# Chapter 13
# Water

## Contents

# 13. Water

## 13.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) assesses the impact of the Tallaght / Clondalkin 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 waterbody (receptor) will be 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 Section13.4.4), 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 Proposed Scheme's compliance with the Water Framework Directive (WFD) (Directive 2000/60/EC) requirements is provided in Appendix A13.1 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 Scheme 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 Section13.3.10 and Section 13.4.5.5 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 attained. 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 has been set at 500m from the boundary of the Proposed Scheme. It is anticipated that any likely significant impacts from the Proposed Scheme would occur at local waterbodies 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 5km (kilometres) upstream of the Proposed Scheme. This is a major public water supply abstraction point (approximately 195,000 $m^3$/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 and groundwaters. The WFD provides a vehicle for establishing a system to improve and / or maintain the quality of waterbodies across the European Union (EU). The Directive requires all water bodies (river, 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 the 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 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 are provided in Section 13.3.9 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 UK Environment Agency's 'Water Framework Directive assessment: Estuarine and Coastal waters' 2016 (updated 2017) (Environment Agency 2016). No specific guidance exists for freshwater waterbodies. However, this guidance was used as the basis of the UK's Planning Inspectorate (PINS) Advisory Note 18 'Water Framework Directive' June 2017 (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 ensuring an integrated approach to the protection, improvement and sustainable management of the water environment, and are published every six years.

The second cycle 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 original (2009) Eastern, South-Eastern, South-Western, Western and Shannon River Basin Districts were merged to form one national River Basin District (RBD). For those water bodies 'At Risk' of failing to meet the objectives of WFD, the RBMP 2018 - 2021 identified the most significant pressures 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, published the draft River Basin Management Plan for Ireland 2022-2027 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; for other water bodies the changes are more mixed; some reductions, 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.

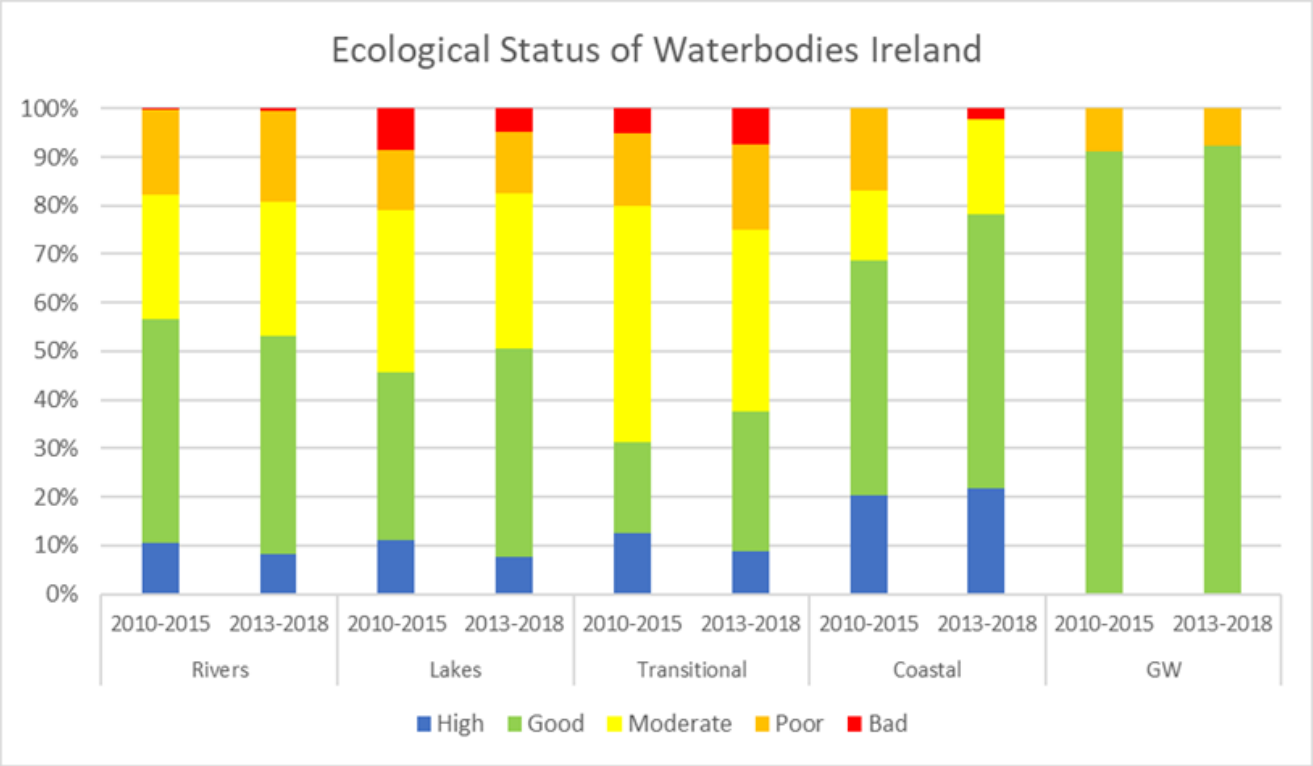


**Image 13.1: Ecological Status of Water Bodies in Ireland**

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 following 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 (hereafter referred to as the EPA Guidelines) (EPA 2022); and<br>• European Commission (EC) Environmental Impact Assessment of Projects. Guidance on the Preparation of the Environmental Impact Assessment Report, 2017 (EC 2017). |
| Water | • Transport Infrastructure Ireland (TII) Road Drainage and the Water Environment guidance document (TII 2015);<br>• National Roads Authority (NRA) Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (NRA 2005)*;<br>• NRA 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 2008)*; and<br>• 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 Authorities (hereafter referred to as the FRM Guidelines) (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 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<br>• Aerial photographs (i.e., Google Maps). |
| Surface Water Quality and Hydromorphology | • WFD Ireland Database;<br>• EPA - water quality monitoring database and reports. EPA Water Environment Maps (EPA 2020a);<br>• EPA Environmental Data Maps;<br>• National Parks and Wildlife Service (NPWS) - designated sites (NPWS 2020); and<br>• Inland Fisheries Ireland (IFI) - fishery resources. |
| Hydrology | • Catchment Summaries;<br>• RBMP 2018 – 2021 (DHPLG 2018); and<br>• EPA - flow and water level measurements. |
| Water/Flood Risk | • OPW National Flood Information Portal (OPW 2020). |

### 13.2.3.2 Field Surveys

Field surveys and walkover assessments were carried out March 2020 and March 2022. In March 2020, visual inspections were made at some crossing locations and areas identified as potentially high risk (e.g., locations of proposed Construction Compounds) – see Figure 13.2 in Volume 3 of this EIAR. 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.

## 13.2.4 Appraisal Method for the Assessment of Impacts

### 13.2.4.1 General Approach

The following 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 2008), specifically Section 5.6. The assessment also took

account of the guidance set out in the Environmental Protection Agency 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 (EU 2018) have been considered in preparing this chapter of the EIAR.

The surface water environment is intrinsically linked to flood risk, ecological receptors and groundwater, considered in the FRA Report (Appendix A13.2 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 19 (Material Assets) and Chapter 10 (Population).

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 waterbodies, coastal waterbodies and lakes) as a result of the Proposed Scheme will be determined based on two parameters:

1. The sensitivity of the waterbody attributes (hydrology, water quality and geomorphology) to change; and
2. The magnitude of the impacts on waterbody 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 2008 adapted to include WFD Assessment Guidelines (Environmental 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 European Union (EU) legislation (e.g., a Designated European Sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) or 'Salmonid Waters'; and<br>• 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<br>or<br>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);<br>• WFD water body ecosystem protected by national legislation (Natural Heritage Area (NHA) status);<br>• 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<br>• Nutrient Sensitive Areas. |
| High | Receptor (or receptor attribute) has a moderate value at an international scale<br>or<br>high quality or value on a national scale | • A WFD water body with High or Good Status;<br>• A Moderate WFD Status (2013 - 2018) water body with some hydrological connection (<2km) to European Sites or protected ecosystems of international status (SAC / SPA or Salmonid Waters) further downstream;<br>• WFD water body which has a direct hydrological connection to sites/ecosystems protected by national legislation (NHA status);<br>• 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<br>• Direct hydrological connectivity to Nutrient Sensitive Areas. |

| Sensitivity | Criteria | Typical Example |
|---|---|---|
| Medium | Receptor (or receptor attribute) has some limited value at a national scale | • WFD water body with Moderate WFD Status (2013 - 2018);<br>• WFD water body with limited (>2km <5km) hydrological importance for sensitive or protected ecosystems (much further downstream);<br>• 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;<br>• Evidence of historical channel change through artificial channel straightening and re-profiling; and<br>• 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 - 2018); and<br>• A WFD water body with >5km (or no) hydrological connection to European Sites or national designated sites.<br>Or<br>• A non-WFD water feature with minimal hydrological importance to sensitive or protected ecosystems; and / or economic and social uses;<br>• 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<br>• 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 (see Table 13.4).

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 project 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.<br>▪ Loss of regionally important public water supply.<br>▪ Loss or extensive change to a designated nature conservation site.<br>▪ Reduction in water body WFD classification or quality elements.<br>▪ Results in loss of receptor and/or quality and integrity of receptor.<br>▪ 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. |

| Nature of Impact | Description | Scale and Nature of Impacts |
|---|---|---|
| Medium Adverse | Results in effect on attribute and / or quality and integrity of the attribute | ▪ Partial loss in productivity of a fishery.<br>▪ Degradation of regionally important public water supply or loss of major commercial / industrial / agricultural supplies.<br>▪ Contribution to reduction in water body WFD classification.<br>▪ Results in impact on integrity of receptor or loss of part of receptor.<br>▪ 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.<br>▪ Minor impacts on water supplies.<br>▪ Results in minor impact on integrity of receptor or loss of small part of receptor.<br>▪ 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.<br>▪ 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 | Profound / Very Significant | Profound |
| Very High | Imperceptible | Significant / Moderate | Very Significant | Profound |
| High | Imperceptible | Moderate / Slight | Significant / Moderate | Profound / Very Significant |
| Medium | Imperceptible | Slight | Moderate | Significant |
| Low | Imperceptible | Imperceptible | Slight | Slight / Moderate |

#### 13.2.4.5 Methodology for Operational Traffic Impact Assessment Method

Traffic modelling (see Chapter 6 (Traffic & Transport)) has been carried out for two scenarios Do Minimum and Do Something (i.e., 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 TII Standard DN-DNG-03065TII Road Drainage and the Water Environment (2015) (TII 2015) was consulted. It states that roads carrying less than 10,000 AADT (Annual Average Daily Traffic) are lightly trafficked and therefore pollutants occur in lower concentrations. As such no significant impact on receptors

are considered likely. 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, the Proposed Scheme Catchment Plans were consulted (see Proposed Surface Water Drainage Works (BCIDA-ACM-DNG_RD-0809_XX_00-DR-CD-9001) in Volume 3 of this EIAR).

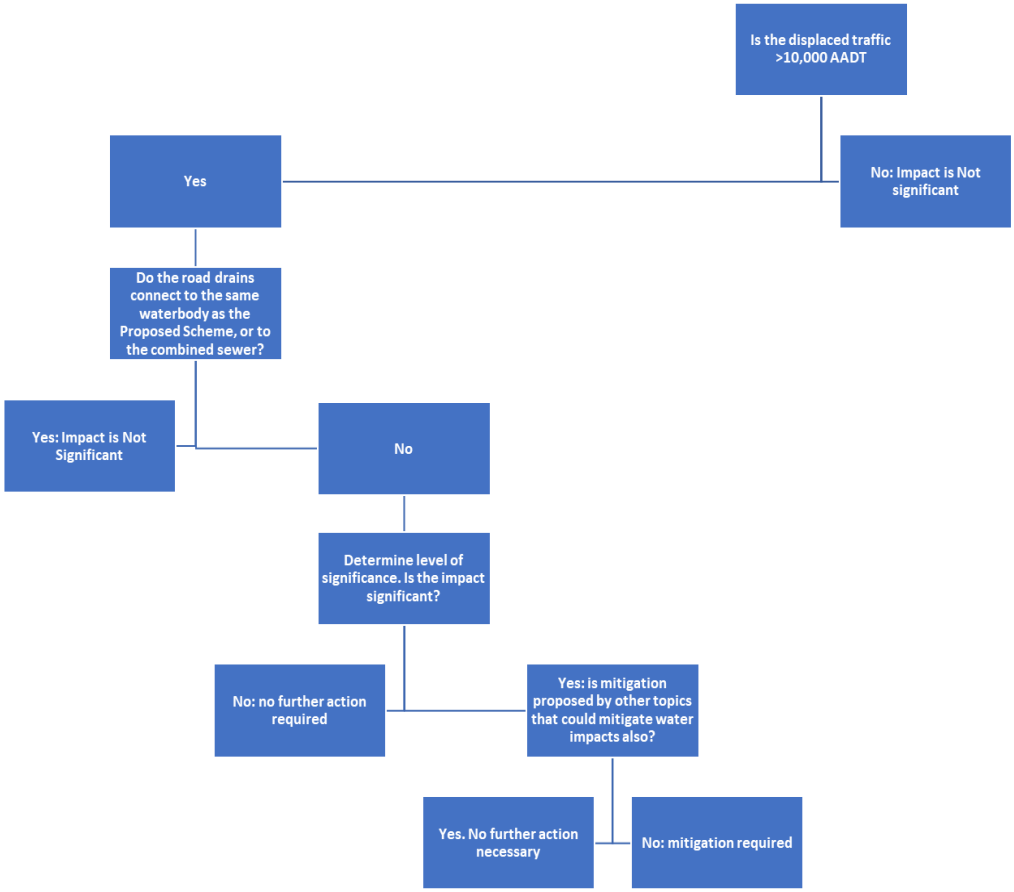


**Diagram 13.1: Traffic Assessment Decision Tree**

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 UK Highways Agency 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 road section length <100m, magnitude is negligible;
- If AADT < 10,500 magnitude is small;
- If AADT >10,500 and <11,000 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 2018a) 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$^2$. The largest urban centre in the catchment is Dublin City. The other main urban centres, relevant to the study area, are Clondalkin, Tallaght, Walkinstown, Fox-and-Geese and Greenhills. 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 2018a). The EPA assigns biological river quality (biotic index) ratings from 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 waterbodies (HMWB) and artificial surface waterbodies (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 2018a)**

| 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 (refer to Figure 13.1 in Volume 3 of this EIAR):

- Jobstown Stream (Dodder_040);
- River Poddle (Poddle_010);
- River Camac (Camac_040);
- Coolfan Stream (Camac_040);
- Robinhood Stream (Camac_040);
- Grand Canal (Grand Canal Main Line (Liffey and Dublin Bay)); and
- Liffey Valley Estuary Upper.

The WFD Status of the rivers and streams within the study area of the Proposed Scheme are detailed in Table 13.7.

**Table 13.7: Surface Water WFD Status**

| WFD Sub-Catchment | Waterbody Section ID | Heavily Modified? | Type | Status (2016 to 2021) | Key Pressures: Elements Causing or with Potential to Cause Less Than Good Status | Risk Categorisation |
|---|---|---|---|---|---|---|
| Dodder_SC_010 | Dodder_040 | Unknown | River | Moderate | Urban runoff | At Risk |
| Dodder_SC_010 | Poddle_010 | In parts – lengthy culverts | River | Poor | Urban runoff | At Risk |
| Liffey_SC_090 | Camac_040 | Unknown | River | Poor | Urban runoff | At Risk |
| Liffey_SC_090 | | Unknown | River | Poor | Urban runoff | At Risk |
| Liffey_SC_090 | | Unknown | River | Poor | Urban runoff | At Risk |
| N/A | Grand Canal Main Line (Liffey and Dublin Bay) | Yes – AWB | Canal | Good Ecological Potential | Elevated faecal coliforms and ammonia | N/A |
| N/A | Liffey Estuary Upper | No | Transitional | Good | N/A | At Risk |

### 13.3.4 Field Survey

The Proposed Scheme was surveyed in March 2020 and August 2022. The results of the field surveys are detailed within Table 13.8, Table 13.9 and Table 13.10.

**Table 13.8: Survey Information for Selected Sites within the Study Area (Tallaght to City Centre Section)**

| Survey Attribute | Survey Location 1 | Survey Location 2 | Survey Location 3 | Survey Location 4 | Survey Location 5 |
|---|---|---|---|---|---|
| Location | Camac_040 at Park West | Camac_040 at other side of Park West | Camac_040 at Woodford walk - Hangar Road | Grand Canal – R134 New Nangor Road | Start of the Poddle_010 |
| Visual Flow | Fast flowing with medium water level | Medium flow with moderate levels | Medium level with medium flow | Altered. Low flow. Medium / high levels | Low flow with medium water level |
| Visual Water Quality | A lot of ragging and litter present. Visibility poor. | Quality is poor. Rubbish - likely regular fly tipping area. Possible source of contamination noted on eastern side of the river downstream. | Not visible – hard to verify quality due to access issue | Clear water but litter present. Water vegetation is to be confirmed with ecologist as possible water quality indicators | Highly polluted and rubbish, ragging present |
| Bed Observation | Not visible, presumed somewhat artificial at culvert | Bed not visible | Bed not visible | Significant bed vegetation at margins of river. Fine sediment | Artificial concrete in part, coarse sediments |
| Bank Stability | High stability due to vegetation | Medium stability. 45-degree sloping grass verge | Concrete bank in one section. Sloping grass verge upstream | Low grass verge and rush | Low sloping grass verge, low stability |
| Features | None recorded | None recorded | None recorded | None recorded | None recorded |
| Modifications | Partially culverted | Partially culvert | Heavily modified | Canal / artificial waterbody altered by lock and quay which is not at this location | Partially culverted upstream |
| Runoff Pathway | Possible direct pathway from road network | Flat, likely direct pathway from road. | Pathway is parallel to watercourse. Sloping to waterbody | Direct pathway from road which is parallel to watercourse | Likely direct runoff from sewer, actual path perpendicular to the waterbody. Stone barrier present |
| Runoff Risk | High | Medium to high | Low to medium | High risk as banks are sloped | If direct present, high. Otherwise, low. |
| Riparian Detail | Beech trees, bramble, ground ivy, nettles, overhanging trees, holly | Grass verges. Standing tree. Bramble and rushes | Cement sloped edges. Some scrub vegetation | Grass verges and rush | Grass verge with some gorse and common hog weed |
| Natural Barriers | Scrub area at roadside and along banks | Partial culvert | Stone wall in sections | Natural channel and banks | Stone wall |
| Discharges | Unable to determine if present | Unable to determine if present | Unable to determine if present | Nonvisible | Present and active (misconnection or fault possible, discharge source from side of culvert) |
| Culverted | Partial | Partial | No | No | Partial |

**Table 13.9: Survey Information for Selected Sites within the Study Area (Clondalkin to Drimnagh Section)**

| Survey Attribute | Survey Location 1 | Survey Location 2 |
|---|---|---|
| Location | Grand Canal Crossing at Coombe | Sally / Parnell Bridge - Grand Canal |
| Visual Flow | Altered. Medium / high flow | High water level. Low flow |
| Visual Water Quality | Rubbish and debris present | Green colouration. Rubbish. Odorous discharge which could be sewer overflow |
| Bed Observation | Bed not visible except for large items of rubbish. Presumed artificial | Bed not visible |
| Bank Stability | Walls one side. Low sloping grass verge – low stability on grassed side | Stone in sections. Low sloping grass elsewhere |
| Features | None | None |
| Modifications | Canal / artificial waterbody altered by lock and quay which is not at this location | Canal / artificial waterbody altered by lock and quay which is not at this location |
| Runoff Pathway | Possible direct link to sewer. Perpendicular to watercourse | Direct link from road network |
| Runoff Risk | High if direct network link, otherwise medium | High |
| Riparian Detail | Stonewall one side, grass verge on the other. Some standing trees. Japanese knotweed | Low sloping verges, with rush winter helipad. Bramble, rushes and Japanese knotweed |
| Natural Barriers | Stone wall | Stone wall / bridge |
| Discharges | Nonvisible | Present and active. Likely road runoff |
| Culverted | No | No |

**Table 13.10: Survey Information for Selected Sites in 2022 within the Study Area**

| Survey Attribute | Survey Location 1 | Survey Location 2 | Survey Location 3 |
|---|---|---|---|
| Location | Camac_040 Crossing at Woodford Walk | Construction Compound TC12 | Construction Compound TC13 |
| Date | 30/08/2022 16:45 | 30/08/2022 16:30 | 30/08/2022 17:00 |
| Climate Observations | Sunny, slightly overcast | Sunny, clear skies slight wind | Sunny, clear skies slight wind |
| Waterbody Crossed | Yes | No | No |
| Construction Compound | No | Yes | Yes |
| Closest Waterbody | Camac_040 | Camac_040 | Camac_040 |
| Distance to Waterbody | 10m from survey point | 15m | 45m |
| River Flow | Low flow | Low flow | Low |
| Water Quality | Visually clear, no signs of contamination | Visually clear, some light brown discolouration noted | - |
| Run-off pathway | Possibly pathway via road, however, the banks are heavily vegetated helping to reduce flow. | Potential pathway from surface water drains. Unlikely for runoff from road as a result of the thick vegetation. | - |

| Survey Attribute | Survey Location 1 | Survey Location 2 | Survey Location 3 |
|---|---|---|---|
| Run-off risk | Low | Low flow | Potential pathway from s/w drains |
| Riverbed observations | Minor pebbles noted along the riverbed. | Difficult to see the riverbed. However, vegetation growth is visible along the bed. | - |
| Riverbank observations | The left riverbank is heavily vegetated with overgrown shrubs | Natural banks with high levels of vegetation on both banks. | - |
| Barriers | Culverted under road, stone walls along the bank. | Metal fence separating road from river. | - |
| Riparian Detail | - | Heavily vegetated | - |

### 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 Nutrient Sensitive Areas, shellfish areas, coastal bathing waters, Special Areas of Conservation (SACs), Special Protection Areas (SPAs), proposed Natural Heritage Areas (pNHAs) and salmonid rivers.

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) and Figure 12.2 in Volume 3 of this EIAR shows the hydrological connectivity to the Proposed Scheme. The following European sites were identified to be relevant to this assessment:

- Rockabill to Dalkey Island SAC (site code: 003000) (approximately 14km from Proposed Scheme at its nearest point);
- North Dublin Bay SAC (site code: 000206) (approximately 7.15km from Proposed Scheme at its nearest point);
- South Dublin Bay SAC (site code: 000210) (approximately 4.15km from Proposed Scheme at its nearest point);
- North Bull Island SPA (site code: 004006); (approximately 6km from Proposed Scheme at its nearest point);
- South Dublin Bay and River Tolka Estuary SPA (approximately 3.8km from Proposed Scheme at its nearest point) (site code: 004024);
- In addition, the following Natural Heritage Areas proposed for designation under Irish national Legislation(pNHAs) located within the study area. hydrologically connected are:
- North Dublin Bay pNHA (site code: 000206);
- South Dublin Bay pNHA (site code: 000210);
- Dodder Valley pNHA (site code: 000991); and
- Grand Canal pNHA (site code: 002104).

There are three Nutrient Sensitive Areas within the study area. They are the River Liffey, Liffey Estuary and Tolka Estuary designated Urban Waste-Water Treatment (UWWT) Directive (refer to Figure 13.2 in Volume 3 of this EIAR).

There is one designated shellfish area in Malahide. 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 seven designated marine bathing waters downstream of the Proposed Scheme. The EPA published its Bathing Water Quality - A Report for the Year 2021 in May 2022 (EPA 2022b) and the website beaches.ie keeps this information regularly updated. Information relating to the beaches and the most up to date assessment (July 2022) of their quality is provided below:

- Dollymount Strand Excellent Quality (approximately 9km from Proposed Scheme at its nearest point);
- North Bull wall – North Bull – Excellent Quality (approximately 8km from Proposed Scheme at its nearest point);
- Half Moon Beach – Excellent quality (approximately 6km from Proposed Scheme at its nearest point);
- Shelley Banks – Good Quality (approximately 7km from Proposed Scheme at its nearest point);

- Sandymount Strand – Excellent Quality (approximately 9km from Proposed Scheme at its nearest point);
- Merrion Strand – Excellent Quality (approximately 10km from Proposed Scheme at its nearest point); and
- Seapoint – Excellent Quality (approximately 11km from Proposed Scheme at its nearest point).

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) Group Scheme 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 wastewater systems (via Storm Water Overflows (SWOs) and urban surface runoff.

The following Industrial Emissions (IE) licensed sites were identified within the study area:

- IE Licenced Facility BG Flexible Packaging, South Circular Road, Dublin 8, Reg No: P0305-01;
- IE Licenced Facility Our Lady's Hospital, Cooley Road, Dublin 2, Reg No: P0063-01;
- IE Licenced Facility BOC Gases, Bluebell, Dublin 12, Reg No: P0051-02;
- IE Licenced Facility Sun Chemical Inks, Bluebell, Dublin 12, Reg No: P0230-01;
- IE Licenced Facility JfK Environmental, Bluebell, Dublin 12, Reg No: P0196-01;
- IE Licenced Facility BASF Printing Systems, Bluebell, Dublin 12, Reg No: P0228-01;
- IE Licenced Facility Kayfoam Woolfson, Bluebell, Dublin 12, Reg No: P0058-02;
- IE Licenced Facility Padraig Thornton Waste Disposal, Bluebell, Dublin 12, Reg No: W0227-01;
- IE Licenced Facility Packaging Inks & Coatings, Naas Road, Dublin 12, Reg No: P0253-01;
- IE Licenced Facility R&A Bailey and Company, Nangor House, Dublin, Reg No: P0807-01;
- IE Licenced Facility Hitech Plating, Ballymount Industrial Estate, Dublin 22, Reg No: P0276-01;
- IE Licenced Facility Ballymount Baling Station, Ballymount Road, Dublin 22, Reg No: W0003-03;
- IE Licenced Facility Galco Steel Limited, Ballymount Road, Dublin 22, Reg No: P0284-02;
- IE Licenced Facility Starrus Eco Holdings, Ballymount Cross, Dublin 24, Reg No: W0039-02;
- IE Licenced Facility APW Enclosures, Airton Road, Dublin 24, Reg No: P0485-01;
- IE Licenced Facility Safety Kleen Ireland, Airton Road, Dublin 24, Reg No: W0099-01;
- IE Licenced Facility The Adelaine & Meath Hospital, Tallaght, Dublin 24, Reg No: P0160-01;
- IPPC Licenced Facility Sherwin-Williams, Robinhood Industrial Estate, Dublin 22, Reg No: P0711-01;
- IPPC Licenced Facility Plateco ZN Limited, Mulcahy Keane Estate, Dublin 22, Reg No: P0277-01;
- IPPC Licenced Facility Irish Printed Circuits, Ballymount Drive, Dublin 12, Reg No: P0217-01;
- IPPC Licenced Facility CCM Limited, Greenhills Road, Dublin 12, Reg No: P0346-01;
- IPPC Licenced Facility Bimeda Animal Health, Airton Close, Dublin 24, Reg No: P0357-01;
- IPPC Licenced Facility Microprint, Airton Road, Dublin 24, Reg No: P0659-02; and
- IPPC Licenced INX International, Tallaght, Dublin 24, Reg No: P0252-01.

### 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 level of treatment and attenuation provided currently. Based on this assessment, the existing road and bridge network consists primarily of kerb and gully, with no treatment or attenuation within the network. No SuDS were identified within the study area.

The pressures identified for the water bodies in the study area include diffuse pollution and discharges from SWOs. These pressures result from failures in the drainage system, either as a result of insufficient capacity, poor maintenance or incorrectly connected wastewater from domestic or commercial properties. It is likely that some or all of these issues are present within the study area.

**Table 13.11: Existing Drainage along the Tallaght to City Centre Section**

| Catchment | Existing Network Type | Waterbody |
|---|---|---|
| 9.12 | Surface Water (Storm) | Network outfalls to Dodder_040 |
| 9.11 | Surface Water (Storm) | Network outfalls to Dodder_040 |
| 9.10 | Surface Water (Storm) | Network outfalls to Poddle_010 |
| 9.9 | Surface Water (Storm) | Network outfalls to Poddle_010 |
| 9.8 | Surface Water (Storm) | Network outfalls to Poddle_010 |
| 9.7 | Surface Water (Storm) | Unknown assumed Poddle_010 |
| 9.6 | Surface Water (Storm) | Camac_040 |
| 9.5 | Surface Water (Storm) | Poddle_010 |
| 9.4 | Surface Water (Storm) | Poddle_010 |
| 9.3 | Surface Water (Storm) & Combined | Ringsend WwTW |
| 9.2 | Surface Water (Storm) & Combined | Ringsend WwTW |
| 9.1 | Surface Water (Storm) & Combined | Ringsend WwTW |

**Table 13.12: Existing Drainage along the Clondalkin to Drimnagh Section**

| Catchment | Existing Network Type | Waterbody |
|---|---|---|
| 8.2 | Surface Water (Storm) | Camac_040 |
| 8.3 | Surface Water (Storm) | Camac_040 |
| 8.4 | Surface Water (Storm) | Camac_040 |
| 8.5 | Surface Water (Storm) | Camac_040 |
| 8.6 | Surface Water (Storm) | Camac_040 |
| 8.7 | Surface Water (Storm) | Camac_040 |
| 9.5 | Surface Water (Storm) | Camac_040 |

### 13.3.9 Surface Water Features

The five main WFD water bodies within the study area, are discussed within this Section. All of the water bodies listed in Table 13.13 ultimately flow into the Liffey Valley Estuary Upper and subsequently Dublin Bay, apart from the Grand Canal which flows in Liffey Estuary Lower and subsequently Dublin Bay (refer to Figure 13.1 in Volume 3 of this EIAR). None of these water bodies are contained within the RBMP 2018 - 2021 'Priority Areas for Action' (DHPLG 2018). The desk study did not identify any surface water features within the study area which are not classified as WFD waterbodies. The overarching hydromorphology of the study area were assessed during field surveys. The study area includes highly modified straight planform water bodies with walled or artificial riparian zones. A summary of the baseline condition of each of these WFD water bodies and their associated flood risk within the study area are detailed in the following sections.

**Table 13.13: Distance of the Water Bodies Within the Study Area to the Proposed Scheme and the Individual Sections of the Proposed Scheme**

| Waterbody | Nearest Proposed Scheme Section | Approximate Distance from Proposed Scheme (m) | Number of Crossings |
|---|---|---|---|
| Dodder_040 | Section 1: Tallaght to Ballymount | 200 | 0 |
| Poddle_010 | Section 1: Tallaght to Ballymount | 0 | 1 |
| Grand Canal | Section 3: Crumlin to Grand Canal | 0 | 1 |
| Poddle_010 | Section 4: Grand Canal to Christchurch | 0 | 1 |
| Liffey Estuary Upper | Section 4: Grand Canal to Christchurch | 50 | 0 |
| Camac_040 | Section 5: Woodford Walk / New Nangor Road junction to Long Mile Road / Naas Road / New Nangor Road junction | 0 | 4 |
| Camac_040 | Section 6: Long Mile Road / Naas Road / New Nangor Road junction to Drimnagh | 230 | 0 |

#### 13.3.9.1 Dodder_040

The Dodder_040 is 24.25km long. The most upstream segment of this water body is a small tributary of the main channel; it rises south of Sean Walsh Park and flows in a north-easterly direction, running parallel to the N81 Tallaght Bypass before it confluences with the main channel of the Dodder_040, approximately 80m south of Glenview Roundabout. Much of its course represents a straightened planform, indicating some form of modification. Land use within the catchment is a mixture of recreational and urban / industrial.

Dodder_040 will not be crossed by the Proposed Scheme. However, it is located approximately 200m to the south and so is within the study area. The Dodder_040 has a Moderate WFD Status and is At Risk of not achieving Good Status by 2027. The water body is facing significant pressure due to urban runoff from diffuse sources causing nutrient and organic pollution.

In terms of assigning sensitivity, it has Moderate WFD status and at the closest point of the Proposed Scheme, the water body is >5km from a designated SAC. It would normally be assigned 'Medium sensitivity'. However, whilst not a designated salmonid river, salmonid species are noted by the IFI to be present. Therefore, it is assigned a High sensitivity.

#### 13.3.9.1 Poddle_010

The Poddle_010 is 10.13km long and contains the main segment of the River Poddle and the River Tymon and joins the Liffey Estuary Upper at R148 Wellington Quay, upstream of Father Mathew Bridge.

The River Poddle rises in Cookstown in Tallaght and flows towards Dublin City via Mount Argus where it splits at a point known as the Tongue. The two rivers later converge and flow through Dublin in a culvert. The River Poddle is significantly culverted along its length or is within concrete channels and is considered to be an underground hidden river in Dublin (Sweeney 1991). Land use within the Poddle catchment is primarily urban / industrial.

The Proposed Scheme will cross the water body close to its source in Tallaght in Section 1 and again in Section 4 at Saint Luke's Avenue, where it is in culvert. The Poddle_010 is of Poor WFD Status and is At Risk of not achieving Good Status by 2027. Significant pressures include urban runoff from diffuse sources causing nutrient and organic pollution, as well as hydro-morphological impacts as result of significant culverting.

The most recent Biological Q Value assessment of the River Poddle was in 2007 (EPA 2020b). Only one station upstream of the study area at Kimmage was assessed and assigned Q3. The assessment stated:

> *'The Poddle stream was moderately polluted at Kimmage (0400) in 2007. The lack of sensitive macroinvertebrate species and the abundance of tolerant species indicated severe ecological disruption. Excessive siltation and the presence of Cladophora sp. a filamentous algae indicative of enrichment were noted. Recent excavation works on the bank noted.'*

This station is not present within the study area.

In terms of assigning sensitivity, a poor status water body which is highly culverted would normally be considered to be a low sensitivity water body. However, the ultimate destination of the Poddle_010 is the Liffey Estuary Upper, which is good WFD status and a Nutrient Sensitive Area (NSA). Given its short, direct hydrological connection with an NSA, it is assigned High sensitivity.

#### 13.3.9.1 Grand Canal (Grand Canal Main Line (Liffey and Dublin Bay))

The Grand Canal Main Line (Liffey and Dublin Bay) (hereafter referred to as the Grand Canal) is an artificial water body, primarily used for recreation. Constructed in the 18th century, the canal traverses the country from Dublin to Shannon for approximately 131km. Waterways Ireland are responsible for the monitoring of this waterbody. The WFD also considers heavily modified waterbodies (HMWB) and artificial waterbodies (AWB). The WFD requires HMWB and AWB to achieve good ecological potential rather than Good Status. The land use associated with the section of the canal contained within the study area, is mostly urban / industrial.

In terms of assigning sensitivity, the Good Status of the Grand Canal means that it would be of High sensitivity. Its connection into Liffey Estuary Upper and ultimate hydrological connection to Dublin Bay SAC is also considered. However, without a direct connection, sensitivity would remain as High.

#### 13.3.9.1 Liffey Valley Estuary Upper

Liffey Valley Estuary Upper is a transitional waterbody 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. Liffey Estuary Upper has a Good WFD Status and is At Risk of not achieving Good Status by 2027. The main risk is urban wastewater from Combined Sewer Overflows (CSOs) at Ringsend. The key impacts are considered to be nutrient pollution and alterations to habitats due to morphological changes.

In terms of assigning sensitivity, Liffey Valley Upper is of Good WFD status and is a Nutrient Sensitive Area. It is classified as being Very High sensitivity.

#### 13.3.9.2 Camac_040

The River Camac is a significant tributary of the River Liffey. The River Camac rises in the west of Dublin City and flows through Saggart, Clondalkin, Inchicore and Kilmainham before entering the Liffey Estuary Upper from a discharge point under Heuston Station. Much of its course is dominated by concrete channels and significant culverting, including the section of the Camac_040 which travels under Heuston Station. The River Camac is a heavily industrialised urban river with similarly associated land use within its catchment.

The EPA segment of the River Camac within the study area is Camac_040. This section is 13.57km and includes the primary segment of the River Camac from Clondalkin to where it joins the River Liffey at Heuston Station. The Camac_040 also includes a number of significant and minor tributaries including Ballymount Stream, Robinhood Stream, Walkinstown Stream and Drimnagh Castle or Walkinstown Stream.

Camac_040 will run parallel to the Proposed Scheme at Woodford Walk before being crossed by the Proposed Scheme at Oak Road / New Nangor Road junction, where it continues until it converges with the Liffey Estuary Upper. The Camac_040 section has Poor WFD Status and is At Risk of not achieving Good Status by 2027. A range of significant pressures have been identified, including culverting causing alteration to habitats, urban wastewater from SWOs and urban runoff from diffuse sources.

The most recent Biological Q Value assessment of the River Camac was in 2019. Four stations were monitored along the length of the watercourse, with Q3 being the lowest assigned Q Value. The assessment stated:

> '*The Camac was found to be at unsatisfactory conditions in August 2019. Poor ecological conditions recorded at 0100, 0310 and 0500, with 0100 (Saggart) declining from Good conditions in 2016. Moderate conditions were maintained at 0200 (Brownsbarn)*' (EPA 2020d)

Despite its Poor status and poor ecological conditions, the IFI, in their consultation response stated:

*'The Camac River is a recognised salmonid system, under significant ecological pressure as a result of its largely urban situation. Although considerable sections of main channel are culverted, lengths of this river that remain on the surface invariably support self-sustaining populations of brown trout (Salmo trutta). The river also supports populations of the Freshwater Crayfish (Austropotamobius pallipes) and Lamprey (Lampetra sp.) species listed under Annex II of the EU Habitats Directive.'*

In terms of assigning sensitivity, its Poor status would normally render it Medium to Low sensitivity. However, its direct hydrological connection to the Liffey Valley Nutrient Sensitive Area, and the fact that it is a recognised salmonid system and supports populations of Annex II species, mean that it is determined to be High sensitivity.

#### 13.3.9.3 Summary of Baseline Receptor Sensitivity

**Table 13.14: Baseline Receptor Sensitivity**

| Waterbody Section ID | Attributes | Indicator / Feature | Sensitivity |
|---|---|---|---|
| Dodder_040 | River | Moderate WFD Status.<br>Salmonid species noted by the IFI. | High |
| Poddle_010 | River | Direct hydrological connection with Designated Nutrient Sensitive Area (Liffey Valley Upper) (High WFD Status).<br>Indirect hydrological connection with South Dublin Bay and River Tolka Estuary SPA and North Dublin Bay SAC.<br>Poor WFD Status. | High |
| Grand Canal Main Line (Liffey and Dublin Bay) | Artificial | Good Ecological Potential. | High |
| Liffey Estuary Upper | Transitional | Designated Nutrient Sensitive Area.<br>Indirect hydrological connection with South Dublin Bay and River Tolka Estuary SPA and North Dublin Bay SAC.<br>Good WFD Status. | Very High |
| Camac_040 | River | Direct hydrological connection with Designated Nutrient Sensitive Area (Liffey Estuary Upper).<br>Poor WFD Status. | 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 (FRA) 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 Environment, 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 this Report is included in Appendix A13.2 in Volume 4 of this EIAR.

The FRM Guidelines define three Flood Zones, namely:

- 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 years 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 years for river flooding and between 0.1% AEP or 1 in 1,000 year and 0.5% AEP or 1 in 200 years 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 Zones A and B.

#### 13.3.10.1 Tallaght to City Centre

The Proposed Scheme from Tallaght to City Centre has varying levels of flood risk along the route. There are multiple sections of the route which are located within the 1 in 10-year fluvial flood extents, and are therefore located within Flood Zone A. These are:

- At Dolphins Barn on the R110;
- On Clogher Road near St. Kevin's College; and
- At the junction between R110 and R137 (near St. Patrick's Cathedral).

The risk of pluvial flooding to the site is low.

The risk of groundwater flooding is considered moderate.

#### 13.3.10.2 Clondalkin to Drimnagh

The Proposed Scheme from Clondalkin to Drimnagh has varying levels of flood risk along the route. The section of the route at Fox-and-Geese and Drimnagh is within the 1 in 100-year Fluvial Flood Extents, and is therefore located within Flood Zone A.

There is no tidal flood risk along this section of the Proposed Scheme.

The risk of pluvial flooding to the site is low.

The risk of groundwater flooding is considered high.

#### 13.3.10.3 Climate Change

Climate change will result in an increased risk of flooding from the existing surface water drainage network due to:

- Increased river flows;
- Increased rainfall depths and intensity; and
- Increased sea levels.

Increased rainfalls depths and intensities will increase the risk of pluvial flooding from the existing surface water drainage network. New drainage measures which will be installed as part of the scheme, including any SuDS, are designed to allow for future climate change.

There will be an increased risk of fluvial flooding to the Proposed Scheme as a consequence of climate change. As noted, it is not possible to reduce the current risk of fluvial flooding to the Proposed Scheme as the existing road levels need to be maintained. The Proposed Scheme will not exacerbate the impacts of climate change on the risk of fluvial flooding.

The impact of climate change on coastal flooding is not applicable to the Proposed Scheme as the current and future risk is so low.

## 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 mitigations 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 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 CIRIA SuDS Manual (CIRIA 2015). The CIRIA 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., attenuation ponds or tanks) 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.

In a number of areas along the Proposed Scheme, there will be either no increase or a reduction in impermeable areas. Where there is an increase in impermeable area is proposed, the following interventions are proposed:

- Sealed Drainage;
- Grass Surface Water Channels, Swales, and Bio Retention Areas / Rain Gardens (SW / RD);
- Soakaways and Infiltration Trenches (SO / IT);
- Tree Pits (TP); and
- Attenuation Tanks / Oversized Pipes (AT / OSP).

The details of drainage measures proposed for each catchment and subsequently each water body are provided in Table 13.15. A summary for each water body is provided in Table 13.16. No new outfalls are proposed.

**Table 13.15: Proposed SuDS and changes to Impermeable Areas**

| Existing Catchment Reference | Chainage | Water body | Road Corridor Area ($m^2$) | Change of use to impermeable areas ($m^2$) | Change of use to permeable areas ($m^2$) | Net Change ($m^2$) | Percentage Change (%) | SuDS Measures Proposed |
|---|---|---|---|---|---|---|---|---|
| 9.12 | A0 – A800 | Dodder_040 | 8855 | 1668 | 570 | 1353 | 16.7% | Oversized pipes, bioretention areas and green roofs |

| Existing Catchment Reference | Chainage | Water body | Road Corridor Area ($m^2$) | Change of use to impermeable areas ($m^2$) | Change of use to permeable areas ($m^2$) | Net Change ($m^2$) | Percentage Change (%) | SuDS Measures Proposed |
|---|---|---|---|---|---|---|---|---|
| 9.11 | A800 – A2000 | Dodder_040 | 24981 | 0 | 0 | 0 | 0% | N/A |
| 9.10 | A2000 – A2210 | Poddle_010 | 1736 | 0 | 0 | 0 | 0% | N/A |
| 9.9 | A2210 – A2550 | Poddle_010 | 5583 | 1654 | 154 | 1454 | 26% | Oversized pipes |
| 9.8 | A2550 – A2770 | Poddle_010 | 3672 | 1927 | 0 | 1427 | 38.9% | Oversized pipes |
| 9.7 | A2770 – A3630 | Poddle_010 | 9380 | 12296 | 2746 | 19847 | 211% | Oversized pipes |
| | B0 – B520 | | | | | | | Oversized pipes |
| 9.6 | A3670 – A5535 | Camac_040 | 47317 | 22020 | 2827 | 13555 | 28.6% | Oversized pipes, bioretention areas |
| | C75 – C914 | | | | | | | Oversized pipes, bioretention areas |
| 9.5 | A5325 – A7400 & | Poddle_010 | 81327 | 1469 | 2292 | -576 | -0.7% | Oversized pipes |
| | D0 – D1060 | Poddle_010 | | | | | | N/A |
| 9.4 | A7400 – A7800 | Poddle_010 | 16628 | 48 | 115 | -47 | -0.3% | N/A |
| | D1060 - D1346 | Poddle_010 | | | | | | N/A |
| 9.3 | A8975 - A9275 | Ringsend WwTP | 63798 | 0 | 615 | -431 | -0.7% | N/A |
| | E0 - E2447 | Ringsend WwTP | | | | | | N/A |
| 9.2 | A7800 – A9275 | Ringsend WwTP | 27632 | 435 | 403 | 22 | 0.1% | Oversized pipes |
| 9.1 | A9275 – A11438 | Ringsend WwTP | 55364 | 55 | 277 | 155 | 0.28% | Oversized pipes |
| 8.2 | F0 – F615 | Camac_040 | 13168 | 1344 | 390 | 668 | 5.1% | Oversized pipes, tree pits, soakaways and filter drains |
| 8.3 | F615 – F1500 | Camac_040 | 20979 | 4928 | 246 | 3277 | 15.6% | Oversized pipes, tree pits, bioretention areas, soakaways and filter drains |

| Existing Catchment Reference | Chainage | Water body | Road Corridor Area ($m^2$) | Change of use to impermeable areas ($m^2$) | Change of use to permeable areas ($m^2$) | Net Change ($m^2$) | Percentage Change (%) | SuDS Measures Proposed |
|---|---|---|---|---|---|---|---|---|
| 8.4 | F1500 – F1980 | Camac_040 | 11738 | 2189 | 107 | 1457 | 12.4% | Oversized pipes, tree pits, bioretention areas and filter drains |
| 8.5 | F1980 – F2750 | Camac_040 | 39188 | 5583 | 1864 | 3434 | 8.8% | Oversized pipes, bioretention areas and filter drains |
| 8.6 | F2750 – F3330 | Camac_040 | 16743 | 2438 | 242 | 1537 | 9.2% | Oversized pipes and soakaways |
| 8.7 | F2200 – F2350 (Long Mile Road) | Camac_040 | 2913 | 1189 | 0 | 833 | 28.6% | Oversized pipes |
| 9.5 | F3330-F4226 | Camac_040 | 24739 | 125 | 758 | -443 | -1.8% | Bioretention area |

**Table 13.16: Summary of Increased Impermeable areas per water body**

| Waterbody | Approximate Impermeable Surface Area | | | SuDS Measures Proposed |
|---|---|---|---|---|
| | Existing | Additional | % change | |
| Dodder_040 | 33836 | 1668 | 5 | Oversized pipes, bioretention areas and green roofs |
| Poddle_010 | 118326 | 17394 | 15 | Oversized pipes, bioretention areas |
| Camac_040 | 176785 | 39816 | 23 | Oversized pipes, tree pits, bioretention areas, soakaways and filter drains |
| Ringsend WwTP | 146794 | 490 | 0 | 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) of this EIAR. 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 road 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 process under baseline conditions (i.e., what is there at present) and reported by the EPA. The RBMP 2018-2021 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 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 Directive 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. 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 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.

Urban Runoff which relates to a mixture of misconnections, leakage from sewers and runoff from paved and unpaved areas, has been identified as a significant pressure to all water bodies, with the exception of Liffey Estuary Upper. Measures are underway by South Dublin County Council and Dublin City Council within the Poddle_010 and Camac_040 to investigate diffuse urban sources and pressures in the area. Additional measures and actions are in place including a Hydromorphological Risk Assessment. All of these measures should reduce these pressures. Further investigation is required to determine the nature and extent of the impacts.

Discharges from WwTPs and agglomeration networks have been identified as pressures to all water bodies within the study area. These include urban wastewater discharges from SWOs.

A programme of WwTP upgrades across the country is scheduled to take place between 2021 and 2024 with some upgrade works already underway.

The EPA Urban Wastewater Treatment in 2018 report (published in 2019) highlights two key actions to improve treatment at WwTPs:

- Upgrade deficient wastewater treatment systems in as timely a manner as possible. This requires increased investment and efficient delivery of infrastructure improvements; and
- Get the best performance from the existing treatment systems by continuing to improve how they are operated, managed and maintained.

This report also underlines the fact that the reliable information through monitoring is essential to identify environmental risks and to plan and complete improvements to mitigate those risks. A number of actions are with Irish Water to complete assessments of their assets to target where future works are required (EPA 2019d).

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 should improve, particularly in relation to water quality.

### 13.4.3 'Do Minimum' Scenario

The potential for changes in traffic loading on side roads 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), i.e. Do Minimum, in line with the assessment of impacts on traffic as set out in Chapter 6 (Traffic and Transport).

The Do Minimum scenario (Opening Year 2028, 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 13.4.5.4 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 current and draft RBMPs (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 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 36 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 TC1:** at the western end of Old Blessington Road, adjacent to the junction with the N81 Tallaght bypass;
- **Construction Compound TC2:** R819 Greenhills Road, immediately south of the junction of Bancroft Park and R819 Greenhills Road;
- **Construction Compound TC3:** R819 Greenhills Road, between Birchview Avenue and R819 Greenhills Road;
- **Construction Compound TC4:** R819 Greenhills Road, between Treepark Road and R819 Greenhills Road;
- **Construction Compound TC5:** R819 Greenhills Road, to the north of Tymon Lane, south-east of the M50 Motorway;
- **Construction Compound TC6:** R819 Greenhills Road, outside Tallaght Truck Dismantlers, north-east of the M50 Motorway;
- **Construction Compound TC7:** R819 Greenhills Road, between Ballymount Avenue and R819 Greenhills Road;
- **Construction Compound TC8:** Bunting Park, along Bunting Road;
- **Construction Compound TC9:** R110 Crumlin Road, immediately west of the junction of Rafter's Road and the R110 Crumlin Road;
- **Construction Compound TC10:** R110 Crumlin Road, immediately east of the junction of Rutland Avenue and the R110 Crumlin Road;
- **Construction Compound TC11:** Dean Street / R137 Patrick Street;
- **Construction Compound TC12**: Between R134 New Nangor Road and Killeen Road; and
- **Construction Compound TC13:** R110 Long Mile Road, south of the New Nangor Road / Naas Road / Long Mile Road junction.

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 construction-related impacts which 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 waterbody within the study area. These include but are not limited to the following:

13.4.4.2.1 Hydrology

- Change in the natural hydrological regime due to an increase in discharge 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 hard standing 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 oil, chemicals or concrete washings. This could occur as a result of a spillage or leakage of oils and fuels stored on site or direct from construction machinery; and the storage of materials or waste in close proximity to waterbodies or drains connected to the waterbodies; and
- Re-exposure of historically settled contaminants within or near to waterbodies as a result of working within or in close proximity to the waterbody.

13.4.4.2.3 Hydromorphology

- Increased sediment loading as a result of silty water runoff or dewatering activities, introducing a sediment plume, potentially leading to the smothering of bed substrate and changes to existing morphological features; and
- Modifications to the morphological characteristics of the waterbody such as alterations to banks for construction of over bridges or other works.

#### 13.4.4.3 Assessment of Potential Impacts on Receptors

Detailed assessment of the potential impacts on receptors is provided here and a summary table for all receptors is provided in Table 13.17.

13.4.4.3.1 Dodder_040

The carriageway and pavement resurfacing works proposed at Belgard Square West, Belgard Square North Belgard Square East, Blessington Road to Main Road are not intrusive and are relatively small scale in nature, being largely reconfiguration of junctions and resurfacing of existing pavement and roads. Potential impacts will be on water quality only in terms of silty water runoff or accidental releases of anthropogenic substances (e.g., hydrocarbons). Potential impacts will be short term, adverse and of negligible magnitude, resulting in impacts of Slight to Moderate significance.

The reconfiguration of the junction at Blessington Road / Cookstown Way involving traffic island removal to permit a new junction arrangement and carriageway and pavement resurfacing / reconstruction to provide for new alignments has the potential to result in impacts. Potential impacts will be on water quality only in terms of silty water runoff or accidental releases of anthropogenic substances (e.g., hydrocarbons). Potential impacts will be short term, adverse and of small magnitude, resulting in impacts of Slight to Moderate significance.

Site preparation and activities at Construction Compound TC1 at the western end of Old Blessington Road, adjacent to the junction with the N81 Tallaght bypass, have the potential to result in impacts on water quality. The existing site is a greenfield site which has a gentle slope down to the road and nearby surface water drains. Potential impacts include silty water runoff from stripped soil, leading to increased sediment loading to the water body and accidental releases of anthropogenic substances, such as hydrocarbons. Potential impacts will be short term, adverse and of medium magnitude, resulting in Moderate to Significant impacts.

The construction of the Tallaght Bus Interchange has the potential to impact water quality due to increased fine sediment running into the waterbody from any construction works. Potential impacts will be short-term, adverse and of medium magnitude, resulting in Significant / Moderate impacts.

#### 13.4.4.3.1 Poddle_010

The carriageway and pavement resurfacing works proposed at Greenhills Road are not predicted to cause significant impacts on the Poddle_010. The works will not be intrusive enough to result in any significant increases in runoff and sediment loading to the water body. Potential impacts will be short term, adverse and of negligible magnitude, resulting in impacts of Moderate significance.

There are seven Construction Compounds proposed within the Poddle_010 drainage catchment. At all of these Construction Compounds, impacts could include silty water runoff from stripped soil leading to increased sediment loading to the water body and accidental releases of anthropogenic substances such as hydrocarbons. Different levels of impact are predicted where there is an increased or decreased likelihood of polluting substances reaching the water body.

Construction Compound TC2, alongside R819 Greenhills Road, immediately south of the junction of Bancroft Park and R819 Greenhills Road, is a greenfield site which is flat and bounded to the north by a small housing estate, to the south and east by residential areas and trees, and to the west by R819 Greenhills Road. It is relatively flat, located greater than 300m from the Dodder_040 and has limited potential connectivity to surface water drains in the road. Potential impacts will be short term, adverse and of medium magnitude, resulting in Significant impacts.

Construction Compound TC3, alongside R819 Greenhills Road, between Birchview Avenue and R819 Greenhills Road, is a greenfield site which has a gentle slope down to the residential area to the west and nearby surface water drains. Potential impacts will be short term, adverse and of medium magnitude, resulting in Significant impacts.

Construction Compound TC4, alongside R819 Greenhills Road, between Treepark Road and R819 Greenhills Road, is a greenfield site which has a gentle slope down to the road and nearby surface water drains. Potential impacts will be short term, adverse and of medium magnitude, resulting in Significant impacts.

Construction Compound TC5, alongside R819 Greenhills Road, to the north of Tymon Lane, is a greenfield site which is flat and bounded to the north by the M50, to the south by a small housing estate and trees; west and east boundaries also have mature trees. It is relatively flat with limited potential connectivity to surface water drains in the road. Potential impacts will be short term, adverse and of small magnitude, resulting in impacts of Slight to Moderate significance.

Construction Compound TC6, alongside R819 Greenhills Road, outside Tallaght Truck Dismantlers, north-east of the M50 Motorway, is a greenfield site which has a gentle slope down to the road and nearby surface water drains. Potential impacts will be short term, adverse and of medium magnitude, resulting in Significant impacts.

Construction Compound TC7, alongside R819 Greenhills Road, between Ballymount Avenue and R819 Greenhills Road, is a greenfield site bounded to the north and west by metal fencing. There are surface water

drains along Ballymount Avenue in close proximity to the site. However, the fencing provides some limited protection in terms of overland flows. Potential impacts will be short term, adverse and of medium magnitude, resulting in Significant impacts.

Construction Compound TC8, at Bunting Park, along Bunting Road, is a greenfield site bounded to the north by a low hedgerow. There are surface water drains in Bunting Road in close proximity to the site. However, the hedgerow provides some limited protection in terms of overland flows. The proposed access / egress point for the site is onto Bunting Road and so this presents an increased risk of a pathway to the drains. Potential impacts will be short term, adverse and of medium magnitude, resulting in Significant impacts.

In addition to consideration of these Construction Compounds individually, the large number within a single water body catchment means it is also prudent to consider them cumulatively. Seven compounds are present, all greenfield and with varying levels of risk in terms of pollution pathways to the Poddle_010. Potential impacts range from Slight to Very Significant. Taken together, the risk of impacts on the Poddle_010 from an incident at a Construction Compound is considered to be high. Cumulatively, potential impacts will be short term, adverse and of medium to large magnitude, resulting in Significant to Very Significant impacts.

There is an existing 220kV oil-filled underground electricity cable in Crumlin Road between St Mary's Road and Errigal Road. There are surface water drains in the road here which drain to the Poddle_010. Historically, the oil-insulated cables in Dublin are known to have leaked. There is a risk that the land in this area could be contaminated and that works here could result in a potential pathway for contaminants to reach the surface water system and the Poddle_010. Some protection will be afforded by the traps in the gullies. However, there is still potential for impacts. Potential impacts will be medium term, adverse and of small magnitude, resulting in impacts of Moderate level of significance.

#### 13.4.4.3.2 Grand Canal

There are no surface water discharges to the Grand Canal from the route of the Proposed Scheme.

Construction Compound TC10 discharges to Ringsend WwTW. However, it is located approximately 30m south of the Grand Canal. It is a relatively flat piece of land. There is a retaining wall surrounding the Grand Canal. Potential impacts will be short term, adverse and of small magnitude, resulting in impacts of Slight to Moderate significance.

#### 13.4.4.3.3 Liffey Estuary Upper

There are no direct discharges to Liffey Estuary Upper from the route of the Proposed Scheme. In the area where the Proposed Scheme is closest to this water body, the surface water system discharges via combined sewer to Ringsend WwTP. Overland flows are not considered likely; at its closest point, the Proposed Scheme is approximately 200m from the water body. Any accidental releases would be stopped or discharge to surface water drains before reaching the Liffey Estuary Upper. No impacts are likely.

#### 13.4.4.3.1 Camac_040

It is proposed to widen the existing R134 New Nangor Road carriageway at the M50 bridge to provide a three-lane arrangement. The Camac_040 is diverted alongside the R134 New Nangor Road in this location and construction activities will be in very close proximity to it (approximately 7m). The riverbank in this location slopes steeply from the roadside to the river. There is a risk of pollutants reaching the water body, including silty water and accidental releases of anthropogenic substances. The works will be relatively minor, however, involving the construction of a footpath. Potential impacts will be short term, adverse and of medium magnitude, resulting in Significant impacts.

Modifications to the headwall of the culverted section of the Camac_040 and extension of the culvert, under the R134 / Oak Road junction will be required. This will require in-stream working and works on the banks of the water body. The banks here are steep. Hydromorphological impacts are unlikely; the Camac_040 in this location is highly channelised and already culverted under the regional road. Water quality impacts are possible, including silty water, concrete washings and accidental releases of hydrocarbons from machinery. Precast headwall

sections will be used to construct the headwall. Potential impacts will be short term, adverse and of large magnitude, resulting in Very Significant impacts.

Other works proposed within the Camac_040 catchment is much less intrusive, involving reconfiguration of junctions, resurfacing and short sections of new retaining walls. There is some potential for pollution via surface water drains from these activities. Potential impacts will be short term, adverse and of small magnitude, resulting in impacts of Slight to Moderate significance.

Construction Compound TC12, located between between R134 New Nangor Road and Killeen Road, is on previously developed land, which appears to have been cleared and left to revegetate naturally. It is a relatively flat piece of land, with Heras fence-line. There is no retaining wall, which increases the likelihood of accidental releases reaching surface water drains and from there, the Camac_040. Potential impacts will be short term, adverse and of medium magnitude, resulting Significant impacts.

Construction Compound T13, located along R110 Long Mile Road, south of the New Nangor Road / Naas Road / Long Mile Road junction, is currently in use for parking and large vehicle storage, including lorry containers and caravans. The site is largely gravel with access roads. It is bounded to the east by large hedges, beyond which the Camac_040 flows. To the north, there is steel fencing and no retaining walls. There is a surface water drain at the access point to the site. Despite the size of this compound and its proximity to the Camac_040, overland flows to the water body are unlikely. The gravel and the mature hedgerow are likely to prevent pollution this way. There is a risk, however, that the surface water drains in the road, especially the one at the site entrance, will provide a pathway to the water body. Potential impacts will be short term, adverse and of medium magnitude, resulting Significant impacts.

#### 13.4.4.4 Summary of Construction Phase Impacts

**Table 13.17: Summary of Potential Construction Phase Impacts on Water Bodies within the Study Area**

| Waterbody Name | Project Activity | Potential Impacts | | | |
|---|---|---|---|---|---|
| | | Description of Potential Impacts | Sensitivity of Receptor | Magnitude of Impacts | Significance of Effects |
| Dodder_040 | Resurfacing and associated works, junction configuration – Belgard Square West, Belgard Square North Belgard Square East, Blessington Road to Main Road | Minimal sediment release expected to be negligible. | High | Negligible | Short term Adverse Slight to Moderate |
| | Resurfacing and associated works, junction configuration – Blessington Road / Cookstown Way junction | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Small | Short term Adverse Slight to Moderate |
| | Construction Compound TC1 and construction of Tallaght Bus Interchange | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Medium | Short term Adverse Moderate to Significant |
| Poddle_010 | Resurfacing and associated works | Minimal sediment release expected to be negligible. | High | Negligible | Short term Adverse Imperceptible |
| | Construction Compound TC2 | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Medium | Short term Adverse Significant |

| Waterbody Name | Project Activity | Potential Impacts | | | |
|---|---|---|---|---|---|
| | | Description of Potential Impacts | Sensitivity of Receptor | Magnitude of Impacts | Significance of Effects |
| | Construction Compound TC3 | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Medium | Short term Adverse Significant |
| | Construction Compound TC4 | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Small | Short term Adverse Significant |
| | Construction Compound TC5 | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Medium | Short term Adverse Slight to Moderate |
| | Construction Compound TC6 | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Small | Short term Adverse Significant |
| | Construction Compound TC7 | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Medium | Short term Adverse Significant |
| | Construction Compound TC8 | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Medium | Short term Adverse Significant |
| | Combined impacts of Construction Compounds | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Medium to Large | Short term Adverse Significant to Very Significant |
| | Works near ESB Oil-filled cable | Creation of pollution pathway for contaminated land; Potential accidental releases of hydrocarbons. | High | Small | Medium Term Adverse Moderate |
| Grand Canal | Construction Compound TC10 | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Small | Short term Adverse Slight to Moderate |
| Camac_040 | Widening of road in close proximity to water body | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Medium | Short term Adverse Significant |
| | Modifications to head wall | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Large | Short term Adverse Very Significant |
| | Road resurfacing and some full depth construction for road widening. | Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Small | Short-term Adverse Slight to Moderate |
| | Construction Compounds TC12 and TC13 | Increased surface water runoff; Increased sediment in runoff; Anthrophonic sources (fuel etc.). | High | Medium | Short term Adverse Significant |

## 13.4.5 Operational Phase

### 13.4.5.1 Overview of Potential Impacts

The potential impacts predicted 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.

Deterioration in water quality from increased levels of 'routine' road contaminants, such as hydrocarbons, metals, sediment and chloride (seasonal) due to:

- Potential increase in pollution and sediment load entering surface water receptors from new or widened roads;
- Increased impermeable area, and changes to the nature, frequency and numbers of vehicles using the 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.

Hydromorphology changes may arise 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

Detailed assessments for each receptor are provided below, with a summary of impacts presented in Table 13.18. Pre-mitigation assessments are based upon the SuDS measures proposed as part of the Proposed Scheme being in place.

13.4.5.2.1 Dodder_040

There is a net decrease in impermeable area of 1,668m$^2$, which equates to a 5% increase across the catchment area. SuDS are proposed in the form of oversized pipes, bioretention areas and green roofs. This will ensure no net increase in flow and will provide a level of treatment. This would result in a permanent, beneficial impact of negligible magnitude, resulting in impacts of imperceptible significance.

13.4.5.2.2 Poddle_010

There is a net increase in impermeable area of 17,394m$^2$ which equates to an increase of 15% across the catchment area. SuDS are proposed in the form of oversized pipes and bioretention areas. This will ensure no net increase in flow and will provide a level of treatment. This would result in a permanent, beneficial impact of negligible magnitude, resulting in impacts of imperceptible significance.

13.4.5.2.3 Camac_040

There is a net increase in impermeable area of 39,816m$^2$ which equates to an increase of 23% across the catchment area. SuDS are proposed in the form of oversized pipes, tree pits, bioretention areas, soakaways and filter drains. This will ensure no net increase in flow and will provide a level of treatment. This would result in a permanent, beneficial impact of negligible magnitude, resulting in impacts of imperceptible significance.

13.4.5.2.4 Grand Canal Main Line (Liffey and Dublin Bay)

There are no discharges to the Grand Canal.

13.4.5.2.5 Liffey Estuary Upper

There are no discharges to Liffey Estuary Upper.

#### 13.4.5.3 Summary of Operational Phase Impacts

**Table 13.18: Summary of Potential Operational Phase Impacts on Water Bodies within the Study Area**

| Waterbody Name | Project Activity | Potential Impacts | | | |
|---|---|---|---|---|---|
| | | Description of Potential Impacts | Sensitivity of Receptor | Magnitude of Impacts | Significance of Effects |
| Dodder_040 | Increase in impermeable area draining to the waterbody;<br>Installation of SuDS. | • No net change in runoff<br>• Increase in water quality | High | Negligible | Permanent<br>Beneficial<br>Imperceptible |
| Poddle_010 | Increase in impermeable area draining to the waterbody;<br>Installation of SuDS. | • No net change in runoff<br>• Increase in water quality | High | Negligible | Permanent<br>Beneficial<br>Imperceptible |
| Camac_040 | Increase in impermeable area draining to the waterbody;<br>Installation of SuDS. | • No net change in runoff<br>• Increase in water quality | High | Negligible | Permanent<br>Beneficial<br>Imperceptible |

#### 13.4.5.4 Assessment of Potential Impacts – Traffic Redistribution

To determine the potential impacts, as a result of increases or decreases in traffic, data from the Traffic Impact Assessment (Chapter 6 (Traffic & Transport)) in relation to modal shifts as well as absolute numbers (Average Annual Daily Traffic (AADT)) have been reviewed and compared to existing drainage patterns.

Traffic modelling (see Chapter 6 (Traffic & Transport)) was carried out for two scenarios, Do Minimum and Do Something, for the years 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 the local road network would not lead to AADTs being above 10,000. Where increases to above 10,000 AADT were predicted for side roads, these roads drain to the same catchment as the route of the Proposed Scheme. Therefore, no significant impacts on receptors are considered likely. These road sections can therefore be screened out of further assessment.

#### 13.4.5.5 Summary of Flood Risk Assessment

Summary text from the FRA (see Appendix A13.2 in Volume 4 of this EIAR) is provided in this Section.

A site-specific flood risk assessment for the Proposed Scheme has been undertaken in accordance with the requirements of “The Planning System and Flood Risk Management Guidelines for Planning Authorities”.

Several historic flood events are noted to be in the vicinity of the Proposed Scheme. The Proposed Scheme is largely on existing roads and will result in minimal increase in paved surfaces. Therefore, it will not increase the existing flood levels and risks.

##### 13.4.5.5.1 Estuarine and Tidal Flood Risk

There is no tidal flood risk to the Proposed Scheme. Therefore, there is no risk of coastal flooding to the site in the present, or in a future climate change scenario.

##### 13.4.5.5.2 Pluvial Flood Risk

The risk of pluvial flooding along most of the Proposed Scheme is low. However, this risk exists in the current scenario and will be reduced as a result of the Proposed Scheme. All proposed surface water sewers provided as part of the Proposed Scheme shall be designed to provide attenuation for a return period of up to 30 years, where possible. This would be an improvement on the existing historical drainage network infrastructure and will reduce the overall risk of pluvial flooding. Proposed drainage infrastructure will be provided which will include new SuDS such as rain gardens, swales and tree pits. These SuDS features will provide source control measures and

reduce the risk of pluvial flooding. The risk of pluvial along the route is considered to be medium and this risk will be reduced further as a result of the Proposed Scheme.

13.4.5.5.3 Groundwater Flood Risk

The groundwater vulnerability varies along both the Tallaght to City Centre and the Clondalkin to Drimnagh sections. As most of the Proposed Scheme is on existing roads with no known flooding specifically due to groundwater, it is not expected that this risk will increase with the construction of the Proposed Scheme.

13.4.5.5.4 Fluvial Flood Risk

There are sections of the Proposed Scheme where there is a risk of fluvial flooding. These are:

13.4.5.5.4.1 Tallaght to City Centre:

- Area 1: Section at Dolphins Barn on the R110 lies within Flood Zone A (1 in 100-year fluvial flood extents);
- Area 2: Section on Clogher Road near St. Kevin's College lies within Flood Zone A (1 in 100-year fluvial flood extents); and
- Area 3: Section at the junction between R110 and R137 (near St. Patrick's Cathedral lies within Flood Zone A (1 in 100-year fluvial flood extents).

13.4.5.5.4.2 Clondalkin to Drimnagh:

- Area 1: Section at the Fox-and-Geese lies within Flood Zone A (1 in 100-year fluvial flood extents);
- Area 2: Section at Drimnagh lies within Flood Zone A (1 in 100-year fluvial flood extents); and
- The rest of the route is at low risk of flooding from rivers and the coast and is therefore located within Flood Zone C.

The proposed development is categorised by the Guidelines as a 'highly vulnerable development' and is required to pass the justification test if any part of the development is located within Flood Zone A or Flood Zone B. As there are areas of the Proposed Scheme identified as being within Flood Zone A, a Justification Test is required.

The Plan Making Justification Test and Development Management Justification have been assessed and passed and further investigation of the flood risk in the form of a Stage 2 FRA is not required.

## 13.5 Mitigation and Monitoring Measures

### 13.5.1 Introduction

This section sets out the measures envisaged to avoid, prevent or reduce any significant adverse effects on the environment identified in Section 13.4 and, where appropriate, identify any proposed monitoring arrangements 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 the Construction Environmental Management Plan (CEMP), which is included in Appendix A5.1 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 the CEMP, Appendix A5.1 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(s), 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:

- Construction Compounds 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 outlined in the SWMP within Appendix A5.1 CEMP in Volume 4 of this EIAR, the majority of impacts will be Not Significant. However, additional measures will be required for protection of water bodies at Construction Compound locations, works near to ESB oil-filled cables, for the widening of the R134 and modifications to the headwall of the Camac_040 where it is culverted under the R134 / Oak Road roundabout.

13.5.2.2.1 Construction Compounds

The general measures for Construction Compounds will apply. However, as most of the compounds are located on greenfield sites with no retaining wall to prevent overland flows of polluting substances to local surface water drains, additional measures are required. Site fencing will include a silt fence for the perimeter of the site to prevent over land flows. Surface water drains at access points will be covered.

Construction Compound TC10 is located on a pedestrian island located approximately 30m from the Grand Canal Mainline. Fuel and other material will be stored as far from the water body as is reasonably practicable. Foul water from welfare facilities will be contained and removed from site via a licensed contractor, as required. Spill kits will be permanently on hand.

13.5.2.2.2 Works close to ESB oil-filled cables

The appointed contractor in consultation with the NTA will engage with ESB Networks to locate their oil-filled cable in the context of the Proposed Scheme. A ground investigation, where construction works are to take place near to the ESB oil-filled cable, will be carried out prior to construction commencing and following this, an appropriate

suite mitigation measures will be confirmed and deployed, which could for example result in the removal of all contaminated material from site as outlined in Chapter 14 (Land, Soils, Geology & Hydrogeology). Any hazardous material to be removed from site will be removed in accordance with measures outlined in Chapter 18 (Waste & Resources).

13.5.2.2.3 Widening of the R134 New Nangor Road

While the proposed works in this location are approximately 7m from the water body, no significant or intrusive works will be carried out within 10m of it. Only minor and surface works will be undertaken closer than 7m. Silt fences will be installed along the length of the top of the bank where works are taking place. These will be monitored on a daily basis to ensure they remain intact. There will be no in stream works and no works on the bank itself. There will only be works along the top of the bank. Vegetation removal will be kept to a minimum.

13.5.2.2.4 Modifications to Camac headwall

Works to modify the headwall where the Camac_040 is culverted under the R134 / Oak Road roundabout will include in-stream works. To ensure there are no water quality impacts as a result of this, no works will take place during the closed (fisheries) season (October to June) without the approval of Inland Fisheries Ireland, and a form of bunding will be used to provide a dry area of work. This could be in the form of sandbags or a silt curtain. Any silty water will be directed to a settlement area or silt-buster tank prior to discharge back to the water body.

### 13.5.3 Operational Phase

Mitigation for the Operational Phase has been built into the design of the Proposed Scheme and is detailed 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.

## 13.6 Residual Impacts

### 13.6.1 Construction Phase

Following implementation of the mitigation measures outlined in Section 13.5 and the SWMP within the CEMP (Appendix A5.1 in Volume 4 of this EIAR), there are no significant impacts predicted on any of the receptors in this study area. Refer to Table 13.19.

**Table 13.19: Summary of Predicted Construction Phase Impacts, Following the Implementation of Mitigation Measures**

| Waterbody Name | Project Activity | Predicted Impacts | | |
|---|---|---|---|---|
| | | Description of Predicted Impacts | Significance of Effects | Significance of Effects (Post mitigation and monitoring) |
| Dodder_040 | Resurfacing and associated works, junction configuration – Belgard Square West, Belgard Square North Belgard Square East, Blessington Road to Main Road | Minimal sediment release expected to be negligible. | Short term<br>Adverse<br>Imperceptible | Short term<br>Adverse<br>Imperceptible |
| | Resurfacing and associated works, junction configuration – Blessington Road / Cookstown Way junction | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Imperceptible | Short term<br>Adverse<br>Imperceptible |

| Waterbody Name | Project Activity | Predicted Impacts | | |
|---|---|---|---|---|
| | | Description of Predicted Impacts | Significance of Effects | Significance of Effects (Post mitigation and monitoring) |
| | Construction Compound TC1 and construction of Tallaght Bus Interchange | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Slight | Short term<br>Adverse<br>Imperceptible |
| Poddle_010 | Resurfacing and associated works | Minimal sediment release expected to be negligible. | Short term<br>Adverse<br>Imperceptible | Short term<br>Adverse<br>Imperceptible |
| | Construction Compound TC2 | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Very Significant | Short term<br>Adverse<br>Imperceptible |
| | Construction Compound TC3 | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Significant | Short term<br>Adverse<br>Imperceptible |
| | Construction Compound TC4 | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Slight to Moderate | Short term<br>Adverse<br>Imperceptible |
| | Construction Compound TC5 | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Significant | Short term<br>Adverse<br>Imperceptible |
| | Construction Compound TC6 | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Slight to Moderate | Short term<br>Adverse<br>Imperceptible |
| | Construction Compound TC7 | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Significant | Short term<br>Adverse<br>Imperceptible |
| | Construction Compound TC8 | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Significant | Short term<br>Adverse<br>Imperceptible |
| | Combined impacts of Construction Compounds | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Significant to Very Significant | Short term<br>Adverse<br>Slight |
| | Works near ESB Oil-filled cable | Creation of pollution pathway for contaminated land;<br>Potential accidental releases of hydrocarbons. | Medium Term<br>Adverse<br>Moderate | Short term<br>Adverse<br>Imperceptible |

| Waterbody Name | Project Activity | Predicted Impacts | | |
|---|---|---|---|---|
| | | Description of Predicted Impacts | Significance of Effects | Significance of Effects (Post mitigation and monitoring) |
| Grand Canal | Construction Compound TC10 | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Slight | Short term<br>Adverse<br>Imperceptible |
| Camac_040 | Widening of road in close proximity to water body | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Very Significant | Short term<br>Adverse<br>Slight |
| | Modifications to head wall | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Very Significant | Short term<br>Adverse<br>Slight |
| | Road resurfacing and some full depth construction for road widening. | Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short-term<br>Adverse<br>Slight to Moderate | Short term<br>Adverse<br>Imperceptible |
| | Construction Compounds TC12 and TC13 | Increased surface water runoff;<br>Increased sediment in runoff;<br>Anthrophonic sources (fuel etc.). | Short term<br>Adverse<br>Significant | Short term<br>Adverse<br>Imperceptible |

## 13.6.2 Operational Phase

As no mitigation is required, residual impacts are as set out in Section 13.4.5. No significant impacts are anticipated for any other waterbody in the study area. Refer to Table 13.20.

**Table 13.20: Summary of Predicted Operational Phase Impacts, Following the Implementation of Mitigation Measures**

| Waterbody Name | Project Activity | Predicted Impacts | | |
|---|---|---|---|---|
| | | Description of Predicted Impacts | Significance of Effects | Significance of Effects (Post mitigation and monitoring) |
| Dodder_040 | Increase in impermeable area draining to the waterbody;<br>Installation of SuDS. | • No net change in runoff<br>• Increase in water quality | Permanent<br>Beneficial<br>Imperceptible | Permanent<br>Beneficial<br>Imperceptible |
| Poddle_010 | Increase in impermeable area draining to the waterbody;<br>Installation of SuDS. | ▪ No net change in runoff<br>▪ Increase in water quality | Permanent<br>Beneficial<br>Imperceptible | Permanent<br>Beneficial<br>Imperceptible |
| Camac_040 | Increase in impermeable area draining to the waterbody;<br>Installation of SuDS. | ▪ No net change in runoff<br>▪ Increase in water quality | Permanent<br>Beneficial<br>Imperceptible | Permanent<br>Beneficial<br>Imperceptible |

### 13.6.3 Summary of WFD Assessment

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

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 (GES) or cause a deterioration of the overall Good Ecological Potential (GEP) of any of the water bodies that are in scope. Therefore, the Proposed Scheme does not require assessment under Article 4.7 (refer to Table 13.21).

**Table 13.21: Compliance of the Proposed Scheme with the Environmental Objectives of the WFD**

| Environmental Objective | Proposed Scheme | Compliance with the WFD Directive |
|---|---|---|
| No changes affecting high status sites | No water bodies identified as high status | Yes |
| No changes that will cause failure to meet surface water GES or GEP or result in a deterioration of surface water GES or GEP | 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 Articles 4.8 and 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. This 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.

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*'.

The Habitats Directive (1992) 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 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 an Appropriate Assessment Screening Report and the Natura Impact Statement (NIS) submitted with the application.

The Nitrates Directive (1991) 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 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 less than 2km from the Proposed Scheme. It is therefore compliant with the revised Bathing Water Directive.

#### 13.6.3.1 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 GES or GEP. 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.

Taking into consideration the impacts of the Proposed Scheme on the biological, physico-chemical and hydromorphological quality elements, it is concluded that following the implementation of design and mitigation measures, it is concluded that it will not compromise progress towards achieving GES or GEP or cause a deterioration of the overall status of the water bodies that are in scope. It will not compromise the qualifying features of protected areas and is compliant with other relevant Directives. It can therefore be concluded that the Proposed Scheme is fully complaint with WFD and therefore does not require assessment under Article 4.7 of the WFD.

## 13.7 References

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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

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S.I. No. 268/2006 - European Communities (Quality of Shellfish Waters) Regulations 2006

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S.I. No. 278/2007 - European Communities (Drinking Water) (No. 2) Regulations 2007

S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations, 1988

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