacts on that water body.

To help determine this, the Road Drainage and the Water Environment (DN-DNG003065) guidance document (TII 2015) was consulted. It states that roads carrying less than 10,000 Annual Average Daily Traffic (AADT) are lightly trafficked and therefore pollutants occur in lower concentrations. Therefore, this was used as a threshold point to determine whether there was the potential for impacts on water bodies.

The threshold was built into a ‘decision tree’ approach (see Diagram 13.1) for the assessment of impacts from displaced traffic.

In order to determine which water body drainage from side roads carrying displaced traffic would discharge to, Catchment Plans were consulted (see Proposed Surface Water Drainage Works (BCIDD-ROT-DNG_RD-0304_XX_00-DR-CD-9001) in Volume 3 of this EIAR).

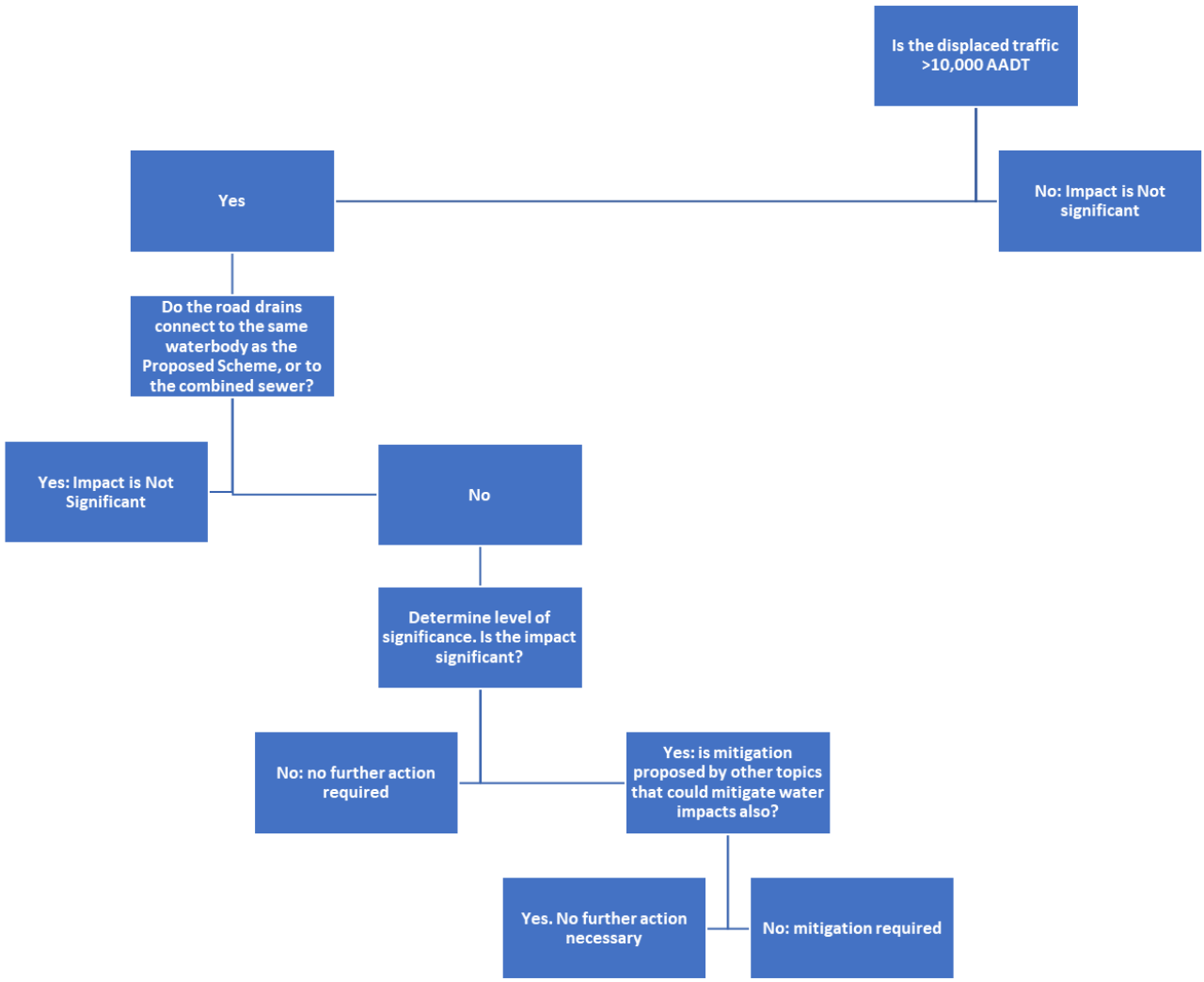

Diagram 13.1 Traffic Assessment Decision Tree

If, through the decision tree, it is determined that a new water body is potentially impacted upon, a qualitative assessment of the potential impact will be carried out. For the sections of road being considered in this assessment, the use of the Highways Agency Water Risk Assessment Tool (HAWRAT) is generally not considered appropriate, and it is considered that it would be a disproportionate level of assessment for the scale of the Proposed Scheme unless new levels of AADT are above 11,000 (see below). Taking into account the existing urban nature of the roads under consideration, the following criteria are applied to determine the magnitude of impact on the new receptor:

- If the road section length is <100m, the magnitude is negligible;
- If AADT is <10,500, the magnitude is small;
- If AADT is >10,500 and <11,000, the magnitude is medium; and
- For AADT >11,000, the HAWRAT spreadsheet will be used to check for potential impacts from heavy metals and sediment.

13.3 Baseline Environment

13.3.1 WFD Catchment Overview

The study area lies within Hydrometric Area (HA) 09 (Liffey and Dublin Bay) and is within the River Liffey catchment. The Liffey and Dublin Bay Catchment Summary (Liffey Catchment Assessment 2010 – 2015 (HA 09)) (EPA 2018) describes this catchment as including the area drained by the River Liffey and by all streams entering tidal water between Sea Mount and Sorrento Point in County Dublin, draining a total area of 1,616km^2 (squared kilometres). There are four main water bodies within the study area in this catchment; the River Santry, River Tolka, Liffey Estuary Upper and the Royal Canal (refer to Figure 13.1 in Volume 3 of this EIAR). The largest urban centre in the catchment is Dublin City. The other main urban centres, relevant to the study area are Broadstone, Glasnevin, Balseskin, Finglas and Ballymun. The Liffey and Dublin Bay catchment contains the largest population (approximately 1,255,000) of any catchment in Ireland and is characterised by a sparsely populated, upland south-eastern area underlain by granites and a densely populated flat, low lying limestone area over the remainder of the catchment basin. The catchment area is heavily urbanised and industrialised.

13.3.2 EPA Surface Water Monitoring

The EPA assesses the water quality of rivers and streams across Ireland using a biological assessment method (EPA 2018). The EPA assigns biological river quality (biotic index) ratings Q1 to Q5 to watercourse sections (refer to Table 13.6). Q5 denotes a watercourse with high water quality and high community diversity, whereas Q1 denotes very low community diversity and bad water quality. This data will be used to inform baseline receptor importance.

The WFD also considers heavily modified water bodies (HMWB) and artificial surface water bodies (AWB). The WFD requires HMWB and AWB to achieve Good Ecological Potential rather than Good Status.

Table 13.6: EPA Scheme of Biotic Indices or Quality (Q) Values (EPA 2018)

Biotic Index 'Q' Value	WFD Status	Pollution Status	Condition	Quality Class
Q5, Q4 - Q5	High	Unpolluted	Satisfactory	Class A
Q4	Good	Unpolluted	Satisfactory	Class A
Q3 - Q4	Moderate	Slightly Polluted	Unsatisfactory	Class B
Q3, Q2 - Q3	Poor	Moderately Polluted	Unsatisfactory	Class C
Q2, Q1 - Q2, Q1	Bad	Seriously Polluted	Unsatisfactory	Class D

13.3.3 Surface Water WFD Status

The EPA river dataset is designed as a geometric river network for monitoring, management and reporting purposes. The EPA has split up rivers and streams into smaller sections to allow areas to be easily distinguished. These segments are assigned segment codes (estuaries and canals are not assigned segment codes). The EPA's segmented coding and naming system has been applied throughout this Chapter.

Water bodies within the study area included in this assessment, are (also refer to Figure 13.1 in Volume 3 of this EIAR):

- Santry_010;
- Tolka_050;
- Tolka_060;
- Royal Canal Main Line (Liffey and Dublin Bay); and
- Liffey Estuary Upper.

The Poddle_010 is within 500m of the Proposed Scheme. However, it has been scoped out of the assessment as it is located on the south bank of the Liffey Estuary Upper with no hydraulic connection to the Proposed Scheme, which will be north of the Liffey Estuary Upper. Therefore, no impacts on this water body are anticipated.

The WFD status of the water bodies within the study area of the Proposed Scheme are provided in Table 13.7.

Table 13.7: Surface Water WFD Status

WFD Sub-Catchment	WFD Water Body Name	Heavily Modified?	Type	Status (2013 to 2018)	Key Pressures: Elements Causing or with Potential to Cause Less Than Good Status	Risk Categorisation
Mayne_SC_010	Santry_010	No	River	Poor	Urban runoff, urban wastewater, diffuse sources runoff and combined sewer overflows (CSOs)	At Risk
Tolka_SC_020	Tolka_050	No	River	Poor	Urban runoff, diffuse sources runoff, urban wastewater and CSOs	At Risk
Tolka_SC_020	Tolka_060	No	River	Moderate	Urban runoff, diffuse sources runoff, urban wastewater and CSOs	At Risk
N/A	Royal Canal Main Line (Liffey and Dublin Bay)	Yes - AWB	Canal	Good Ecological Potential*	n/a	N/A
N/A	Liffey Estuary Upper	No	Transitional	Good	Urban wastewater and CSOs	At Risk

13.3.4 Field Survey

The Proposed Scheme was surveyed in March 2020 and March 2022. The water bodies surveyed were the Liffey Estuary Upper, Tolka_050, Tolka_060, Royal Canal Main Line and Blessington Basin. Weather conditions were recorded as dry for all sites of the survey.

The results of the March 2022 field surveys are detailed in Table 13.8.

Table 13.8: Survey Information for Sites Along the Proposed Scheme

Location	Location BF1	Location BF2	Location BF3	Location BF4	Location BF5	Location BF6	Location BF7
Survey Attribute	**Tolka_050 at Brookville**	**Tolka_050 at Finglas Road**	**Tolka Crossing, Glasnevin Hill**	**Construction Compound B2, St. Mobhi Drive**	**Tolka Crossing, St. Mobhi Road**	**Royal Canal**	**Pond at Royal Canal**
Date	03/03/2022 11:37	03/03/2022 13:04	03/03/2022 13:57	03/03/2022 14:15	03/03/2022 14:20	03/03/2022 14:29	03/03/2022 15:23
Climate Observations	Sunny, light wind	Sunny, clear	Dry, sunny	Cloudy, dry	Dry, slightly cloudy	Heavy rain, overcast	Cloudy and dry
Water Body Crossed	No	Yes	Yes	Yes	Yes	No	No
Construction Compound	No	No	No	Yes	No	No	No
Closest Water Body	Tolka_050	Tolka_050	Tolka_060	Tolka_060	Tolka_060	Tolka_060	Blessington street basin
Distance to Water Body	Approx. 10m	Adjacent to water body	Bridge is constructed over water body	10m	Bridge constructed over water body	10m from survey point	5m
River Flow	-	Fast	Moderate	-	Moderate	Moderate	Stagnant water
Water Quality	-	Very clear no signs of contamination. However, moss is visible along both sides of the banks	Slightly discoloured, medium quality.	-	Very clear water, high water quality.	Discoloured.	Slightly discoloured, with vegetation and rubbish located along the edges of the basin
Runoff Pathway	-	Likely runoff pathway, impermeable walkway	Likely run-off pathway through surface water drains	-	Likely run-off pathway over impermeable roads and surface water drains	Potential runoff from bridge.	Impermeable path along the perimeter of the basin
Runoff Risk	-	Medium	High	-	High	Medium	Low
Riverbed Observations	-	Small, rounded cobbles	Few cobbles, fine sediment at the base of riverbed	-	Rounded cobbles with large boulders.	Water too deep to see riverbed.	Not visible, water too deep
Riverbank Observations	-	Man-made riverbank composed of boulders.	Vegetation present along the banks	-	Channelised river, with concrete banks	Concrete banks	Barriers along edges of basin. Vegetation along banks.
Features	-	Raised banks	Weir and discharge point visible	-	Active discharge point	Channelised concrete walls	Two water features
Barriers	-	Man-made barriers	Concrete banks acting as barrier	-	Metal barriers along both sides of river banks	Concrete wall	Metal barriers along edges of basin

Location	Location BF1	Location BF2	Location BF3	Location BF4	Location BF5	Location BF6	Location BF7
Riparian Detail	Lots of vegetation around the banks of the river	Thick moss on the river banks. Tree fallen in river 5m upstream of survey point	Growth of vegetation along river banks	-	Man-made banks, with vegetation growth on the banks	-	Vegetated growth along banks. Flat surface
Comments	No visual access to the river, can hear from fence the river flowing. Housing and main road located on both sides of the river	Very fast flow. Discharges are present but inactive	-	The survey point is on a sloped bank which leads down to a river. Two surface water drains identified on road beside construction compound location. Vegetation present in the area, some trees may need clearing	-	The general topography slopes towards the river. There is a concrete wall which may prevent run-off. The concrete wall is located in a hollow and is the same height of the ground	Silt curtain present centrally in basin

13.3.5 Designated Sites

The designated sites that are considered in Section 13.3.9 as part of the determination of sensitivity for each water body are located within the Liffey and Dublin Bay catchment. The sites described comprise Special Areas of Conservation (SACs), Special Protection Areas (SPA), proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Nutrient Sensitive Areas, salmonid rivers, shellfish areas and marine bathing waters.

A review of the Natura 2000 network was conducted to determine those European sites which are within the study area and / or hydrologically connected to the water bodies listed in Section 13.3.3. A full assessment of potential impacts on designated European sites, including hydrological links and water dependent species or habitats is contained within Chapter 12 (Biodiversity) in Volume 2 of the EIAR and Figure 12.2 in Volume 3 of the EIAR, respectively. The following European sites were identified to be relevant to this assessment:

- North Dublin Bay SAC (site code: 000206) (approximately 6km from the Proposed Scheme);
- South Dublin Bay SAC (site code: 000210) (approximately 4km from the Proposed Scheme);
- North Bull Island SPA (site code: 004006) (approximately 6km from the Proposed Scheme); and
- South Dublin Bay and River Tolka Estuary SPA (site code: 004024) (approximately 3km from the Proposed Scheme).

In addition, the following NHAs proposed for designation under Irish national legislation (pNHAs) located within the study area / hydrologically connected are:

- Santry Demesne pNHA (site code: 000178) (0.5km from the Proposed Scheme);
- North Dublin Bay pNHA (site code: 000206) (approximately 3km from the Proposed Scheme);
- South Dublin Bay pNHA (site code: 000210) (approximately 4km from the Proposed Scheme); and
- Royal Canal pNHA (site code: 002103) (in the study area).

There are three Nutrient Sensitive Areas within the study area. They are the River Liffey, Liffey Estuary and Tolka Estuary designated as per Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment (hereafter referred to as the UWWT Directive) (refer to Figure 13.2 in Volume 3 of this EIAR).

There is one designated shellfish area in Malahide, which is located to the north-east of the Proposed Scheme. The shellfish area is compliant with the relevant standards and there are no water quality issues of concern (as per the Sea Fisheries Protection Authority (SFPA) and Marine Institute Monitoring Programme).

There are four designated marine bathing waters downstream and potentially hydrologically linked to the Proposed Scheme. The EPA published its Bathing Water Quality - A Report for the Year 2020 in May 2020 (EPA 2020b) and the website ‘www.beaches.ie’ keeps this information regularly updated. The beaches and the most up to date assessment (checked February 2022) of their quality is provided below:

- Dollymount Strand – Poor Quality (approximately 9km from the closest point of the Proposed Scheme);
- North Bull Wall – Poor Quality (approximately 7km from the closest point of the Proposed Scheme);
- Half Moon Beach – Excellent Quality (approximately 10km from the closest point of the Proposed Scheme) ; and
- Shelley Banks – Excellent Quality (approximately 11.5km from the closest point of the Proposed Scheme) .

No designated salmonid rivers were identified within the study area during the desk study.

13.3.6 Drinking Water Supply (Surface Water)

There are no Geological Survey Ireland (GSI) Public Supply Source Protection Areas or National Federation of Group Water Schemes (NFGWS) Source Protection Areas within the study area. None of the river segments within the study area are designated as Drinking Water Rivers.

13.3.7 Known Pressures

The EPA online interactive map and database for water (EPA 2021) was reviewed to identify the pressures on water bodies and the presence of point source discharges from EPA licenced activities within the study area. Pressures common to all water bodies in the study area are discharges from urban waste water systems (via Storm Water Overflows (SWOs) and urban surface runoff. Further details on these for each water body are provided in Section 13.3.9.

The following Integrated Pollution Control (IPC) licensed facilities were identified within the study area:

- IPC Licenced Facility Botanic Road, Glasnevin, Dublin 9, Reg No: P0120-03;
- IPC Licenced Facility Botanic Road, Glasnevin, Dublin 9, Reg No: P0212-01;
- IPC Licenced Facility Botanic Road, Glasnevin, Dublin 9, Reg No: P0537-01; and
- IPC Licenced Facility Jamestown Road, Finglas, Dublin 11, Reg No: P0119-02.

13.3.8 Existing Drainage

A desk study of the existing road drainage system within the study area, using online mapping tools (Google Street View and OpenStreetMap) and historical sewer network information, was conducted to determine the existing road drainage and the level of treatment and attenuation provided currently.

There is very limited data available for SUDs within the study area. The details of six existing SUDS along the route of the Proposed Scheme were available from the SUDS Register and Map for Dublin City Council (DCC) and indicate the presence of filter drains at 39A Violet Hill Drive and attenuation tanks at 31 to 36 Ormond Quay Upper, 113 Phibsborough Road, 274 North Circular Road, 106a and 107 King Street North and Mellowes Road (DCC 2010).

For the purposes of describing the Proposed Scheme, it has been split into the following seven sections (Section 1 to Section 4 comprise the Ballymun Section of the Proposed Scheme and Section 5 to Section 7 comprise the Finglas Section of the Proposed Scheme):

- Section 1 – Ballymun Road from St. Margaret's Road to Griffith Avenue;
- Section 2 – St. Mobhi Road and Botanic Road from Griffith Avenue to Hart's Corner;
- Section 3 – Prospect Road, Phibsborough Road from Hart's Corner to Western Way;
- Section 4 - Constitution Hill and Church Street to Arran Quay;
- Section 5 – Finglas Road from St. Margaret's Road to Wellmount Road;
- Section 6 – Finglas Road from Wellmount Road to Ballyboggan Road; and
- Section 7 – Finglas Road from Ballyboggan Road to Hart's Corner.

Further details are provided in Chapter 4 (Proposed Scheme Description).

The existing drainage is largely a separate system with all but Section 3 of the Proposed Scheme (closest to the City Centre) discharging to surface water sewers and ultimately to local water bodies (see Table 13.9) (please see Proposed Surface Water Drainage Works drawings (BCIDD-ROT-DNG_RD-0304_XX_00-DR-CD-9001)).

Table 13.9: Existing Drainage

Catchment	Existing Network Type	Proposed Scheme Section ID	Water Body
D4_01	Surface Water (Storm)	Section 5	Tolka-050
D4_02	Surface Water (Storm)	Section 5	Tolka-050
D4_03	Surface Water (Storm)	Section 5	Tolka-050
D4_04	Surface Water (Storm)	Section 5	Tolka-050
D4_05	Surface Water (Storm)	Section 6	Tolka-050
D4_06	Surface Water (Storm)	Section 6	Tolka-050
D4_07	Surface Water (Storm)	Section 6	Tolka_050
D4_08	Surface Water (Storm)	Section 6	Tolka-050
D4_09	Surface Water (Storm)	Section 7	Tolka-050
D4_10	Surface Water (Storm)	Section 7	Tolka-050
D4_11	Surface Water (Storm)	Section 7	Tolka-050
D4_12	Surface Water (Storm)	Section 2	Tolka_060
D3_01	Surface Water (Storm)	Section 1	Tolka_060 (very north may go to Santry_010)
D3_02	Surface Water (Storm)	Section 1	Tolka_060
D3_03	Surface Water (Storm)	Section 2	Tolka_060
D3_04	Surface Water (Storm)	Section 2	Tolka_060
D3_05	Surface Water (Storm)/ Combined	Section 2	Tolka_060
D3_06	Surface Water (Storm)/ Combined	Section 2	Tolka_060
D3_07	Combined	Section 3	Combined Sewer / Liffey Estuary Upper
D3_08	Combined	Section 3	Combined Sewer / Liffey Estuary Upper
D3_09	Combined	Section 4	Combined Sewer / Liffey Estuary Upper
D3_10	Combined	Section 4	Combined Sewer / Liffey Estuary Upper

13.3.9 Surface Water Features

The main water bodies within the study area are discussed within this Section. All of the water bodies listed in Table 13.7 ultimately flow into Dublin Bay (refer to Figure 13.1 in Volume 3 of this EIAR). The Santry_010 is contained within the RBMP 2018 - 2021 'Priority Areas for Action' (DHPLG 2018).

In addition, the desk study identified one surface water feature within the study area which is not classified as a WFD water body. However, this feature is not hydrologically linked to the Proposed Scheme. The overarching hydromorphology of the study area was assessed during field surveys. The study area comprises a wide variety of features, including culverted rivers and modified water bodies with concrete channels and dense vegetation. A summary of the baseline condition of each of these WFD water bodies and their associated flood risk within the study area is detailed in the following sections.

Table 13.10 details the distances and number of crossings of each water body within the study area.

Table 13.10: Distance of the Water Bodies Within the Study Area to the Proposed Scheme and the Individual Sections of the Proposed Scheme

Water Body	Nearest Proposed Scheme Section	Approx. Distance from Proposed Scheme (m)	Number of Crossings
Santry_010	Section 1	200	0
Tolka_050	Section 5 to Section 6	0	1
Tolka_060	Section 1 and Section 2	0	2
Royal Canal	Section 3	0	1
Liffey Estuary Upper	Section 3 and Section 4	50	0

13.3.9.1 Santry_010

The Santry_010 has its origins at Harristown and Dubber, south of St. Margaret's. It flows from immediately south of the western edge of Dublin Airport and is parallel to the main runway for a short distance. From here, it flows east through Silloge Golf Club, under the M50 Motorway at Ballymun and through Santry Demesne. It then passes under the M1 / M50 Motorway at Santry, through Kilmore, Edenmore, Raheny and under the Dublin / Belfast railway line before discharging to Dublin Bay at the North Bull Island SPA. It has a total length of approximately 6km and has a catchment area of approximately 27.5km^2. Land use within the catchment is predominantly urban with land surrounding the upstream portion of the River Santry used for agricultural purposes.

The Santry_010 will not be crossed by the Proposed Scheme, as it is approximately 250m north from the northernmost extent of the Ballymun Section. It is unclear whether there is a hydrological connection to this water body from the northernmost catchment and reviews of drainage records have not been able to confirm this. As a worst-case, it is assumed it is connected via surface water sewers for a short section and is therefore included in this assessment. Santry_010 has a Poor WFD status and is At Risk of not achieving Good Status by 2027 due to a number of significant pressures such as diffuse urban sources of pollution and SWOs.

The most recent Biological Q Value assessment of the River Santry was in 2019, at one monitoring station (Clonshaugh Road Bridge) located downstream of the study area, approximately 3km from the Proposed Scheme. The Q Value along the River Santry was Q2 to Q3, which equates to poor water quality.

The EPA River Quality Surveys: Biological (EPA 2020c) reported that:

> *'Ecological conditions at Clonshaugh Road Bridge remain Poor, declining very slightly on 2016 results.'*

In terms of assigning sensitivity, the Santry_010 is of Poor Status. It does flow into North Bull Island SPA, but this is approximately 8km downstream from the closest point to the Proposed Scheme. The indirect and relatively distant hydrological connection (>2km and <5km) to this and Dublin Bay SAC, means it is assigned a Low sensitivity.

13.3.9.2 Tolka_050 and Tolka_060

The River Tolka is the second largest river in Dublin. The source of the River Tolka is located south-west of Dunshaughlin from where it flows through Dunboyne and Blanchardstown before entering the north-west of Dublin City, becoming tidal downstream of Drumcondra and flowing into Dublin Bay along the northern edge of Dublin Port. The River Tolka has a total length of 22km and a catchment area of approximately 140km^2. The land surrounding the River Tolka upstream is predominantly agricultural, with the mid-downstream portion of the River Tolka being urban / brownfield.

There are significant industrial pressures throughout the Tolka_SC_020 sub-catchment, particularly urban diffuse and misconnections. There have been misconnection studies initiated and extensive studies throughout the Tolka Valley Park area. Illegal dumping is also an issue in the Dunsink Lane area. There have also been improvement attempts made with a large-scale SUDS programme in the Ballymun area.

The EPA segments of the River Tolka which are contained within the study area are Tolka_050 and Tolka_060. The Tolka_050 segment is 9.25km long and consists of the main channel of the River Tolka from Blanchardstown to Glasnevin, as well as three minor unnamed tributaries in Finglas. The Tolka_060 segment is 3km long and flows from Glasnevin to Drumcondra, then directly into the Tolka Estuary after approximately 1.5km from where it will cross the Proposed Scheme. For both segments, the catchment contributions are considered to be primarily urban.

The Tolka_050 will run parallel to the Proposed Scheme for approximately 1.8km until the main branch of the Tolka_050 will be crossed by the Proposed Scheme just north of Ballyboggan Road, south of Balseskin. The Tolka_050 has Poor WFD status and is At Risk of not achieving Good Status by 2027. Its main pressures include urban runoff and urban wastewater from CSOs.

Tolka_060 will be crossed by the Proposed Scheme at Dean Swift Bridge on R108 St. Mobhi Road, north-west of Drumcondra. The Tolka_060 flows into the Tolka Estuary which is a Nutrient Sensitive Area. It then flows into the North Bull Island transitional water body at Raheny. North Bull Island is a SPA and Santry_020 is also hydrologically connected to the Tolka Estuary which is a Nutrient Sensitive Area. The Ecological Status of the Tolka_060 segment is Unassigned but is however At Risk of not achieving Good Status by 2027. Its main pressures are due to urban runoff and urban wastewater from SWOs.

The most recent Biological Q Value assessment of the River Tolka was in 2019. Five stations were monitored along the length of the water body, one of which (RS09T011100) is located within the study area, approximately 0.3km downstream of the Ballymun Section of the Proposed Scheme. This station gave a Q Value of Q3, which equates to poor water quality.

In terms of assigning sensitivity to the Tolka_050, its Poor WFD status would suggest a low sensitivity. Tolka_050 is subject to a number of pressures from industrial discharges in addition to urban diffuse pollution. It is At Risk of not achieving Good Status. However, other factors are also considered in assigning sensitivity. At its point of crossing the Tolka_050 the Proposed Scheme will be approximately 3km upstream of the Tolka Estuary, and 4.6km upstream of the South Dublin Bay and Tolka Estuary SPA. Therefore, despite being of Poor Status, the fact that it is >2km and <5km from protected areas means it is of Medium sensitivity.

In terms of assigning sensitivity to the Tolka_060, it has moderate WFD status. It has been characterised as At Risk of achieving Good Status, with multiple point source discharges being identified as pressures from waste and industrial process industries. Notwithstanding this, the supporting chemistry conditions 'Pass' which means they are generally meeting the standards set out in the Surface Water Regulations. The Tolka_060 is not a designated site and is not directly hydrologically connected to one. The nearest designated site is the South Dublin Bay and River Tolka Estuary SPA which is 3.2km from the Proposed Scheme. At its point of crossing the Tolka_060, the Proposed Scheme will be approximately 1.3km from the Tolka Estuary. It is a Nutrient Sensitive Area and a WFD Protected Area as a surface water in a SAC and SPA habitat. This direct and relatively close (<2km) hydrological connection to the Tolka Estuary Nutrient Sensitive Area and WFD Protected Area mean that the Tolka_060 is assigned High sensitivity.

13.3.9.3 The Royal Canal (Royal Canal Main Line (Liffey and Dublin Bay))

The Royal Canal Main Line (Liffey and Dublin Bay) is an AWB, primarily used for recreation in modern times, rather than the original transportation function of the 18th and 19th centuries. Constructed in the 18th century, shortly after the Grand Canal, the Royal Canal is 145km long and runs from the River Liffey in Dublin to Cloondara on the River Shannon, with an 8km branch line into the town of Longford. The Royal Canal will be crossed by the Proposed Scheme at Cross Guns Bridge where the R108 changes from Prospect Road to Phibsborough Road, north of Phibsborough. Canals are AWBs and consequently are classified based on their ecological potential rather than ecological status. Assessment of the canals using macroinvertebrates indicates generally good biological conditions. Similarly, positive results were identified in terms of macrophyte assessment. The Royal Canal achieved Good Ecological Potential in the period from 2013 to 2015 (EPA 2017).

The Royal Canal is of Good Status. At the point where the Proposed Scheme will cross the Royal Canal, it will be more than 3km from the Royal Canal's confluence with Liffey Estuary Lower. It is assigned High sensitivity on the basis of its WFD status.

13.3.9.1 Liffey Estuary Upper

The Liffey Estuary Upper is a transitional water body and is within the Liffey Nutrient Sensitive Area. It is fed by the Camac_040, Liffey_190 and Poddle_010 and flows into Liffey Estuary Lower before reaching Dublin Bay. The Proposed Scheme will be within 15m of the Liffey Estuary Upper at the Father Matthew Bridge. Liffey Estuary Upper has a Good Status and is At Risk of achieving the WFD objective of Good Status by 2027. The main risk is urban wastewater from CSOs at Ringsend. The key impacts are considered to be nutrient pollution and alterations to habitats due to morphological changes.

In terms of assigning Liffey Estuary Upper a sensitivity, it is of Good Status. It is not a European or Internationally designated site but has an indirect connection to South Dublin Bay SAC via Liffey Estuary Lower, although this is located more than 6km downstream. Liffey Estuary Upper is a Nutrient Sensitive Area and also, Liffey Estuary Lower is identified as a WFD protected area in its entirety. Liffey Estuary Lower begins approximately 1km downstream of the Proposed Scheme. Sensitivity has therefore been determined to be Very High.

13.3.9.2 Non-WFD Classified Surface Water Features

The desk study and field survey identified an artificial lake at Blessington Street Park (The Basin), which will be 120m from the Proposed Scheme at R108 Phibsborough Road. As this is an artificial lake and will not be hydrologically connected to the Proposed Scheme, no impacts on the water feature are anticipated and no further assessment is required. The desk assessment did not identify any other non-WFD classified surface water features within the study area.

13.3.9.3 Summary of Baseline Receptor Sensitivity

A summary of water body sensitivity is provided in Table 13.11.

Table 13.11: Summary of Baseline Receptor Sensitivity

Water Body	Attributes	Indicator / Feature	Sensitivity
Santry_010	Partially culverted, heavily modified river	Distant Hydrologically connected to North Dublin Bay SAC and North Bull Island SPA Poor WFD Status	Low
Tolka_050	River	Poor WFD status >2km and <5km from WFD protected area and Nutrient Sensitive Area	Medium
Tolka_060	River	<2km from a WFD Protected Area Moderate WFD Status	High
Royal Canal Main Line (Liffey and Dublin Bay)	AWB	Good ecological potential pNHA	High
Liffey Estuary Upper	Transitional water body	Designated Nutrient Sensitive Area Good WFD Status	Very high

13.3.10 Flood Risk

Flood Risk is not considered as part of the impact assessment in this Chapter. A separate Site Specific Flood Risk Assessment has been completed for the Proposed Scheme. However, given the connectivity between this assessment and the FRA, a summary of the baseline flood risk and the assessment of future risk from the FRA is provided here for ease of reference.

The FRA has been prepared in accordance with the Department of the Environmental, Heritage and Local Government (DEHLG) and the Office of Public Works (OPW) Planning System and Flood Risk Management Guidelines for Planning Authorities (hereafter referred to as the FRM Guidelines) (DEHLG and OPW 2009). A copy of the FRA report is included in Appendix A13.2 Site Specific Flood Risk Assessment in Volume 4 of this EIAR.

The FRM Guidelines define three Flood Zones:

- Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% Annual Exceedance Probability (AEP) or 1 in 100 year for river flooding or 0.5% AEP or 1 in 200 for coastal flooding);
- Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% AEP or 1 in 1,000 year and 1% AEP or 1 in 100 year for river flooding and between 0.1% AEP or 1 in 1,000 year and 0.5% AEP or 1 in 200 year for coastal flooding); and
- Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% AEP or 1 in 1,000 for both river and coastal flooding).

Flood Zone C covers all areas which are not in Flood Zone A and Zone B.

13.3.10.1 Ballymun Section

13.3.10.1.1 Flooding from Fluvial and Sea Level Rises / Coastal Flooding

The Proposed Scheme will be in close proximity to the Liffey Estuary Upper and the Tolka_060. The Liffey Estuary Upper is influenced downstream by the Royal Canal. OPW flood maps (OPW 2021) show the Ballymun Section is outside the boundaries of the flood zones, and therefore, no likelihood of flooding from this source can be expected.

13.3.10.1.2 Surface Water Flooding

Surface water flooding occurs when the local drainage system cannot convey stormwater flows from extreme rainfall events. The rainwater does not drain away through the normal drainage pathways or infiltrate into the ground but instead ponds on or flows over the ground. Surface water flooding is unpredictable as it depends on a number of factors including ground levels, rainfall and the local drainage network. There is no indication of previous issues with the existing drainage network.

13.3.10.1.3 Groundwater Flooding

Groundwater flooding is a result of upwelling in occurrences where the water table or confined aquifers rise above the ground surface. This tends to occur after long periods of sustained rainfall and / or very high tides. High volumes of rainfall and subsequent infiltration to ground will result in a rising of the water table. Groundwater flooding tends to occur in low-lying areas, where, with additional groundwater flowing towards these areas, the water table can rise to the surface causing groundwater flooding. The sources consulted such as the OPW mapping and GSI records (Department of Communications, Climate Action and the Environment (DCCAE) 2021) show no indication that the Proposed Scheme will be subject to groundwater derived flooding in this section.

13.3.10.1.4 Pluvial Flooding

Pluvial flooding results from heavy rainfall that exceeds ground infiltration capacity, or more commonly in Ireland, where the ground is already saturated from previous rainfall events. This causes ponding and flooding at localised depressions. Pluvial flooding is commonly a result of changes to the natural flow regime such as the implementation of hard surfacing and improper drainage design. The OPW flood maps show distributed flooding from this source.

13.3.10.2 Finglas Section

13.3.10.2.1 Flooding from Fluvial and Sea Level Rises / Coastal Flooding

The Proposed Scheme will be in close proximity to the Tolka_050 and Tolka_060. OPW flood maps show the Proposed Scheme is outside the boundaries of the flood zones, and therefore, no likelihood of flooding from this source can be expected.

13.3.10.2.2 Surface Water Flooding

Surface water flooding occurs when the local drainage system cannot convey stormwater flows from extreme rainfall events. The rainwater does not drain away through the normal drainage pathways or infiltrate into the ground but instead ponds on or flows over the ground. Surface water flooding is unpredictable as it depends on a number of factors including ground levels, rainfall and the local drainage network. There is no indication of previous issues with the existing drainage network.

13.3.10.2.3 Groundwater Flooding

Groundwater flooding is a result of upwelling in occurrences where the water table or confined aquifers rises above the ground surface. This tends to occur after long periods of sustained rainfall and / or very high tides. High volumes of rainfall and subsequent infiltration to ground will result in a rising of the water table. Groundwater flooding tends to occur in low-lying areas, where, with additional groundwater flowing towards these areas, the water table can rise to the surface causing groundwater flooding. The sources consulted such as the OPW mapping and GSI records show no indication that the Proposed Scheme will be subject to groundwater derived flooding.

13.3.10.2.4 Pluvial Flooding

Pluvial flooding results from heavy rainfall that exceeds ground infiltration capacity, or more commonly in Ireland, where the ground is already saturated from previous rainfall events. This causes ponding and flooding at localised depressions. Pluvial flooding is commonly a result of changes to the natural flow regime such as the implementation of hard surfacing and improper drainage design. OPW flood maps show distributed flooding from this source.

13.4 Potential Impacts

This Section presents potential impacts that may occur due to the Proposed Scheme, taking into account the proposed drainage design, as set out in Section 13.4.1, but in the absence of any further mitigation. This informs the need for mitigation or monitoring to be proposed (refer to Section 13.5). Predicted 'residual' impacts, taking into account any proposed mitigation, are then presented in Section 13.6.

13.4.1 Characteristics of the Proposed Scheme

Full details of the Proposed Scheme are provided in Chapter 4 (Proposed Scheme Description), but elements of relevance to the surface water impact assessment are provided below.

13.4.1.1 Impermeable Areas and Drainage Design

The drainage design is based on a number of general principles, which are set out in the document BusConnects Core Bus Corridor Drainage Design Basis (National Transport Authority 2020). This includes principles relating to SUDs. A SUDS drainage design has been developed as a first preference and in accordance with the SUDS hierarchy, as described in the SuDS Manual C753 (hereafter referred to as the SUDS Manual) (CIRIA 2015). The SUDS Manual recommends that when considering SUDS solutions, the preferred approach is a hierarchy, whereby runoff using source control solutions (e.g. pervious surfacing) are considered first. Where source control is not possible or cannot fully address an increase in runoff from a development, residual flows are then managed using site controls (e.g. bioretention / infiltration basins). If this is not practical, or residual flows remain above existing runoff rates, regional controls (e.g. oversized pipes) are used. SUDS provide the dual benefits of controlling flows and treating water quality. In areas where the catchment is proposed to remain unchanged, as no additional impermeable areas are proposed, the design consists of relocating existing gullies (where possible) to new locations.

The drainage design principles have informed the drainage design (see Chapter 4 (Proposed Scheme Description), and Appendix A4.1 Preliminary Design Guidance Booklet for BusConnects Core Bus Corridors in Volume 4 of this EIAR) which will ensure no net increase in the surface water flow discharged to these receptors.

The proposed drainage design includes the relocation and addition of drainage gullies, as well as the installation of a new surface water sewer at the southern end of R135 Finglas Road. Attenuation will be in the form of filter drains, bioretention systems and permeable pavement areas. These SUDS measures will allow a level of treatment and / or attenuation to be provided before discharging to the network, reducing the impact on water quality as well as preventing an increase in runoff rates.

Where an increase in impermeable area is proposed, attenuation is generally provided in the form of SUDS such as bioretention areas. As explained in the BusConnects Core Bus Corridor Drainage Design Basis, a hierarchical approach to select SUDS solutions has been applied. If following the site selection process, the provision of SUDS is not possible, attenuation is provided.

The following SUDs and attenuation types are proposed for the Proposed Scheme:

- Bioretention;
- Oversized pipes; and
- Permeable paving.

The details of the drainage measures proposed for each catchment and subsequently each water body are provided in Table 13.12. No new outfalls are proposed.

Table 13.12: Proposed SUDs and Impermeable Area Changes

Existing Catchment Reference	Water Body	Approx. Surface Area (m^2)				SUDs Measure(s) Proposed
		Existing (m^2)	Proposed New (m^2)	Change (m^2)	Change (%)	
D4_01	Tolka_050	3,356	3,898	542	16.2	Bioretention
D4_02	Tolka_050	995	1,048	53	5.3	None
D4_03	Tolka_050	3,664	3,848	184	5.0	Bioretention
D4_04	Tolka_050	4,263	4,263	0	0.0	None
D4_05	Tolka_050	34,715	36,190	1475	4.2	Bioretention
D4_06	Tolka_050	13,313	13,227	-86	-0.6	Bioretention
D4_07	Tolka_050	3,158	3,174	16	0.5	Bioretention
D4_08	Tolka_050	2,662	2,768	106	4.0	None
D4_09	Tolka_050	837	844	7	0.8	None
D4_10	Tolka_050	2,463	2,463	0	0.0	None
D4_11	Tolka_050	11,189	11,190	1	0.0	Oversized pipe
D3_01	Tolka_060	113,772	110,727	-3045	-2.7	Bioretention
D3_02	Tolka_060	277	200	-77	-27.8	None
D3_03	Tolka_060	21,266	21,683	417	2.0	Bioretention
D3_04	Tolka_060	1,392	1,395	3	0.2	None
D3_05	Tolka_060	4,955	5,159	204	4.1	Bioretention
D3_06	Tolka_060	19,508	19,554	46	0.2	Bioretention and oversized pipe
D4_12	Tolka_060	22,401	23,912	1511	6.7	Bioretention, permeable paving
D3_07	Ringsend Wastewater Treatment Plant (WwTP)	44,518	45,154	636	1.4	Oversized pipe
D3_08	Ringsend WwTP	20,854	20,836	-18	-0.1	None
D3_09	Ringsend WwTP	7,395	7,822	427	5.8	None

Existing Catchment Reference	Water Body	Approx. Surface Area (m^2)				SUDs Measure(s) Proposed
		Existing (m^2)	Proposed New (m^2)	Change (m^2)	Change (%)	
D3_10	Ringsend WwTP	3,001	3,001	0	0.0	None

Table 13.13: Changes in Impermeable Areas by Water Body

Water Body	Approximate Impermeable Surface Area (m^2)				SUDs Measure(s) Proposed
	Existing (m^2)	Proposed New (m^2)	Change (m^2)	Change (%)	
Tolka_050	80,615	82,913	2,298	2.9	Bioretention and oversized pipes
Tolka_060	183,571	182,630	-941	-0.5	Bioretention, oversized pipes and permeable paving
Ringsend WwTP	75,765	76,813	1,045	1.4	Oversized pipes

13.4.1.2 Key Infrastructure Proposed

Key infrastructure elements for the Proposed Scheme are described in detail within Chapter 4 (Proposed Scheme Description). Chapter 5 (Construction) describes the Construction Phase for the works related to these key infrastructure elements.

13.4.2 'Do Nothing' Scenario

In the 'Do Nothing' Scenario, the Proposed Scheme would not be implemented and there would be no changes to existing highway infrastructure, so infrastructure provision for buses, pedestrians and cyclists would remain the same.

The baseline (see Section 13.3) includes a description of the current status of the environment in and around the area in which the Proposed Scheme will be located, and identifies the existing pressures on the water bodies within the study area. These are identified and categorised under the RBMP 2018 – 2021 (DHPLG 2018) process under baseline conditions (i.e. what is there at present) and reported by the EPA. The RBMP categorises significant pressures impacting water bodies in Ireland into 14 categories, and identifies measures and actions aimed at addressing each pressure. This supports the analysis of future trends expected in the water environment, in order to determine the 'evolution of the baseline without the development'. Future trends will be more noticeable, predictable and measurable in the short to medium-term in relation to water quality, whereas hydrological and hydromorphological changes are subject to more long-term trends.

Future trends are determined based on the significant pressures identified under the RBMP, and the measures and actions in relation to policy and monitoring identified for the water bodies to meet the requirements of the WFD and any information available detailing progress on those measures or actions.

The most significant pressures on water bodies within the study area are diffuse urban runoff and urban wastewater.

Urban runoff comprises a mixture of misconnections, leakage from sewers and runoff from paved and unpaved areas and has been identified as a significant pressure to Santry_010 and the Tolka_050 and Tolka_060. RBMP 2018-2021 includes a measure for further investigation under the Local Authority Water Programme (LAWPRO) (See www.lawaters.ie) to determine the nature and extent of the impacts. The draft RBMP (DHLGH 2021) proposes six separate measures to address urban runoff pressures, including the development of strategies and guidance for nature-based solutions, including SUDS and the preparation of integrated urban drainage management plans.

Discharges from Wastewater Treatment Plants (WwTPs) and agglomeration networks have been identified online (EPA 2021) as pressures to all water bodies within the study area. These include discharges from SWOs and Storm / Emergency Water Overflows.

The Urban Wastewater Treatment in 2019 report (EPA 2020d) recommends three actions for Irish Water:

- Identify and remedy the underlying causes for the delays in upgrading deficient treatment systems;
- Target resources to resolve environmental issues at the 113 priority areas and make sure each of these has an action programme and timeframe to improve treatment; and
- Accelerate the pace at which the overdue impact assessments on shellfish waters are carried out and use the findings to plan and implement improvement works.

The draft RBMP includes an action for Irish Water to continue investment in wastewater infrastructure with Irish Water investing in 83 WwTPs and 10 collection networks at an estimated cost of €1.022 billion, over the period 2020 to 2024. In addition, as part of Ireland's National Recovery and Resilience Plan 2021 (Government of Ireland 2021), Irish Water will be delivering its enhanced Ambition Programme, which aims to deliver 10 priority WwTP projects whose discharges have been identified as being significant pressures on receiving water bodies.

With these investigations, programmes and actions in place to locate and improve deficient infrastructure, it is anticipated that pressures from urban wastewater and urban runoff will be reduced over the coming years. Therefore, in the absence of the Proposed Scheme, the surface water environment in the area is anticipated to improve particularly in relation to water quality.

13.4.3 Do Minimum

The potential for changes in traffic loading on side roads, as set out in Section 13.2.4.5 of this Chapter, means that the assessment of potential operational impacts from the Proposed Scheme is required to consider an additional future baseline scenario, as well as Do Nothing, Do Minimum, in line with the assessment of impacts on traffic as set out in Chapter 6 (Traffic & Transport).

The 'Do Minimum' scenario (Opening Year (2028) and Design Year (2043)) represents the likely traffic and transport conditions of the direct and indirect study areas including for any transportation schemes which have taken place, been approved or are planned for implementation, without the Proposed Scheme in place. This scenario forms the reference case by which to compare the Proposed Scheme ('Do Something') for the quantitative assessments. Further detail on the Proposed Scheme and demand assumptions within this scenario is included in Chapter 6 (Traffic & Transport).

The outputs of the transport modelling for these future scenarios are used in the operational impact assessment in Section 13.5.3 of this Chapter. In terms of the potential future baseline of the surface water environment under these two scenarios, there is a great deal of uncertainty. However, it is reasonable to assume that the measures set out in the RBMP 2018 – 2021 (DHPLG 2018) and the draft RBMP (DHLGH 2021) (once agreed) will be implemented and improvements to water bodies in terms of their biological, water quality and hydromorphology will continue to enable as many water bodies as possible to achieve Good Status by 2027.

13.4.4 Construction Phase

13.4.4.1 Introduction

Chapter 5 (Construction) outlines the principal Construction Phase activities required to complete the Proposed Scheme and includes details of these activities, such as new or improved bridges, road widening and narrowing, new and / or improved footpaths, cycle tracks, pavement repairs, road resurfacing, junction upgrades, new or improved lighting, bus stops, retaining walls and any other upgrade works, where relevant.

In addition to a detailed description of the works involved, Chapter 5 (Construction) also details the location of the six Construction Compounds, the location and duration of any necessary traffic diversions, hours of working, and numbers of personnel involved.

The duration of the Construction Phase is estimated to be 24 months. The Construction Compounds will be in place for the full duration of the extent of the works they support and will be removed following completion of the works they support.

The Construction Compounds will be located at the following sites:

- **Construction Compound B1:** Santry Cross;
- **Construction Compound B2:** St. Mobhi Drive;
- **Construction Compound B3:** Constitution Hill / Catherine Lane North Junction;
- **Construction Compound F1:** Mellowes Park in the vicinity of St. Margaret's Road Roundabout, Finglas;
- **Construction Compound F2:** Finglas Road / Finglas Place Junction; and
- **Construction Compound F3:** Claremont Lawns (opposite Glasnevin Cemetery).

The assessment considers the potential impacts of the Proposed Scheme construction activities, prior to mitigation or control measures being implemented.

13.4.4.2 Potential Construction Phase Impacts

There are a number of potential impacts which, in the absence of mitigation, could occur during the construction of the Proposed Scheme in relation to hydrology, water quality and hydromorphology. The potential for any of these types of impacts are considered for different construction activities for each water body within the study area. These potential construction impacts include:

13.4.4.2.1 Hydrology

- Change in the natural hydrological regime due to an increase in discharges as a result of dewatering activities (if required) during construction. This may alter the groundwater regime and affect the baseflow to a surface water receptor;
- Disruption to local drainage systems due to diversions required to accommodate the construction works; and
- Temporary increase in hardstanding areas and / or soil compaction during construction works which could result in temporary increased runoff rates to water bodies.

13.4.4.2.2 Water Quality

- Silty water runoff containing high loads of suspended solids from construction activities. This includes the stripping of topsoil / road surface during site preparation, the construction of widened roads, the dewatering of excavations and the storage of excavated material;
- Contamination of water bodies with anthropogenic substances such as oil, chemicals or concrete washings. This could occur because of a spillage or leakage of oils and fuels stored on-site or directly from construction machinery, and the storage of materials or waste in close proximity to water bodies or drains connected to the water bodies; and
- Re-exposure of historically settled contaminants in or near to water bodies, as a result of working in or near to the water body.

13.4.4.2.3 Hydromorphology

- Increased sediment loading due to silty water runoff or dewatering activities, introducing a sediment plume, potentially leading to the smothering of bed substrate and changes to existing morphological features;
- In-stream working, which can lead to localised changes in the flow and sediment processes within the channel; and
- Modifications to the morphological characteristics of the water body such as alterations to banks for construction of bridges or other works.

13.4.4.3 Assessment of Potential Impacts on Receptors

A detailed assessment of the potential impacts on receptors is provided here and a summary table for all receptors is provided in Table 13.14.

13.4.4.3.1 Santry_010

Construction Compound B1 will be located at Santry Cross in a section of the Proposed Scheme where surface water records are unclear as to whether surface water discharges to the Santry_010 or the Tolka_060. As such, the potential impacts on both water bodies from Construction Compound B1 have been assessed. The water body will be 220m from Construction Compound B1 at Santry Cross, which will be beyond a distance at which impacts from overland runoff are likely to occur. However, local surface water drains may outfall to the water body. Potential impacts will be Adverse and Short-Term, and of small magnitude, resulting in impacts of Imperceptible significance.

13.4.4.3.2 Tolka_050

The Tolka_050 water body will be 70m from Construction Compound F1 at Mellowes Park in the vicinity of St. Margaret's Road Roundabout, which will be beyond a distance at which impacts from runoff are likely to occur. However, the local surface water system discharges to the head of Tolka_050, to the north of the roundabout. The surface water sewers will run directly beneath the location of Construction Compound F1. The land here is greenfield (constructed) and there are no gullies or drains present on the site itself. However, there is the potential for ground contamination to reach the surface water system if there are land drains present. Given that this is a man-made green space and surface drainage in the area includes that from the roundabout and surrounding areas, it is considered unlikely that porous pipes would be present in this location. However, it is possible a surface water manhole is present, as the drainage records show a joining of two surface water sewers to the northern section of the site. There is some (albeit limited) potential for a pathway here. Potential impacts from the Construction Compounds include silty water, cement and hydrocarbons from spillages or leaking plant and machinery. Surface water gullies in the road outside of the site are unlikely to be affected by any overland flows as a short wall surrounds the site, effectively acting as a bund wall. Potential impacts will be Adverse and Short-Term, and of small magnitude, resulting in impacts of Slight significance.

Potential impacts as a result of the reconfiguration of the existing road to include cycle tracks, footpaths and bus lanes, junction realignments in Section 5 and Section 6 of the Proposed Scheme on R135 Finglas Road will include some of the generic impacts highlighted in Section 13.4.4.2. The Bachelors Stream water body (tributary of the River Tolka) is culverted along almost the full length of these sections and direct hydrological pathways exist via the surface water network in the road. If spillages were to occur, there is a high probability of these reaching the water body. However, as no significant earthworks are proposed, the likelihood of occurrence will be much reduced. Potential impacts will be Adverse and Short-Term, and of small magnitude, resulting in impacts of Slight significance.

There are foul sewers crossing under the site where it is proposed to locate Construction Compound F2 at Finglas Place and surface water gullies in the roads outside of the green space. There are also manholes within the site which may be foul or surface water (they are sprayed blue which would tend to indicate surface water) but the drainage records indicate more strongly that they are foul sewer manholes. The site slopes towards the road, but for the most part there is a short wall, which will effectively act as a bund for any spillages. There are two breaks in the wall where a footpath enters and leaves the site. Potential impacts will be Adverse and Short-Term, and of small magnitude, resulting in impacts of Slight significance.

Section 7 will involve narrowing and widening of roads and footpaths, with relocated drainage, pavement repairs and resurfacing. This will require earthworks, and surface water drains in this area drain to the water body to the north. Potential impacts will be Adverse and Short-Term, and of small magnitude, resulting in impacts of Slight significance.

13.4.4.3.3 Tolka_060

As set out above, Construction Compound B1 will be located at Santry Cross, approximately 220m from the Santry_010. However, it has not been confirmed by drainage records whether surface water here drains to Santry_010 or Tolka_060 catchments, and so, both water bodies have been assessed. The Tolka_060 will be a substantial distance from Construction Compound B1 (approximately 3km), and although there will be a potential hydrological pathway via surface water sewers, any potential pollutants will be unlikely to reach it. Potential impacts will be Adverse and Short-Term, and of small magnitude, resulting in impacts of Slight significance.

Construction Compound B2 is proposed to be located on the public road and footpath at St Mobhi Drive, approximately 25m up a slope from the Tolka_060 at its closest point. Potential impacts from the Construction Compound include cement and hydrocarbons from spillages or leaking plant and machinery. Silty water is unlikely as this is on a road and footpath. Risk could arise if pollutants were to runoff to the surface water drains in the road or across the grass to the south of the site. There is a surface water drain at the junction of St Mobhi Drive and R108 St Mobhi Road which outfalls to the Tolka_060. It is approximately 5m from the easternmost boundary of the Construction Compound B2 site. There are no surface water drains within the Construction Compound site itself. The risk of pollutants entering the surface water drain is low, given the topography. However, on a precautionary basis, the potential impact of hydrocarbons on the water body is assessed as being Adverse and Short to Medium-Term, and of medium magnitude, resulting in impacts of Significant to Moderate significance. The likelihood of runoff across the grassed area to the south is very low, as there is an existing low wall which will act as a bund. If this wall is removed, impacts could occur. Cement washings would be unlikely to reach the water body, and an oil spill could potentially reach the water body if it were a substantial spill. Potential impacts will be Adverse and Short to Medium-Term, and of small magnitude, resulting in impacts of Slight significance.

The works proposed in Section 1, Section 2, Section 5, Section 6 and Section 7 within the catchment area of the Tolka_060 will largely comprise realignment and reconfiguration, with no earthworks proposed. Therefore, with the exception of two small areas of works as described in the following paragraphs, potential impacts will be Adverse and Short-Term, and of negligible magnitude, resulting in impacts of Imperceptible significance.

The widening of the road between St Mobhi Drive and Botanic Avenue in Section 2 will require earthworks. Potential impacts are largely related to silty water runoff and any sediment in any dewatering that may be required. However, the road slopes away from the water body in this location and surface water drains to a combined sewer, and as a result, no impacts are predicted for the water body.

The new parking spaces proposed at Claremont Lawns in Section 7, opposite Glasnevin Cemetery have the potential to impact the Tolka_060, as all surface water drains to this water body in this location. However, the works will be relatively minor and whilst some earthworks will be required, and on the side of the road where road gullies will drain to the water body, the distance via the surface water system to the Tolka_060 is approximately 600m in a straight line. Potential impacts will be Adverse and Short-Term, and of negligible to small magnitude, resulting in impacts of Slight significance.

13.4.4.3.4 Royal Canal Main line (Liffey and Dublin Bay)

There are no surface water outfalls to the Royal Canal and so no works on the roads will give rise to impacts upon it.

The proposed cycle / pedestrian bridge over the Royal Canal and the ramp down to Royal Canal Bank at Eglington Terrace have the potential to result in impacts on water quality. The bridge will be supported by new stone covered walls which will form a new canal wall on the southern side and will be in the banks, set back from the canal on the northern side. The bridge foundations will be in the canal banks on both sides. On the southern side of the canal, a ramp will be constructed with a retaining wall installed into the canal bank. The canal will be lowered to 0.5m and a dry working area will be provided by using sandbags and dewatering the area between these and the canal bank. The potential impacts associated with this activity are silty water runoff, high sediment loads in the dewatering of the canal, leaching of poured concrete, concrete washings from pre-cast concrete structures (both of which could alter the pH of the canal), and hydrocarbons entering the water body as a result of spillages or drips of fuel from machinery on the canal bank. There is no proposal to carry out any works from a barge so this is excluded as a risk. Silty water and higher sediment loads from dewatering activities are of less significance than other potential impacts in a canal used for recreational boating. As a result, it is predicted that impacts will be Adverse and Short-Term, and of small magnitude, resulting in impacts of Slight significance. Concrete and hydrocarbons present a larger risk to water quality and the aquatic ecosystem. Potential impacts will be Adverse and Short-Term, and of medium magnitude, resulting in impacts of Moderate to Significant significance.

13.4.4.3.5 Liffey Estuary Upper

The pavement repairs and resurfacing works proposed at the R108 on Phibsborough Road and Constitution Hill, and R132 Church Street to R148 Arran Quay are not predicted to cause significant impacts on the environment. The works will not be intrusive enough to result in any significant increases in ground permeability to result in

hydrological impacts, or increased sediment runoff to result in water quality or hydromorphological impacts. Potential impacts will be Adverse and Short-Term, and of negligible magnitude, resulting in impacts of Imperceptible significance.

13.4.4.4 Summary of Potential Construction Phase Impacts

Table 13.14: Summary of Potential Construction Phase Impacts on Water Bodies Within the Study Area

Water Body Name	Proposed Scheme Activity	Potential Impacts			
		Description of Impacts	Sensitivity of Receptor	Magnitude of Impacts	Significance of Impacts
Santry_010	Construction Compound B1 at Santry Cross	• Increased surface water runoff; • Increased sediment in runoff; and • Anthrophonic sources (fuel etc.)	Low	Small	Adverse, Imperceptible and Short-Term
Tolka_050	Construction Compound F1 at Mellowes Park in the vicinity of St. Margaret's Road Roundabout and Construction Compound F2 at Finglas Place	• Increased surface water runoff; • Increased sediment in runoff; and • Anthrophonic sources (fuel etc.)	Medium	Small	Adverse, Slight and Short-Term
	Road reconfiguration, junction re-alignments and associated works	• Increased surface water runoff; • Increased sediment in runoff; and • Anthrophonic sources (fuel etc.)	Medium	Small	Adverse, Slight and Short-Term
	Resurfacing and associated works	• Minor sediment release.	Medium	Small	Adverse, Slight and Short-Term
Tolka_060	Construction Compound (B1) at Santry Cross	• Increased surface water runoff; • Increased sediment in runoff; and • Anthrophonic sources (fuel etc.)	Low	Small	Adverse, Slight and Short-Term
	Construction Compound (B2) at St Mobhi Drive.	• Increased runoff • Increase water levels and river flow; and • Increased sediment runoff.	High	Medium	Adverse, Moderate to Significant and Short to Medium-Term
	Road Widening and associated works	• Increased surface water runoff; • Increased sediment in runoff; and • Anthrophonic sources (fuel etc.)	High	No impact (combined sewer)	No impact
	Resurfacing and associated works	• Minimal sediment release expected to be negligible.	High	Negligible	Adverse, Imperceptible and Short-Term
	New parking spaces proposed at Claremont Lawns	• Increased runoff; • Increase water levels and river flow; and • Increased sediment runoff.	High	Negligible - Small	Adverse, Slight and Short-Term

Water Body Name	Proposed Scheme Activity	Potential Impacts			
		Description of Impacts	Sensitivity of Receptor	Magnitude of Impacts	Significance of Impacts
Royal Canal Main Line (Liffey and Dublin Bay)	Construction of new Cycle Bridge over railway and ramp at Royal Canal	• Increased runoff could increase water levels and river flow; • Bridge may be susceptible to flood damage; and • Increased sediment runoff.	High	Medium	Adverse, Moderate to Significant and Short-Term
Liffey Estuary Upper	Pavement repairs and resurfacing works	• Minimal sediment release expected to be negligible.	Very High	Negligible	Adverse, Imperceptible and Short Term

13.4.5 Operational Phase

13.4.5.1 Potential Operational Phase Impacts

The potential impacts for the Operational Phase are related to water quality and hydromorphology only. No potential changes to hydrology are predicted as the drainage design ensures no net increase in runoff rates.

Potential impacts that could occur include:

- Deterioration in water quality from increased levels of 'routine' road contaminates, such as hydrocarbons, metals, sediment and chloride (seasonal) due to:
  - Potential increases in pollution and sediment loads entering surface water receptors from new or widened roads;
  - Increased impermeable area, and changes to the nature, frequency and numbers of vehicles using the new routes of the Proposed Scheme; and
  - Dispersal of traffic onto other side roads, which may drain to a different catchment or have less stringent pollution control infrastructure.
- There is the potential for hydromorphology changes due to:
  - Changes in the flow regime due to increased surface water runoff or discharges in new locations, resulting in changes to sedimentation processes and the structure of riverbanks.

13.4.5.2 Assessment of Potential Impacts – Surface Water Runoff

Assessments for each receptor are provided below, with a summary of impacts provided in Table 13.15.

13.4.5.2.1 Santry_010

There is uncertainty regarding the route of discharge of surface water sewers in the northern section of the Proposed Scheme. There is the potential for this section to discharge to Santry_010 and not Tolka_060. As such, both water bodies are assessed for potential impacts upon them. In this catchment, a reduction in impermeable area of 3,045m^2 (2.7%) is proposed. In addition, SUDS will be installed in the form of bioretention. This is an improvement on the existing environment both in terms of volume of runoff and treatment. Potential impacts will be Positive and Permanent, and of negligible magnitude, resulting in an impact of Imperceptible significance.

13.4.5.2.2 Tolka_050

The Proposed Scheme will result in an increase of 2,298m^2 of impermeable area in the catchment discharging to Tolka_050. This will equate to a 2.9% increase in impermeable area within the existing boundary of the catchment. The implementation of the SUDs measures set out in Section 13.4.1.1 will ensure that this does not result in an increase in surface water runoff rates. The use of SUDS such as bioretention features will provide some measure of treatment to address water quality issues. Potential impacts will be Positive and Permanent, and of negligible magnitude, resulting in an impact of Imperceptible significance.

13.4.5.2.3 Tolka_060

The Proposed Scheme will result in a decrease in impermeable area of 941m^2 (0.5%) across the Tolka_060 catchment. This will result in a decrease in the volume and rate of runoff to the Tolka_060. In addition, SUDS will be installed in the form of bioretention, oversized pipes and permeable paving. This will be an improvement on the existing environment both in terms of volume of runoff and treatment. Potential impacts will be Positive and Permanent, and of negligible magnitude, resulting in an impact of Imperceptible significance.

13.4.5.2.4 Royal Canal Main Line (Liffey and Dublin Bay)

There will be no hydrological connection from the Proposed Scheme to the Royal Canal Main Line during operation. Therefore, there will be no potential impacts.

13.4.5.2.5 Liffey Estuary Upper

There is the potential for impacts on the Liffey Estuary Upper through the increased (in terms of volume and frequency) discharge of SWOs which outfall to it. The predicted increase in impermeable area in the combined sewer catchment will be 1,045m^2. This will equate to a 1.4% increase. Some SUDs are proposed in the form of oversized pipes. Potential impacts will be Positive and Permanent, and of negligible magnitude, resulting in an impact of Imperceptible significance.

13.4.5.3 Structures

13.4.5.3.1 Royal Canal Cycle / Pedestrian Bridge

There is potential for impacts on the hydromorphology of the Royal Canal as a result of changes proposed to the canal bank. Whilst canals are AWBs and the assessment of Good Ecological Potential takes into account the hydromorphological characteristics required for the water body to function as a canal, there is the potential for soft banks to contribute to good biological conditions and so impacts upon these are included in the assessment. The proposed new bridge and ramp to the south of the canal will result in the loss of 65m of soft canal bank. The provision of a planting box and aquatic plants are part of the design of the Proposed Scheme in order to minimise this loss. The Royal Canal is 145km long and the Royal Canal Main Line (Liffey and Dublin Bay) water body is 40km long. The loss of 65m (0.1%) of bankside habitat is unlikely to have a significant impact on the biological conditions for the water body as a whole. Potential impacts will be Adverse and Permanent, and of negligible magnitude, resulting in an impact of Imperceptible significance.

13.4.5.4 Summary of Potential Operational Phase Impacts

Table 13.15: Summary of Potential Operational Phase Impacts from Changes in Impermeable Areas on Water Bodies Within the Study Area.

Water Body Name	Proposed Scheme Activity	Potential Impacts			
		Description of Potential Impacts	Sensitivity of Receptor	Magnitude of Impacts	Significance of Impacts
Santry_010	Decrease in impermeable area draining to the water body	• Decreased surface water runoff • Decreased sediment in runoff • Decreased anthropogenic sources (fuel etc.)	Low	Negligible	Positive, Imperceptible and Permanent
Tolka_050	Increase in impermeable area draining to the water body	• Decreased anthropogenic sources (fuel etc.); and	Medium	Negligible	Positive, Imperceptible and Permanent
Tolka_060	Decrease in impermeable area draining to the water body	• Decreased surface water runoff; • Decreased sediment in runoff; • Decreased anthropogenic sources (fuel etc.); and • Decreased scouring of watercourse.	High	Negligible	Positive, Imperceptible and Permanent
Royal Canal	Increase in impermeable area	None – no hydrological connection	High	No impact	No impact
	Cycle / pedestrian bridge and ramp	• Hydromorphological changes to canal bank	High	Negligible	Adverse, Imperceptible and Permanent
Liffey Estuary Upper	Increase in impermeable area	• Decreased anthropogenic sources (fuel etc.).	Very High	Negligible	Positive, Imperceptible and Permanent

13.4.5.5 Assessment of Potential Impacts – Traffic Redistribution

Traffic modelling (see Chapter 6 (Traffic & Transport)) was carried out for two scenarios, the Do Minimum and Do Something scenarios for 2028 and 2043. The review of changes in AADT provides a mechanism to understand if the Proposed Scheme could result in traffic redistribution onto the surrounding local road network. A review of the data identified that, for most cases, any increases in traffic on side roads would not lead to AADTs of greater than 10,000. However, four road sections were identified as having increased traffic of >10,000 under the 2028 and / or 2043 Do Something scenarios (see Table 13.16). One of these sections (12263-12214) is split into two for the purposes of assessment, as it rises from the Tolka_050 to go over the Royal Canal and slopes down on the other side, and it is therefore likely that the surface water drains in two different directions.

Table 13.16: Road Sections with Increased Traffic (>10,000 AADT)

Road Name	A_B (GIS)	Length of Section (km)	2028 DM*	2028 DS*	%	2043 DM*	2043 DS*	%	Closest Existing Drainage Route	Likely Change in Drainage Catchment ?	Significant Impact?
Ratoath Road	12184_ 12211	0.19	9,112	10,507	15	9,154	10,408	14	Combined sewer or Tolka_060	No*	No
Ratoath Road	12184_ 12263	0.42	10,197	10,932	7	10,099	10,647	5	Combined sewer or Tolka_060	No	No
Ratoath Road	12263_ 12214	0.25	10,130	10,808	7	10,073	10,560	5	Tolka_050	No	No
Ratoath Road	12263_ 12214	0.31	10,130	10,808	7	10,073	10,560	5	Combined sewer or Tolka_060	No	No
Ratoath Road	18100_ 12267	0.36	9,895	11,123	12	10,020	11,693	17	Tolka_050	No	No

*All four sections of road with increases >10,000 AADT are on the same road, Ratoath Road. Advice from the drainage design team is that all of these sections of Ratoath Road would drain to the Tolka_050; even those to the south of the Royal Canal would drain to the Tolka_050 and not the Royal Canal. As a result, no significant impacts are anticipated.

13.4.5.6 Summary of Flood Risk Assessment

Summary text from the FRA (Appendix A13.2 Site Specific Flood Risk Assessment in Volume 4 of the EIAR) is provided in this Section.

13.4.5.6.1 Flood Risk – Ballymun Section

13.4.5.6.1.1 Flooding from Fluvial and Sea Level Rises / Coastal Flooding

The Proposed Scheme will be in close proximity to the Liffey Estuary Upper and Tolka_060. The Liffey Estuary Upper is influenced downstream by the Royal Canal. The OPW flood maps show the Proposed Scheme will be outside the boundaries of the flood zones, and therefore, there will be no likelihood of flooding from this source.

13.4.5.6.1.2 Groundwater Flooding

Sources consulted, such as the OPW mapping and GSI records, show no indication that the Proposed Scheme will be subject to groundwater derived flooding.

13.4.5.6.1.3 Surface Water Flooding

There is no indication of previous issues with the existing drainage network. The Proposed Scheme will include some additional impermeable areas, and in order to address possible additional surface water, SUDS measures have been incorporated into the design. A detailed FRA with respect to flooding derived from surface water flooding is therefore not required.

13.4.5.6.1.4 Pluvial Flooding

OPW flood maps show distributed flooding from this source. However, SUDS measures have been proposed to mitigate the risk. Pluvial flooding will be considered in the modifications of the drainage system, if and when needed.

13.4.5.6.1.5 Conclusion

There is a potential risk of surface water flooding due to heavy rainfall and impervious surfaces combined with low permeability soils. This risk has been identified and addressed through the proposal of SUDS that will mitigate the risk. With this, flood risk will be mitigated and no Stage 3 FRA will be necessary.

13.4.5.6.2 Flood Risk – Finglas Section

13.4.5.6.2.1 Flooding from Fluvial and Sea Level Rises / Coastal Flooding

OPW flood maps show the Proposed Scheme will be outside the boundaries of the flood zones, and therefore, there will be no likelihood of flooding from this source.

13.4.5.6.2.2 Groundwater Flooding

The sources consulted such as the OPW mapping and GSI records show no indication that the Proposed Scheme will be subject to groundwater derived flooding.

13.4.5.6.2.3 Surface Water Flooding

The Proposed Scheme will include some additional impervious areas, and in order to address possible additional surface water, SUDS measures have been incorporated into the design. The Proposed Scheme is not considered to require a detailed FRA with respect to flooding derived from surface water.

13.4.5.6.2.4 Pluvial Flooding

OPW flood maps show distributed flooding from this source. SUDS measures have been proposed to mitigate the risk. Pluvial flooding will be considered in the modifications of the drainage system, if and when needed.

13.4.5.6.2.5 Conclusion

There will be a risk of surface water flooding due to heavy rainfall and impervious surfaces combined with low permeability soils. This risk has been identified and addressed through the proposal of SUDS that will mitigate the risk. To that effect, an additional report has been undertaken. With this flood risk will be mitigated and no Stage 3 FRA will be necessary.

13.5 Mitigation and Monitoring Measures

13.5.1 Introduction

This Section sets out the measures envisaged to avoid, prevent or reduce any potential significant adverse impacts on the environment identified in Section 13.4 and, where appropriate, identifies any proposed monitoring of the efficacy of implementing those mitigation measures. This Section covers both the Construction and Operational Phases. Construction works will take place in accordance with Appendix A5.1 Construction Environmental Management Plan (CEMP) in Volume 4 of this EIAR.

13.5.2 Construction Phase

13.5.2.1 Mitigation Measures

In terms of mitigation, a Surface Water Management Plan (SWMP) has been prepared (provided in Appendix A5.1 CEMP in Volume 4 of this EIAR), which details control and management measures for avoiding, preventing, or reducing any significant adverse impacts on the surface water environment during the Construction Phase of the Proposed Scheme. It will be a condition within the Employer's Requirements that the successful contractor, immediately following appointment, must detail in the SWMP how it is intended to effectively implement all the applicable measures identified in this EIAR and any additional measures required pursuant to conditions imposed by An Bord Pleanála to any grant of approval.

At a minimum, all the control and management measures set out in the SWMP will be implemented. This includes measures relating to:

- A requirement for a Pollution Incident Response Plan;
- Construction Compound management including the storage of fuels and materials;
- Control of Sediment;
- Use of Concrete;
- Management of vehicles and plant including refuelling and wheel wash facilities; and
- Monitoring.

13.5.2.2 Site-Specific Mitigation Measures

Following implementation of the mitigation measures in the SWMP within Appendix A5.1 CEMP in Volume 4 of this EIAR, the majority of impacts will be Not Significant. However, one construction activity and one Construction Compound have been highlighted for further mitigation. Construction Compound B2 at St Mobhi Drive and the proposed new cycle / pedestrian bridge crossing the Royal Canal have been highlighted, as these have the potential to result in Adverse impacts ranging from Slight to Moderate to Significant and Short to Medium-Term on the water bodies.

13.5.2.2.1 Construction Compound B2 at St Mobhi Drive

The following construction methods and mitigation measures have been identified and will be implemented to minimise and avoid these impacts:

- No connections between the temporary Construction Compound and the existing surface water drainage system in St Mobhi Drive will be made;
- The existing low wall along the southern boundary of the site will be retained, as far as is practicable, to provide protection to the Tolka_060 from overland flows;
- Fuel storage will be located on the western boundary of the Construction Compound, as far as possible from the surface water drain at the eastern end of St Mobhi Drive. All fuel will be stored in accordance with the SWMP in Appendix A5.1 CEMP in Volume 4 of this EIAR;
- Construction vehicles will be fuelled using a mobile fuelling bowser system on a temporary stand that is self-contained, such that any spillage is trapped into a small tank for pumping back into the bowser, or by using a flat-bed trailer base with a folding gate to be closed behind the vehicle being fuelled;
- Storage of other materials will be located on the western boundary of the Construction Compound, as far as possible from the surface water drains;
- All storage areas will be covered;
- Any cement and concrete mixing / batching will be located as far as possible from the surface water drain;
- Wheel wash areas will be closed-cycle. There will be no discharge of wheel wash water to surface water drains. Off site disposal of contaminated and silty water and sludge will be required; and
- Wastewater from cabins will be contained. Where discharge to the local sewer is required, consent from the local authority will be obtained (i.e. a temporary permit).

13.5.2.2.2 Proposed Cycle / Pedestrian Bridge Crossing of the Royal Canal

Full details of the construction methodology for this structure are provided in Chapter 5 (Construction). In addition, the following site-specific mitigation measures have been identified and will be implemented:

- Silt fences will be used along the southern bank to reduce the likelihood of silty water runoff during construction of the cycle ramp;
- Any water collected will be dewatered via siltbusters, or similar, before being discharged back into the canal;
- Prefabricated concrete will be used for the structure, wherever reasonably practicable, or where new concrete is batched at Construction Compounds, it will be cleaned prior to installation; and
- No plant will be refuelled within 10m of the canal.

Following implementation of the mitigation measures outlined in Section 13.5, no significant residual impacts are anticipated on any of the receptors in this study area (see Table 13.17).

Table 13.17: Summary of Predicted Construction Phase Impacts, Following the Implementation of Mitigation Measures

Water Body Name	Proposed Scheme Activity	Predicted Impacts		
		Description of Impacts	Significance of Impacts	Post Mitigation Predicted Impacts
Santry_010	Construction Compound B1 at Santry Cross	• Increased surface water runoff; • Increased sediment in runoff; and • Anthrophonic sources (fuel etc.)	• Adverse • Imperceptible • Short-Term	• Adverse • Imperceptible • Short-Term
Tolka_050	Construction Compound F1 at Mellowes Park in the vicinity of St. Margaret's Road Roundabout and Construction Compound F2 at Finglas Place	• Increased surface water runoff; • Increased sediment in runoff; and • Anthrophonic sources (fuel etc.)	• Adverse • Slight • Short-Term	• Adverse • Imperceptible • Short-Term
	Road reconfiguration, junction re-alignments and associated works	• Increased surface water runoff; • Increased sediment in runoff; and • Anthrophonic sources (fuel etc.)	• Adverse • Slight • Short-Term	• Adverse • Imperceptible • Short-Term
	Resurfacing and associated works	• Minor sediment release.	• Adverse • Slight • Short-Term	• Adverse • Imperceptible • Short-Term
Tolka_060	Construction Compound B1 at Santry Cross	• Increased surface water runoff • Increased sediment in runoff • Anthrophonic sources (fuel etc.)	• Adverse • Slight • Short-term	• Adverse • Imperceptible • Short-Term
	Construction Compound B2 at St. Mobhi Drive.	• Increased runoff; • Increase water levels and river flow; and • Increased sediment runoff. • Anthropogenic sources (fuel, cement washings etc.)	• Adverse • Slight to Moderate to Significant • Short-Term	• Adverse • Imperceptible • Short-Term
	Road Widening and associated works	• Increased surface water runoff; • Increased sediment in runoff; and • Anthrophonic sources (fuel etc.)	No impact	No impact
	Resurfacing and associated works	• Minimal sediment release expected to be negligible.	• Adverse • Imperceptible • Short-Term	• Adverse • Imperceptible • Short-Term
	New parking spaces proposed at Claremont Lawns	• Increased runoff; • Increase water levels and river flow; and • Increased sediment runoff.	• Adverse • Slight • Short-Term	• Adverse • Imperceptible • Short-Term
Royal Canal Main Line (Liffey and Dublin Bay)	Construction of new Cycle / Pedestrian Bridge over the Royal Canal and cycleway ramp	• Increased runoff could increase water levels and river flow; • Bridge may be susceptible to flood damage; and • Increased sediment runoff.	• Adverse • Moderate to Significant • Short-Term	• Adverse • Slight • Short-Term

Water Body Name	Proposed Scheme Activity	Predicted Impacts		
		Description of Impacts	Significance of Impacts	Post Mitigation Predicted Impacts
Liffey Estuary Upper	Pavement repairs and resurfacing works	Minimal sediment release expected to be negligible.	• Adverse • Imperceptible • Short-Term	• Adverse • Imperceptible • Short-Term

13.5.3 Operational Phase

Mitigation for the Operational Phase has been built into the design of the Proposed Scheme, which is outlined in Section 13.4.1.1. No additional mitigation is required.

In the Operational Phase, the infrastructure (including the maintenance regime for SUDS) will be carried out by the local authorities and will be subject to their management procedures.

Table 13.18: Summary of Predicted Operational Phase Impacts, Following the Implementation of Mitigation Measures

Water Body Name	Proposed Scheme Activity	Predicted Impacts		
		Description of Impacts	Significance of Impacts	Post Mitigation Predicted Impacts
Santry_010	Increase in impermeable are draining to the water body	• Decreased surface water runoff • Decreased sediment in runoff • Decreased anthropogenic sources • Decreased scouring of watercourse	• Positive • Imperceptible • Permanent	• Positive • Imperceptible • Permanent
Tolka_050	Increase in impermeable area draining to the water body	• Decreased anthropogenic sources (fuel etc.)	• Positive • Imperceptible • Permanent	• Positive • Imperceptible • Permanent
Tolka_060	Decrease in impermeable area draining to the water body	• Decreased surface water runoff; • Decreased sediment in runoff; • Decreased anthropogenic sources (fuel etc.); and • Decreased scouring of watercourse.	• Positive • Imperceptible • Permanent	• Positive • Imperceptible • Permanent
Royal Canal	Increase in impermeable area	None – no hydrological connection	No impact	No impact
	Cycle / pedestrian bridge and ramp	Hydromorphological changes to canal bank	• Adverse • Imperceptible • Permanent	• Adverse • Imperceptible • Permanent
Liffey Estuary Upper	Increase in impermeable area	Decreased anthropogenic sources (fuel etc.)	• Positive • Imperceptible • Permanent	• Positive • Imperceptible • Permanent

13.6 Residual Impacts

13.6.1 Construction Phase

Following implementation of the mitigation measures outlined in Section 13.5, and the SWMP in Appendix A5.1 CEMP in Volume 4 of this EIAR, there are no significant residual impacts predicted on any of the receptors in this study area.

13.6.2 Operational Phase

Mitigation for the Operational Phase has been built into the design of the Proposed Scheme. As a result, no significant residual impacts are anticipated for any water body in the study area. Therefore, impacts remain as identified in Section 13.4.5.

13.6.3 Summary of WFD Assessment

The full WFD Assessment can be found in Appendix A13.1 WFD Assessment in Volume 4 of this EIAR. A summary is provided here for ease of reference.

13.6.3.1 Overview

Taking into consideration the anticipated impacts of the Proposed Scheme on the biological, physico-chemical and hydromorphological quality elements following the implementation of design and mitigation measures, it is concluded that it will not compromise progress towards achieving Good Ecological Status or cause a deterioration of the overall Good Ecological Potential (in the case of an AWB) of any of the water bodies that are in scope. Therefore, the Proposed Scheme does not require assessment under Article 4.7 of the WFD (refer to Table 13.19).

Table 13.19: Compliance of the Proposed Scheme with the Environmental Objectives of the WFD

Environmental Objective	Proposed Scheme	Compliance with the WFD
No changes affecting high status sites	No water bodies identified as high status	Yes
No changes that will cause failure to meet surface water Good Ecological Status or Good Ecological Potential or result in a deterioration of surface water Good Ecological Status or Good Ecological Potential	After consideration as part of the detailed compliance assessment, the Proposed Scheme will not cause deterioration in the status of the water bodies during construction following the implementation of mitigation measures; during operation, no significant impacts are predicted.	Yes
No changes which will permanently prevent or compromise the Environmental Objectives being met in other water bodies	The Proposed Scheme will not cause a permanent exclusion or compromise achieving the WFD objectives in any other bodies of water within the River Basin District.	Yes
No changes that will cause failure to meet good groundwater status or result in a deterioration groundwater status.	The Proposed Scheme will not cause deterioration in the status of the of the groundwater bodies.	Yes

The WFD also requires consideration of how a new scheme might impact on other water bodies and other EU legislation. This is covered in Article 4.8 and Article 4.9 of the WFD.

Article 4.8 states:

> '*a Member State shall ensure that the application does not permanently exclude or compromise the achievement of the objectives of this Directive in other bodies of water within the same river basin district and is consistent with the implementation of other Community environmental legislation*'.

All water bodies within the study area have been assessed for direct impacts and indirect impacts. The assessment concludes that the Proposed Scheme will not compromise the achievement of the objectives of the WFD for any water body. In addition, the Proposed Scheme has been assessed for the potential for cumulative impacts with other proposed developments within 1km of the study area. The assessment concludes that in combination with other proposed developments, the Proposed Scheme will not compromise the achievement of

the objectives of the WFD for any water body. Therefore, the Proposed Scheme complies with Article 4.8 of the WFD.

Article 4.9 of the WFD requires that '*Member States shall ensure that the application of the new provisions guarantees at least the same level of protection as the existing Community legislation*'.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (hereafter referred to as the Habitats Directive) promotes the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Habitats Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance. There are European designated sites in the vicinity of the Proposed Scheme which have been assessed and are presented in the Natura Impact Statement (NIS). The NIS is a standalone document included in the planning application for the Proposed Scheme. It concludes that the Proposed Scheme will not lead to a deterioration in the features of any designated site. The Proposed Scheme is not considered to be a risk to designated habitats, and therefore, is compliant with the Habitats Directive.

Council Directive of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (91/676/EEC) (hereafter referred to as the Nitrates Directive) aims to protect water quality by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. The Proposed Scheme will not influence or moderate agricultural land use or land management.

The revised Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC (hereafter referred to as the rBWD) was adopted in 2006, updating the microbiological and physico-chemical standards set by the original Council Directive of 8 December 1975 concerning the Quality of Bathing Water (76/160/EEC) and the process used to measure / monitor water quality at identified bathing waters. The rBWD focuses on fewer microbiological indicators, whilst setting higher standards, compared to those of the original directive. Bathing waters under the rBWD are classified as excellent, good, sufficient or poor according to the levels of certain types of bacteria (*intestinal enterococci* and *Escherichia coli*) in samples obtained during the bathing season (May to September). The Proposed Scheme will not impact any designated bathing waters as there are none that are less than 2km from the Proposed Scheme. The Proposed Scheme is therefore compliant with the rBWD.

13.6.3.2 Conclusion

Considering all requirements for compliance with the WFD, the Proposed Scheme will not cause a deterioration in status in any water body and will not prevent it from achieving Good Ecological Status or Good Ecological Potential. There will be no cumulative impacts with other developments and it complies with other environmental legislation.

It can be concluded that the Proposed Scheme complies with all requirements of the WFD.

13.7 References

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Council Directive of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources

Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy

Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC

Council Directive of 8 December 1975 concerning the Quality of Bathing Water (76/160/EEC)

S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009

S.I. No. 722/2003 – European Communities (Water Policy) Regulations 2003

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