

# Appendix 7C

## Preliminary Water Framework Directive Compliance Assessment

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Overview of the groundwater classification elements (UKTAG,

# 1. Introduction

## 1.1 Background to this Appendix

- 1.1.1 This Appendix has been produced to demonstrate how the HyNet North West Hydrogen Pipeline Project (the 'Project') complies with the requirements of the European Union's Water Framework Directive (WFD), as implemented in domestic law by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.
- 1.1.2 A single preliminary document to cover all aspects of WFD compliance is presented, as it has the benefit of being able to draw conclusions on WFD compliance based on the outputs of several chapters of the Preliminary Environmental Information Report (PEIR) including **Chapter 7: Water Environment** and **Chapter 5: Biodiversity**.
- 1.1.3 The Project is a Nationally Significant Infrastructure Project (NSIP), which will be authorised by a Development Consent Order (DCO). The decision will be made by the Secretary of State for Energy and Industrial Strategy, as advised by the Planning Inspectorate (PINS). Further to this, the Environment Agency is the relevant permitting authority in relation to its role in issuing Environmental Permits under the Environmental Permitting (England and Wales) Regulations 2016.
- 1.1.4 In England, whilst the responsibility for ensuring that the WFD is implemented lies with Environment Agency, public bodies have a duty to 'have regard' to the objectives of the WFD in exercising their functions. In the case of the Project this includes Lead Local Flood Authorities (LLFA) which are responsible for consenting works in Ordinary Watercourses. In addition, Natural England has responsibility for ensuring compliance with the Objectives and Measures associated with Natura 2000 sites, designated as Protected Areas under the WFD. As noted in the PINS Advice Note 18 (PINS, 2017<sup>1</sup>) the 2017 WFD (England and Wales) Regulations place these duties on each public body to exercise their functions to secure compliance with the WFD and in particular with regard to relevant River Basin Management Plans.

## 1.2 Structure of this Appendix

- 1.2.1 This preliminary WFD Compliance Assessment is structured as follows:
- **Section 1: Introduction** outlines the legislative requirements and context of the WFD in respect of the Project.
  - **Section 2: Consultation** provides dialogue between Cadent Gas Limited ('the Applicant') and the regulatory bodies that have a responsibility of the WFD.

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<sup>1</sup> PINS (2017). Planning Advice Note 18. (online). Available at <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-18/> (Accessed 11 July 2022)

- **Section 3: WFD assessment methodology** provides an overview of the methodology that has been adopted to undertake the preliminary WFD compliance assessment.
- **Section 4: Screening** sets out the process that has been followed to gain a better understanding of project activities that are low risk and do not require further consideration (activities to be ‘screened out’) and those that require detailed assessment (activities to be ‘screened in’), along with identifying the WFD water bodies which have the potential to be affected and are screened in, or do not have the potential to be affected and are screened out.
- **Section 5: Scoping assessment** is a receptor-based exercise that considers the potential effects of screened in activities against screened in water bodies, which need to be scoped in for further assessment.
- **Section 6: WFD impact assessment** sets out the approach to, and outcomes of a further, detailed assessment on those relatively high-risk activities that were scoped in as part of the work presented in **Section 5**. These findings will be developed and refined at the ES stage of the DCO Application.
- **Section 7: Article 4.7 derogations** sets out the approach that will be taken for any WFD water bodies where the proposed activities have been assessed to result in non-compliance with WFD objectives.
- **Section 8: Preliminary conclusions on WFD compliance** takes the outputs from **Sections 5, 6 and 7** to reach a preliminary conclusion on the compliance of the Project with the objectives of the WFD.
- **Section 9: Glossary of terms and abbreviations.**

## Design of the Project to facilitate WFD compliance

- 1.2.2 As a general principle, the Project has been designed to minimise the impact to water bodies and WFD objectives; first by minimising direct contact between construction, operation and maintenance activities and surface water bodies, and second by incorporating appropriate embedded environmental measures where infrastructure has to pass over, under or through water bodies. In this way, the ultimate impact to WFD water bodies from the Project has been managed to an acceptably low level, and the Project will not therefore compromise WFD objectives. This document provides the initial evidence to demonstrate how this preliminary draft conclusion has been reached.

## 1.3 Legislative Context

### Overview

1.3.1 The WFD (2000/60/EC)<sup>2</sup> came into force in 2000 and was originally transposed into UK law in 2003<sup>3</sup>. Though the UK is now no longer a Member State the Directive remains relevant as the transposed regulations are part of the UK's own legal framework<sup>4</sup>. The principal aims of the WFD are to protect and improve the water environment and promote the sustainable use of water. Environmental Quality Standards (EQSs; 2008/105/EC<sup>5</sup>) for priority substances<sup>6</sup> were set by the daughter directive to the WFD (the EQS Directive and subsequent amendments (EQSD; 2013/39/EU<sup>7</sup>) and the Groundwater Directive (2006/118/EC<sup>8</sup>). The environmental objectives of the WFD and its daughter directives are to:

- prevent deterioration of aquatic ecosystems;
- protect, enhance and restore water bodies to 'Good' Status; which is based on ecology (with its supporting hydromorphological and physico-chemical factors)

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<sup>2</sup> European Commission (2000). Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. (online) Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32000L0060> (Accessed 22 July 2022).

<sup>3</sup> The original 2003 enabling regulations have since been superseded in England and Wales by the current Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, which came into force on 10 April 2017.

<sup>4</sup> UK Government (2017) Water Resources, England and Wales, The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (2017), (online). Available at: [https://www.legislation.gov.uk/ukxi/2017/407/pdfs/ukxi\\_20170407\\_en.pdf](https://www.legislation.gov.uk/ukxi/2017/407/pdfs/ukxi_20170407_en.pdf) (Accessed 11 July 2022)

<sup>5</sup> European Commission (2008). Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council. (online) Available at: <https://www.legislation.gov.uk/eudr/2008/105/contents> (Accessed 22 July 2022).

<sup>6</sup> The Environment Agency list of priority substances is available on the Environmental Quality Standards Directive (EQSD) list for WFD assessments (2016), (online). Available at: <https://www.gov.uk/government/publications/list-of-chemicals-for-water-framework-directive-assessments/environmental-quality-standards-directive-eqsd-list-for-wfd-assessments> (Accessed 12 July 2022)

<sup>7</sup> European Commission (2013). Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy Text with EEA relevance. (online) Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32013L0039> (Accessed 22 July 2022).

<sup>8</sup> European Commission (2006). Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration. (online) Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0118> (Accessed 22 July 2022).

and chemical factors for surface water, and water quantity and chemical Status for groundwater;

- comply with water related standards and objectives for environmentally protected areas established under other European Union (EU) legislation;
- progressively reduce pollution from priority substances and cease or phase out discharges of priority hazardous substances; and
- prevent or limit the input of pollutants into groundwater and reverse any significant or sustained upward trends in the concentration of any groundwater pollutant.

1.3.2 The WFD sets a default objective for all rivers, lakes, estuaries, groundwater and canal water bodies to achieve Good Status by 2027 at the latest. Where it is not possible to achieve Good Status by 2027, alternative water body objectives can be set. The current (baseline) status, and the measures required to achieve the 2027 Status Objective are set out for each water body in the relevant River Basin Management Plans (RBMPs), as prepared by the Environment Agency every six years. The first RBMPs were published in 2009, and the current Cycle 2 RBMPs were published in December 2015. The draft Cycle 3 RBMPs are currently out for consultation. As such this assessment has been based on Cycle 2 but at the ES stage if the Cycle 3 RBMP is available then it will be fully taken into account. The plans provide the baseline condition of the water environment at the time of publication, and indicate the measures needed and timescales required to attain their target status.

## Surface waters

1.3.3 For surface water bodies (rivers, transitional water bodies, canals and lakes), overall water body status has an ecological and a chemical component. Ecological Status is measured on the scale of high, good, moderate, poor and bad. Chemical Status is measured as good or fail, based on the presence or absence of priority substances which present a risk to the environment. Good Ecological Status (GES) is defined as a slight variation from undisturbed natural conditions, with minimal distortion arising from human activity.

1.3.4 Whilst GES is defined as a slight variation from undisturbed conditions in 'natural' water bodies, surface water bodies can also be designated as artificial or heavily modified water bodies (AWBs or HMWBs). These designations apply where there has been significant human influence on the nature of the water body such that they are considered to be unable to achieve the standards required to attain GES. Instead, AWBs and HMWBs have a target to achieve Good Ecological Potential (GEP), which recognises their essential human use/s (e.g. flood protection, navigation), whilst making sure ecology is protected and enhanced as far as possible. The Ecological Potential for AWBs and HMWBs is also measured on the scale high, good, moderate, poor and bad.

1.3.5 For rivers, transitional waters and lakes, hydromorphology is a supporting element of the WFD. At Good and Moderate Ecological Status hydromorphological conditions are not defined but are to be 'consistent with the achievement of the values specified for the biological quality elements'. Hydromorphology elements

are only specifically assessed for High Status. Surface water morphology is important not only for defining water bodies at High Status, or for investigating possible reasons for water bodies that fail to reach Good Ecological Status, it also has an important role to play in characterising and setting in place appropriate monitoring of HMWBs and AWBs.

- 1.3.6 For AWBs and HMWBs Ecological Potential is measured based on the presence or absence of a list of mitigation measures. These measures are set in order for the sensitive ecological elements to achieve the best aquatic health that is possible without compromising the human use of the water body. Ecological elements that are not affected by the heavily modified or artificial nature of the water body are measured in the same way and with the same standards as for natural water bodies. Similarly, the chemical Status of AWBs and HMWBs is also measured and classified in the same way as for natural water bodies.
- 1.3.7 In order for a surface water body to attain good 'overall' Status or Potential, it must meet the requirements of GES or GEP, and achieve good chemical Status. The achievement of Good Status or Potential by 2027 at the latest is the default WFD objective for almost all water bodies in the UK.
- 1.3.8 The Ecological Status/Potential of water bodies is determined by examining biological elements (e.g. fish, invertebrates, plants) and a number of supporting elements and conditions, including physico-chemical (e.g. metals and organic compounds), and hydromorphological (e.g. depth, width, flow, and 'structure') factors. These elements are summarised in **Table 1.1**.

**Table 1.1 WFD classification elements for rivers, transitional, lakes and canal WFD water bodies**

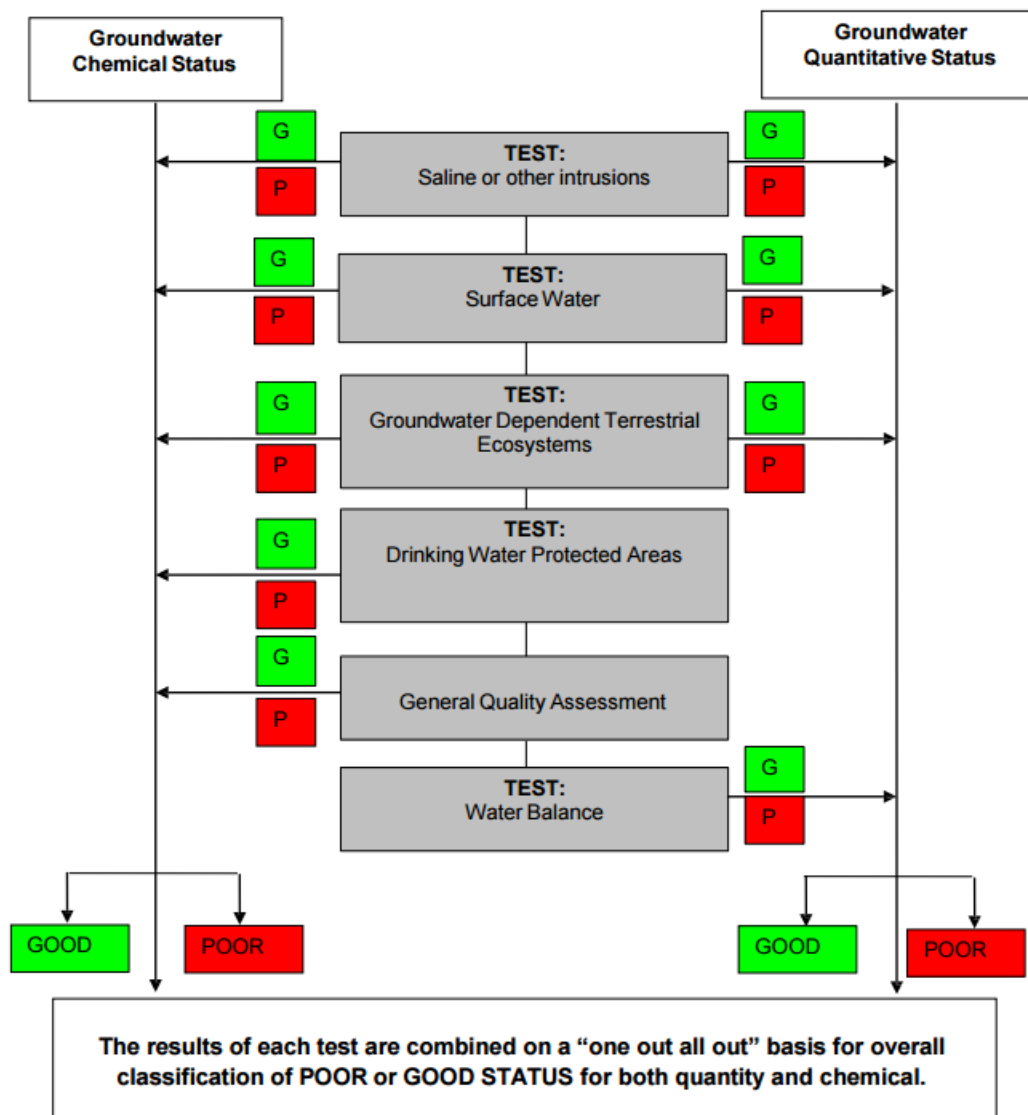
| Water body Type                    | Biological                                                                                           | Physio-chemical and chemical                                                                                                                                                                                                                                                        | Hydromorphological                                                                                                                                                                                                                                                            |
|------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Rivers</b><br><b>(HMWB/AWB)</b> | Macrophytes<br>Phytobenthos<br>Benthic invertebrates<br>Fish<br><br>(mitigation measures assessment) | <ul style="list-style-type: none"> <li>– Thermal conditions</li> <li>Dissolved oxygen</li> <li>Acidification</li> <li>Nutrients</li> <li>– Salinity</li> <li>Organic pollutants</li> <li>– Pollution by substances being discharged, e.g. chemicals, metals, pesticides.</li> </ul> | Hydrological regime:<br>- quantity and dynamics of water flow<br>- connection to groundwater bodies.<br>River continuity<br>morphological conditions:<br>- river depth and width variation<br>- structure and substrate of the river bed<br>- structure of the riparian zone. |

| Water body Type            | Biological                                                                                           | Physio-chemical and chemical                                                                                                                                                                                                                                          | Hydromorphological                                                                                                                                                                              |
|----------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transitional Waters</b> | Phytoplankton<br>Other aquatic flora<br>Benthic invertebrates<br>Fish                                | <ul style="list-style-type: none"> <li>– Transparency</li> <li>– Thermal conditions</li> <li>– Dissolved oxygen</li> <li>– Nutrients</li> <li>– Salinity</li> <li>– Pollution by substances being discharged e.g. chemicals, metals, pesticides.</li> </ul>           | Tidal regime:<br>- freshwater flow<br>- wave exposure<br>Morphological conditions:<br>- depth variation<br>- quantity, structure and substrate of the bed<br>- structure of the intertidal zone |
| <b>Lakes</b>               | Phytoplankton<br>Other aquatic flora<br>Macrophytes<br>Phytobenthos<br>Benthic invertebrates<br>Fish | <ul style="list-style-type: none"> <li>– Thermal conditions</li> <li>– Oxygenation</li> <li>– Salinity</li> <li>– Acidification</li> <li>– Nutrient conditions</li> <li>– Total Nitrogen</li> <li>– Phosphorous</li> <li>– River Basin specific pollutants</li> </ul> | Hydrological regime<br>- Lake depth variation<br>- Quantity, structure & substrate of the lake bed<br>- Structure of the lake shore                                                             |
| <b>Canals</b>              |                                                                                                      | <ul style="list-style-type: none"> <li>– pH</li> <li>– Specific pollutants</li> </ul>                                                                                                                                                                                 | N/A                                                                                                                                                                                             |

## Groundwater

1.3.9 For groundwater bodies, Good Status has quantitative and chemical components that are assessed via a series of ‘tests’, as shown in **Graphic 1.1**. Together, these provide a single final classification: good or poor Status. Quantitative Status is evaluated on the basis of overall aquifer water balance, impacts of abstraction on dependent surface waters or wetlands and potential for saline intrusion. Chemical Status is evaluated on the basis of evidence for impacts of poor water quality on dependent surface waters or wetlands or deterioration of the quality of groundwater used for potable supply.

**Graphic 1.1 Overview of the groundwater classification elements (UKTAG, 2012<sup>9</sup>)**



1.3.10 The WFD also requires the prevention of any input of priority substances and limiting (or control) of the input of all other substances to groundwater to prevent the deterioration of Groundwater Body Status.

## Protected Areas

1.3.11 Consideration must also be paid to protected areas that are designated under European legislation and now transposed into UK regulations as part of the UK's

<sup>9</sup> UK technical Advisory Group on the Water Framework Directive (2008). UK Environmental Standards and Conditions (Phase 1), (online). Available at: [https://www.wfduk.org/sites/default/files/Media/Environmental%20standards/Environmental%20standards%20phase%201\\_Finalv2\\_010408.pdf](https://www.wfduk.org/sites/default/files/Media/Environmental%20standards/Environmental%20standards%20phase%201_Finalv2_010408.pdf) (Accessed 19 July 2022)

own legal framework. These include drinking water, bathing water and Natura 2000 protected areas.

- 1.3.12 There are no Drinking Water Safeguard Zones within the Study Area (as defined in **Section 4.2** of this Appendix) and they are therefore not considered further in this Appendix<sup>10</sup>.
- 1.3.13 The EU Nitrates Directive (European Commission, 1991<sup>11</sup>) and Urban Waste Water Treatment Directive (European Commission, 1991<sup>12</sup>) areas that are within the Study Area are:
- Sankey Brook (Black Brook to Mersey) Nitrate Vulnerable Zone (NVZ).
  - Whittle Brook NVZ.
  - River Weaver (Dane to Frodsham) NVZ.
  - Peckmill Brook, Hoolpool Gutter at Ince Marshes NVZ.
  - Delamere Sands (groundwater).
  - River Gowy (Milton Brook to Mersey) NVZ.
- 1.3.14 The National Site Network areas that are within the Study Area are:
- Mersey Estuary Special Protection Area.
- 1.3.15 There are no Special Areas of Conservation within the Study Area.
- 1.3.16 Each of the protected sites are considered in **Section 6** of this Appendix within the preliminary assessment process as a component of the WFD water body that they fall within.
- 1.3.17 The EU's revised Bathing Water Directive (rBWD) came into force in March 2006 and replaced the 'current Bathing Water Directive (cBWD)' (76/160/EEC<sup>13</sup>). The rBWD provides more stringent standards than the cBWD and places an emphasis on providing information to the public. The Bathing Water Directive is transposed

<sup>10</sup> Information on Drinking Water Protection Areas (DWPAs) is not currently available from the Environment Agency as it is in the process of being updated as part of the Cycle 3 RBMP. DWPAs will therefore be considered at the ES stage.

<sup>11</sup> European Commission, (1991). Council Directive of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (91/676/EEC). (online) Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A31991L0676> (Accessed 22 July 2022).

<sup>12</sup> European Commission (1991). Council Directive of 21 May 1991 concerning urban waste-water treatment (91/271/EEC). (online) Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31991L0271> (Accessed 22 July 2022).

<sup>13</sup> European Commission (2006). 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. (online) Available at: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32006L0007> (Accessed 22 July 2022).

into domestic law in England under The Bathing Water (Amendment) (England) Regulations 2018<sup>14</sup>.

1.3.18

As there are no Bathing Waters within the Study Area, this is not considered further in this Appendix.

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<sup>14</sup> UK Government (2018). The Bathing Water (Amendment) (England) Regulations 2018, [online]. Available at: <https://www.legislation.gov.uk/uksi/2018/527/contents/made> (Accessed 19 July 2022)

## 2. Consultation

2.1.1 **Table 2-1** sets out the comments received from stakeholders relating to WFD as part of the environmental impact assessment (EIA) Scoping Opinion and how these have been addressed in this preliminary assessment. A full list of the Planning Inspectorate (PINS) Scoping Opinion comments and responses relating to the wider water environment EIA is provided in **Table 7.4** of **Chapter 7**.

**Table 2.1 Consultation responses relating to WFD Assessment**

| Comment Source                                                 | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | How this is addressed in this Appendix                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PINS (7.6.7)</b>                                            | The inspectorate notes that <i>“The Applicant proposes that biological elements of Ecological Status for river water bodies (macroinvertebrates and fish) will not be part of future water environment assessments within the ES, however the potential for indirect effects on biology elements which could occur as a direct result of changes to the water quality or the hydromorphology of a water feature, will be part of the future biodiversity assessment, if required. The Inspectorate does not consider that the Scoping Report explains why this matter should be scoped out. In the absence of further justification, an assessment of effects on macroinvertebrates and fish should be provided in the ES.”</i> | <p>This Appendix presents a preliminary WFD Compliance Assessment for all potentially impacted WFD water bodies, which incorporates the findings and provides cross referencing to these other documents where appropriate. At the ES stage this Appendix will be updated and refined based on the final outline design.</p> <p>Furthermore, the potential for indirect effects of changes to water quality or the hydromorphology of a water feature on macroinvertebrates and fish will be addressed within <b>Chapter 5: Biodiversity</b> of the PEIR, and the findings of the biodiversity assessment will be used to inform the overall assessment for WFD compliance.</p> |
| <b>Environment Agency (EA) response in the Scoping Opinion</b> | The EA states that <i>“Paragraph 7.4.59 &amp; 7.4.60 (page 181) of the scoping report, describes how Water Framework Directive change will be considered with paragraph 7.4.60 stating ‘It may be appropriate to assess construction related effects against the existing baseline surface water environment, however potential operational effects should take account of a future baseline</i>                                                                                                                                                                                                                                                                                                                                | The consideration of long-term impact(s) on achieving WFD Good Ecological Status or Good Ecological Potential construction in relation to any new modifications to rivers is assessed within this Appendix.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Comment Source | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | How this is addressed in this Appendix                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <i>environment that assumes Good Ecological Status/Potential will be attained during the lifetime of the Project'. The construction of any new modifications to rivers will also need to consider long term impact(s) on achieving Water Framework Directive Good Ecological Status or Good Ecological Potential."</i>                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                | <i>The EA states that "While there are a lot of heavily modified water bodies within our operational area and can agree some could be considered as low-quality habitat, the approach should be to ensure they do not deteriorate further as part of the scheme. Indeed, we would recommend opportunities need to be taken to reduce modifications wherever possible."</i>                                                                                                                                                                                                                                 | This comment relates to the example provided of a 'Very low' sensitivity receptor. The example is not intended to include all artificial or heavily modified watercourses. It is acknowledged that some water bodies designated as AWBs or HMWBs in RBMPs could be accorded a higher receptor sensitivity. The wording of the example has been changed accordingly within <b>Chapter 7</b> . The WFD requirement to ensure no deterioration of Ecological Status is noted and will be addressed within this Appendix. |
|                | <i>The EA states that "It should be noted the Scoping Report does not appear to contain specific reference to Water Framework Directive mitigation measures associated with Heavily Modified Water bodies. (These must not to be confused with measures to mitigate environmental effects from the development proposal). Paragraph 7.6.7, page 187, states the intention to assess the effects on Water Framework Directive biological elements as a direct result of hydromorphology changes, which we support. However, the Environmental statement must also assess whether any of the development</i> | A full assessment of impacts on AWBs and HMWBs will be included within this assessment.                                                                                                                                                                                                                                                                                                                                                                                                                               |

| Comment Source | Comment                                                                                                                                                                                                           | How this is addressed in this Appendix |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
|                | <i>proposals prevent any heavily modified water body mitigation measure being completed, because this would prevent the legal objective of ‘Good Ecological Potential’ for that heavily modified water body.”</i> |                                        |

## 3. WFD Assessment Methodology

### 3.1 Structure of this Assessment

- 3.1.1 All aspects of construction, operation and maintenance, and decommissioning of the Project have been considered in the assessment to determine whether each will have an effect on WFD water bodies. Accordingly, the WFD assessment considers the following key questions:
- At the water body scale, on a non-temporary basis, will the Project result in deterioration of any of the WFD classification elements from one status class to the next, (e.g. from good to moderate) irrespective of whether or not it results in the lowering of overall status?
  - Will the Project prevent any water bodies from achieving good overall status or, where relevant, an alternative objective?
  - Will the Project contribute towards a cumulative deterioration of WFD status (in combination with other projects) or prevent the cumulative enhancement of status (up to 2027)?
  - Will the Project compromise the achievement of the WFD objectives in multiple water bodies that are hydrologically linked?
  - Can the Project assist in the delivery of any measures, as published in the RBMP, required to achieve water body objectives?

### 3.2 Available Guidance

- 3.2.1 This WFD assessment has been undertaken in line the guidance within PINS Advice Note 18 (PINS, 2017<sup>1</sup>). In this Advice Note, the Inspectorate supports the preparation and submission of separate WFD assessment reports by Applicants, which clearly explain how the requirements of WFD have been met. The guidance informs applicants to the requirements of the WFD and 2017 Regulations<sup>4</sup>, as applicable to NSIPs under the Planning Act 2008<sup>1516</sup>. It explains the information that the Inspectorate considers an Applicant must provide with their NSIP application to clearly demonstrate that the WFD and the 2017 Regulations have been appropriately considered.

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<sup>15</sup> UK Government, (2008) Planning Act 2008, (online). Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents> (Accessed 19 July 2022)

<sup>16</sup> Applicants will need to clearly identify in their documentation (either within the ES or as a standalone document(s)) the implications of the Proposed Development for the objectives of the WFD and relevant RBMPs. While it is most likely that the WFD assessments will utilise information gathered as part of the wider EIA, this must be transposed into an assessment in the context of WFD and ultimately it must be determined if the Proposed Development has the potential to impact upon WFD water bodies.

- 3.2.2 The principal source of relevant guidance on WFD Compliance Assessment in England is the Environment Agency. At present the only publicly available guidance is Environment Agency (2017) *Clearing the Waters for All*, which relates specifically to activities in estuarine and coastal water bodies up to one nautical mile out to sea. This guidance interprets the ‘no deterioration criterion’ as applying to each supporting WFD element as well as the overall status classification of the water body. This is supported by the ‘Bund Case’<sup>17</sup> which ruled (at a European level) that this was true for all WFD water bodies. So, for example, a deterioration in the quality of macrophytes in a river water body from good to moderate status would be classed as deterioration irrespective of whether this caused the overall water body status to be lowered.
- 3.2.3 Furthermore, the Cycle 2 RBMPs indicate that within-class deterioration of any constituent element (e.g. a lowering of the quality of macrophytes in a river water body that does not result in a lowering of the status of macrophytes e.g. from good to moderate) is permissible, but should be limited as far as practicable. There are two exceptions to this: first, where the water body is at the lowest possible class (Bad Ecological Status/Potential) where no within-class deterioration is allowed and, second, elements that are at High Status (with the exception of morphology), which may be allowed to deteriorate to Good Status provided a number of additional conditions are met.
- 3.2.4 From an overall WFD compliance perspective, the principles set out in *Clearing the Waters for All* (Environment Agency, 2017) are unlikely to change. The Environment Agency have also made available their position statement on WFD assessment of new physical works in rivers (position 488\_10) (Environment Agency, 2015), which has been used, as appropriate, to assess effects on river water bodies.
- 3.2.5 The Environment Agency has not published any guidance on WFD compliance assessments of lake or groundwater bodies, or non-reportable water bodies.

### 3.3 Assessment Process

- 3.3.1 The WFD assessment considers the potential for both short-term and long-term impacts on WFD water bodies, which have a connection to the Project.
- 3.3.2 The WFD assessment has been based on the approach set out in PINS Advice Note 18 and comprises the following stages:
- Stage 1: Screening;
  - Stage 2: Scoping;
  - Stage 3: Further assessment; followed by, if required;
  - Stage 4: Article 4.7 considerations; and
  - Stage 5: Preliminary conclusions.

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<sup>17</sup> Paloniitty, Tiina (2016). The Weser Case: Case C-461/13 Bund V Germany. Journal of Environmental Law, Volume 28, Issue 1, March 2016, Pages 151–158.

## 4. Screening Assessment

- 4.1.1 The screening assessment aims to identify the Project Activities, which have the potential to affect WFD water bodies and those water bodies which could be affected.

### 4.2 Spatial Scope of the Assessment

- 4.2.1 The Preliminary Order Limits for the Project, referred within **Chapter 2: The Project**, is the area within which all project infrastructure and activities will be located and, therefore, where direct effects on the water environment arising from the Project may be expected to occur.
- 4.2.2 A wider Study Area has then been defined to include all WFD surface water body catchments intersected by the Preliminary Order Limits, as these are the water bodies which have the greatest potential to be affected by the Project. There are no WFD surface water bodies downstream of the Study Area. With regards to groundwater bodies the Study Area has been deemed to be suitable on the basis of the localised and shallow nature of any works below the ground, and the full area of the WFD groundwater bodies, which intersect the Preliminary Order Limits being judged to be too extensive with there being no potential for effects in the wider area. This Study Area is used as the basis for both the EIA and WFD Compliance Assessments, as set out in **Section 7.4 of Chapter 7**.
- 4.2.3 All of the WFD water bodies within the Study Area are within the North West River Basin District. The Environment Agency consulted on the draft Cycle 3 North West RBMP from 22 October 2021 to 22 April 2022, but have not yet published the final version. The 2015 (cycle 2) RBMP has therefore been assessed. It sets out the objectives of all the water bodies in the region and a summary of the programme of measures that are needed to achieve the objectives.

### 4.3 Water Bodies

#### Overview

- 4.3.1 The WFD water bodies screened in for further assessment are outlined here, with full details of their WFD classification included within **Appendix 7A**.
- 4.3.2 The WFD water bodies are screened into the assessment on the basis that they have a potential hydrological or hydrogeological connection to the Project and therefore have the potential to be affected. All other WFD water bodies are considered to not have a potential connection to the Project and have therefore been screened out from further assessment within **Chapter 7** on the basis that they are unlikely to be affected. As there are no WFD water bodies downstream of the screened in water bodies, downstream impacts are not considered further.
- 4.3.3 A summary of the WFD water bodies which have been screened in for further assessment is provided below.

- 4.3.4 The baseline status/potential and objectives of the water bodies is included within **Appendix 7A** and summarised in **Section 6** of this Appendix.

### River water bodies

- 4.3.5 There are twenty three River water bodies within the Study Area. Two River water bodies, Forge Brook and Dog Clog Brook, have been screened out of further assessment on the basis of having no direct hydrological connection to the Preliminary Order Limits.
- 4.3.6 Twenty one River WFD water bodies have therefore been screened in for further assessment. Ten of these are designated as being HMWBs. All the screened in River water bodies are listed in **Appendix 7A** and shown on **Figure 7.2**.

### Canal water bodies

- 4.3.7 There are five canal WFD water bodies within the Study Area, which all intersect the Preliminary Order Limits and have been screened in for further assessment. The location of the canal water bodies is shown on **Figure 7.2**.

### Transitional water bodies

- 4.3.8 The Mersey is the only transitional WFD water body within the Study Area and it is intersected by the Preliminary Order Limits. It has been screened in for further assessment and its location is shown on **Figure 7.2**.

### Lake water bodies

- 4.3.9 While there are three Lake WFD water bodies present within the Study Area, all three have been screened out of further assessment on the basis that the lakes are located upstream of the Preliminary Order Limits and are not considered likely to be affected. Lake WFD water bodies are therefore not considered further.

### Non reportable water bodies

- 4.3.10 There are three non-reportable water bodies within the Study Area. While they are not reportable under the WFD, they are still legally protected from pollution, modification and abstraction.
- 4.3.11 The non-reportable water bodies that are considered within this assessment are outlined in **Figure 7.2**. As these water bodies have not been formally designated with names, appropriate names have been given to facilitate the assessment and aid readability.

### Groundwater bodies

- 4.3.12 There are five WFD groundwater bodies which intersect the Study Area. They have all been screened in for further assessment and they are shown on **Figure 7.5**.

## 4.4 Proposed Project Activities

### Overview

- 4.4.1 A brief overview of the development is provided here to describe the project activities. Further details are provided in **Chapter 2: The Project**.
- 4.4.2 The Project includes the construction, operation and maintenance of up to 125km of new pipelines to distribute hydrogen to industrial customers, power stations and for potential blending with the existing natural gas network in North West England. The pipeline network would connect to a newly constructed Hydrogen Production Plant at the Essar Stanlow site as the source of hydrogen for onward distribution through the network. A Central Hub Hydrogen Above Ground Infrastructure (HAGI) connects the four (North, South, East and West) main pipeline corridors. Branching off from each main corridor there would be spurs - smaller pipelines - that form the connections to users identified as part of the Project (**Figure 7.1**).
- 4.4.3 As the Project is a linear infrastructure project the construction methods will predominantly be consistent along the length of the route. Therefore, development activities which will be repeated multiple times have been considered as single groups of activities for the purposes of screening.
- 4.4.4 **Table 4.1** summarises the proposed project activities (with a full description provided in **Chapter 2**) and determines whether they are screened in or out of further assessment.

**Table 4.1 Screening assessment of project activities**

| Activity / Infrastructure                                 | Element of construction / maintenance of interest to the WFD                                                                                                                                                                                                                                                                                                       | Screened in or out of further assessment                                                                                                                                                  |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pipeline corridor laying</b>                           | <ul style="list-style-type: none"> <li>• Soil stripping</li> <li>• Trenching</li> <li>• Fabrication</li> <li>• Pipe laying</li> <li>• Testing – (cleaned using pigging equipment and hydrostatically pressure tested using a local water source in accordance with a permit. Disposal of test water in accordance with permit)</li> <li>• Reinstatement</li> </ul> | <b>Screened in</b> due to the potential for pollutants to be released during construction, and the potential for excavations to affect surface water flow paths and groundwater quantity. |
| <b>Pipeline corridor watercourse crossings – Open cut</b> | <ul style="list-style-type: none"> <li>• Trenching</li> <li>• Fluming</li> <li>• Damming</li> </ul>                                                                                                                                                                                                                                                                | <b>Screened in</b> due to the potential for, hydromorphology, ecological continuity, water quantity and quality to be affected.                                                           |

| Activity / Infrastructure                                   | Element of construction / maintenance of interest to the WFD                                                                                                                                                                                                                                                                                                                                                                                                       | Screened in or out of further assessment                                                                                                                                                                   |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pipeline corridor watercourse crossings – Trenchless</b> | <ul style="list-style-type: none"> <li>Horizontal directional drilling (HDD)</li> <li>Auger boring</li> <li>Micro-tunnelling</li> <li>Direct pipe</li> </ul>                                                                                                                                                                                                                                                                                                       | <b>Screened in</b> due to the potential for water quantity and quality to be affected.                                                                                                                     |
| <b>Temporary construction haul road</b>                     | <ul style="list-style-type: none"> <li>Construction of temporary haul roads and associated watercourse crossings</li> </ul>                                                                                                                                                                                                                                                                                                                                        | <b>Screened in</b> due to the potential for, hydromorphology, ecological continuity, water quantity and quality to be affected.                                                                            |
| <b>Temporary construction compounds</b>                     | <ul style="list-style-type: none"> <li>Construction of temporary construction compounds and associated drainage</li> </ul>                                                                                                                                                                                                                                                                                                                                         | <b>Screened in</b> due to water quality and quantity to be affected.                                                                                                                                       |
| <b>Permanent above ground infrastructure (construction)</b> | <ul style="list-style-type: none"> <li>Up to 10 HAGIs</li> <li>2 Block Valves</li> </ul>                                                                                                                                                                                                                                                                                                                                                                           | <b>Screened in</b> due to the potential for water quality and quantity to be affected.                                                                                                                     |
| <b>Operation and maintenance</b>                            | <ul style="list-style-type: none"> <li>Presence of buried pipeline and above ground infrastructure</li> <li>Routine checks on a weekly basis requiring 1-2 personnel for a short period (approximately 1 hour)</li> <li>Annual maintenance</li> <li>Major maintenance every 2 to 5 years</li> <li>Pipeline pigging operations undertaken every 5 to 15 years</li> <li>Infrequent breakdown or emergency visits with access on a 24/7 basis if required.</li> </ul> | <b>Screened out</b> due to relative scale of permanent infrastructure relative to water body scale, and there being no proposed activities which are considered likely to affect any aspect of WFD Status. |

## Decommissioning Phase

4.4.5 Proposals for decommissioning of the Project at the end of its operating life are described in **Chapter 2, Section 2.7**. In summary, it is likely that the buried pipeline would be left in-situ to avoid any environment effects associated with its removal, but that sections at crossings (including of watercourses) would be grouted. At HAGIs and Block Valves, all above ground infrastructure would be removed, residual subsurface pipework would be capped and backfilled, and the surface restored or prepared for redevelopment.

- 4.4.6 The design life of the pipeline and HAGIs is anticipated as 40 years. It is reasonably expected that a statutory framework will be developed and agreed prior to any decommissioning. Similarly, future technology and good practice would develop and provide for new ways to undertake the process. A Decommissioning Plan will be developed by the Undertaker in accordance with the strategy outlined within **Chapter 2, Section 2.7**.
- 4.4.7 As such decommissioning effects are **screened out** of further assessment at this time. However, these would need to be subject to full assessment at the appropriate time, when detailed proposals are put forward, and according to the baseline and regulatory context prevailing at that time of decommissioning works.

## 5. Scoping

- 5.1.1 The scoping assessment involves undertaking an initial assessment to identify the risks from the proposed project activities, which have been screened in against the screened in WFD water bodies.
- 5.1.2 **Table 5.1** considers the proposed project activities and scopes in or out the WFD water bodies for further assessment based on the potential for the proposed activity to affect any aspect of WFD classification.
- 5.1.3 As the construction methods for the proposed project activities will be consistent along the length of the pipeline, the activities continue to be considered as groups, rather than each individual occurrence of each activity. Similarly, the WFD water bodies are considered as groups rather than individuals as the potential impacts of the proposed project activities are considered to be consistent across the Preliminary Order Limits and therefore across the screened in WFD water bodies.
- 5.1.4 It should be noted that all construction activities will be temporary and of limited duration. In addition, construction will not be occurring along the whole Preliminary Order Limits at once with only limited sections being worked on at any one time. As such the effects of construction should be viewed in this context.
- 5.1.5 The activities scoped out are covered in **Table 5.1** below, with a summary provided here:
- There will be no open cut watercourse crossings on canals or the Lower Mersey Transitional water body and therefore these proposed project activities are scoped out in relation to these WFD water bodies;
  - There will be no temporary construction haul road crossings of the Lower Mersey Transitional water body and this activity is therefore scoped out;
  - There is no permanent above ground infrastructure proposed in the vicinity of the Mersey Transitional water body and therefore this activity is scoped out; and
  - It is not predicted that effects on WFD groundwater bodies are likely to be significant with regards to the temporary haul roads and permanent above ground infrastructure construction due to the superficial nature of the proposed works, their limited size and limited potential for dewatering, and these activities are therefore scoped out.

Table 5.1 Scoping for further assessment

| Development activity<br>(during construction)                     | Aspects of relevance to<br>the WFD                                                                            | Water bodies -<br>Scoped in/out                                                                                            | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pipeline corridor<br/>laying</b>                               | Trenching (with potential dewatering),<br>Hydrostatic testing,<br>abstraction and discharge<br>of test water. | River - In<br><br>Canal - In<br><br>Transitional - In<br><br>Non-reportable -<br>TBC <sup>18</sup><br><br>Groundwater - In | Potential for the following short-term, temporary and localised effects:<br><ul style="list-style-type: none"> <li>- Pollutants and sediments ingress to watercourses via runoff from working areas.</li> <li>- Pollutant release and ground disturbance during trenching, including discharge of dewatered groundwater pumped from trenched excavations.</li> <li>- Flow regimes and groundwater quantity to be affected by the abstraction and discharge of water for hydrostatic testing.</li> </ul> |
| <b>Pipeline corridor<br/>watercourse<br/>crossings – Open cut</b> | Damming or fluming of<br>ordinary watercourses.                                                               | River - In<br><br>Canal - Out<br><br>Transitional - Out<br><br>Non-reportable -<br>TBC<br><br>Groundwater - In             | Potential for the following short-term, temporary and localised effects:<br><ul style="list-style-type: none"> <li>- Pollutant and sediment ingress to watercourses via runoff from adjacent working areas.</li> <li>- Disruption of channel morphology, hydraulic regime and continuity of aquatic habitat</li> <li>- Disturbance of bed and bank material, including potentially contaminated sediments.</li> </ul>                                                                                   |

<sup>18</sup> The Applicant is currently in dialogue with the Environment Agency about how WFD compliance should be assessed for non-reportable water bodies. This will be confirmed before the final DCO-stage assessment is completed.

| Development activity<br>(during construction)               | Aspects of relevance to<br>the WFD                                                                          | Water bodies -<br>Scoped in/out                                                                                  | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                             |                                                                                                             |                                                                                                                  | <ul style="list-style-type: none"> <li>- Creation of a pollution pathway through the construction of a trench across watercourses and through interactions between groundwater and surface waters in stretches losing flow to the ground.</li> </ul> <p>All transitional water bodies will be crossed with trenchless methods, so they are scoped out.<br/>All canals will be crossed with trenchless methods so they are scoped out.</p> |
| <b>Pipeline corridor watercourse crossings – Trenchless</b> | <p>Construction of trenchless crossing access pits</p> <p>Tunnelling/boring/drilling below watercourses</p> | <p>River - In</p> <p>Canal - In</p> <p>Transitional - In</p> <p>Non-reportable - TBC</p> <p>Groundwater - In</p> | <p>Potential for the following short-term, temporary and localised effects:</p> <ul style="list-style-type: none"> <li>- New pollution pathways to groundwater via excavation of launch and reception pits.</li> <li>- Ingress of pollution to watercourses via dewatering discharges from tunnelling/drilling drive and reception pits.</li> <li>- Pollution of ground and surface water via 'break-out' of drilling fluid.</li> </ul>   |
| <b>Temporary construction haul road</b>                     | <p>Road construction</p> <p>Temporary culverts</p> <p>Temporary bridges.</p>                                | <p>River - In</p> <p>Canal - In</p> <p>Transitional - Out</p>                                                    | <p>Potential for the following short-term, temporary and localised effects:</p> <ul style="list-style-type: none"> <li>- Pollutant and sediment ingress to watercourses via runoff from haul roads.</li> </ul>                                                                                                                                                                                                                            |

| Development activity<br>(during construction) | Aspects of relevance to<br>the WFD | Water bodies -<br>Scoped in/out | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                    | Non-reportable -<br>TBC         | - Disruption of channel morphology, hydraulic regime and continuity of aquatic habitat during culvert installation.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                               |                                    | Groundwater - Out               | - Disturbance of bed and bank material, including potentially contaminated sediments during culvert installation.<br>- Change in watercourse hydraulic regime as a result of culvert or bridge presence.<br>It is not anticipated that a temporary haul road would cross the Mersey, as existing crossing would be used. There are likely to be crossings over canals.<br>Effects on the groundwater bodies are not likely to be significant due to the superficial nature of the proposed temporary construction haul road with no requirement for dewatering. |
| <b>Temporary construction compounds</b>       | Compound construction              | River - In                      | Potential for the following short-term, temporary and localised effects:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                               |                                    | Canal - In                      | - Ingress of pollutants and sediments to watercourses in runoff from construction compounds during their establishment and operation.                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                               |                                    | Transitional - In               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                               |                                    | Non-reportable -<br>TBC         | - Contamination of shallow groundwater from accidental spillage from and disturbance of existing land                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                               |                                    | Groundwater - Out               | contamination by construction activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Development activity<br>(during construction) | Aspects of relevance to<br>the WFD | Water bodies -<br>Scoped in/out | Explanation                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------|------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                    |                                 | Effects on the groundwater bodies are not likely to be significant due to the superficial nature of works required to establish the proposed compounds with no requirement for dewatering.                                                                                                                                                                                                                     |
| <b>Permanent above ground infrastructure</b>  | Infrastructure construction        | River - In                      | Potential for the following short-term, temporary and localised effects:                                                                                                                                                                                                                                                                                                                                       |
|                                               |                                    | Canal - In                      | - Pollutant and sediment ingress to watercourses via runoff from areas disturbed by construction and discharge of groundwater dewatered from excavations.                                                                                                                                                                                                                                                      |
|                                               |                                    | Transitional - Out              | - Contamination of shallow groundwater from accidental spillage from and disturbance of existing land contamination by construction activities.                                                                                                                                                                                                                                                                |
|                                               |                                    | Non-reportable - TBC            |                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                               |                                    | Groundwater - Out               | Quantitative effects on the groundwater bodies are not likely to be significant due to the relatively shallow nature and small spatial scale of the proposed permanent infrastructure works and limited potential for dewatering. There is no permanent above ground infrastructure proposed with a direct hydrological connection to the Lower Mersey transitional water body and it is therefore scoped out. |

## 6. WFD Impact Assessment

### 6.1 WFD Water Bodies Baseline

6.1.1 The WFD water bodies screened into the assessment are outlined in **Section 4**. This section presents baseline information on the current (2019 Cycle 2) WFD classifications and the objectives of the water body<sup>19</sup>. While the operational phase of the Project has been screened out, the water body objectives are presented here, along with reasons for not achieving Good, in order to assess the likelihood of the Project affecting the ability of the water bodies to achieve these objectives. Full details of the classifications, reasons for not achieving good and objectives for all water bodies are included in **Appendix 7A**, with a summary provided here.

#### River water bodies

6.1.2 Twenty River WFD water bodies have been screened into the assessment; ten are classed as being HMWBs and are therefore classified using Potential, rather than Status.

6.1.3 Of the ten screened in non-HMWBs, four are achieving Poor Status. This is predominantly due to poor soil, nutrient, and livestock management, as well as farm infrastructure and barriers to ecological discontinuity. Urbanisation is also a reason for not achieving Good Status. The six remaining non artificial or HMWBs are achieving Moderate Status. This is due to a variety of reasons including poor nutrient, soil and livestock management, as well as urbanisation and sewage discharge and private sewage treatment.

6.1.4 All of the ten HMWBs are achieving Moderate Potential, due to the Mitigation Measures Assessment<sup>20</sup> being classed as Moderate or Less.

6.1.5 The objectives of the water bodies are listed below. Where a water body does not have an objective of Good Ecological Status/Potential by 2027, the justifications for this are listed.

6.1.6 Good Ecological Status/Potential by 2027:

- Whittle Brook (Mersey Estuary);
- Sutton Brook;
- Weaver (Dane to Frodsham);
- Weaver (Marbury Brook to Dane);

<sup>19</sup> When the Cycle 3 RMBP are published, the assessment will be updated.

<sup>20</sup> Ecological Potential in artificial and heavily modified water bodies is determined by an assessment of whether measures are properly in place to mitigate the impacts of any modification on the ecology of the water body. If all mitigation measures are in place, the water body has been classified as being at Good Potential. If one or more identified mitigation measures are absent the water body has been classified as Moderate Potential.

- Dane (Wheelock to Weaver);
- Gale Brook;
- Puddinglake Brook;
- Bogart Brook;
- Wade Brook;
- Arley Brook (Source to Gale Brook);
- Keckwick Brook;
- Cogshall Brook;
- Sankey Brook (Hardshaw Brook to Rainford Brook); and
- Hardshaw (Windle) Brook.

6.1.7 Good Ecological Status by 2021<sup>21</sup>:

- Cuddington Brook (Source to Crowton Brook).

6.1.8 Moderate Ecological Status by 2027:

- Dane (Wheelock to Weaver):
  - ▶ Disproportionately expensive: Disproportionate burdens; and
  - ▶ Technically infeasible: No known technical solution is available.

6.1.9 Moderate Ecological Status/Potential by 2015:

- Sinderland Brook:
  - ▶ Disproportionately expensive: Disproportionate burdens; and
  - ▶ Technically infeasible: No known technical solution is available;
- Mersey/ Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin):
  - ▶ Disproportionately expensive: Unfavourable balance of costs and benefits;
  - ▶ Technically infeasible: Cause of adverse impact unknown; and
  - ▶ Technically infeasible: No known technical solution is available.
- Bollin (Ashley Mill to Manchester Ship Canal):
  - ▶ Disproportionately expensive: Disproportionate burdens;
  - ▶ Technically infeasible: Cause of adverse impact unknown; and
  - ▶ Technically infeasible: No known technical solution is available.
- Mersey (Bollin confluence to Howley Weir) including Padgate Brook:

<sup>21</sup> It appears that no assessment has yet been carried out to determine whether this target has been met. This will be kept under review and updated as new assessments are made available to support publication of the 3<sup>rd</sup> cycle RBMP.

- ▶ Disproportionately expensive: Disproportionate burdens;
- ▶ Disproportionately expensive: Unfavourable balance of costs and benefits; and
- ▶ Technically infeasible: No known technical solution is available.

6.1.10 Poor Ecological Status by 2015:

- Peckmill Brook, Hoolpool Gutter at Ince Marshes
  - ▶ Disproportionately expensive: Disproportionate burdens; and
  - ▶ Technically infeasible: No known technical solution is available.

## Canal water bodies

- 6.1.11 Five canal WFD water bodies have been screened in for assessment. All of them are classified as being at Moderate Ecological Potential. Landfill leaching, atmospheric deposition and sewage discharge are reasons listed for not achieving Good.
- 6.1.12 The objective of all the screened in Canal WFD bodies is Good Ecological Potential by 2027.

## Transitional water bodies

- 6.1.13 The Mersey is the only transitional WFD water body within the Study Area. The Mersey is achieving Moderate Ecological Status. The reasons for not achieving Good are contaminated land in the catchment and due to a contaminated water body bed.
- 6.1.14 The objective of the Lower Mersey Transitional WFD water body is Good Ecological Status by 2027.

## Lake water bodies

- 6.1.15 No lake water bodies have been screened in for further assessment.

## Non reportable water bodies

- 6.1.16 There are three non-reportable water bodies within the Study Area. While they are not reportable under the WFD, they are still legally protected from pollution, modification and abstraction.
- 6.1.17 The non-reportable water bodies that are considered within this assessment are outlined in **Figure 7.2**. As these water bodies have not been formally designated with names, appropriate names have been given to facilitate the assessment and aid readability.
- 6.1.18 Baseline conditions for non-reportable water bodies are not presented here as they are not routinely monitored and their WFD Status is not reported on.
- 6.1.19 It is assumed for the purposes of preliminary assessment that all non-reportable water bodies are currently and will be at Good Ecological Status.

## Groundwater bodies

- 6.1.20 Five WFD groundwater bodies have been screened into the assessment. All five are currently achieving Poor Status. The reasons for not achieving Good are predominantly poor nutrient management. Saline intrusion and abandoned mines have also affected the Manchester and East Cheshire Permo-Triassic Sandstone Aquifers and the Sankey and Glaze Carboniferous Aquifers respectively.
- 6.1.21 The objectives of the water bodies are listed below. Where a water body does not have an objective of Good Status by 2027, the justifications for this are listed
- 6.1.22 Good by 2027:
- Wirral and West Cheshire Permo-Triassic Sandstone Aquifers;
  - Weaver and Dane Quaternary Sand and Gravel Aquifers; and
  - Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers.
- 6.1.23 Good by 2021:
- Manchester and East Cheshire Permo-Triassic Sandstone Aquifers.
- 6.1.24 Poor by 2015:
- Sankey and Glaze Carboniferous Aquifers:
    - ▶ Disproportionately expensive: Disproportionate burdens.

## 6.2 Environmental Measures Incorporated into the Project

- 6.2.1 The environmental measures incorporated into the Project are outlined in **Table 7.16 of Chapter 7**. Embedded mitigation is associated with construction activities, particularly pipeline construction and related watercourse crossing points, temporary access roads and compounds, HAGIs and associated drainage.
- 6.2.2 **Table 6.1** relates the embedded environmental measures within the Project to the potential elements of the WFD, which could be affected by the proposed project activities.
- 6.2.3 All construction activities will be carried out in accordance with the CoCP, CEMP and PPP to ensure that any unforeseen accidents during construction (such as freak weather etc.) are able to be mitigated as far as practicable to reduce the risk of any negative impacts affecting WFD status.

**Table 6.1 Summary of embedded environmental measures and their relevance regarding potential effects to the WFD**

| <b>WFD element</b>     | <b>Potential effect on WFD element</b>                                                               | <b>Embedded environmental measure to manage potential effect – for full description see Table 7.16 of Chapter 7</b>                                                                                                                                                                                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphology</b> | Alteration of flow regime – via input to watercourses and via indirect changes within the catchment. | D-1 Underground pipeline<br>D-4 Temporary access tracks design<br>D-5 Management of subsurface flow pathways<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-4 Diversion and reinstatement of existing drainage networks<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-7 Management of dewatering excavations<br>C-10 Timely reinstatement following completion of works<br>C-11 Permitting of discharges |
| <b>Hydromorphology</b> | Alteration of channel morphology.                                                                    | C-9 Stand-off distances from watercourses<br>C-25 A Watercourse Crossing Plan (WCP)<br>C-26 Trenchless pipeline crossings<br>C-27 Trenched crossings of minor watercourses<br>C-29 Temporary construction access watercourse crossings                                                                                                                                                                                                               |
| <b>Hydromorphology</b> | Lateral and longitudinal connectivity.                                                               | C-9 Stand-off distances from watercourses<br>C-25 A Watercourse Crossing Plan (WCP)<br>C-26 Trenchless pipeline crossings<br>C-27 Trenched crossings of minor watercourses                                                                                                                                                                                                                                                                           |

| WFD element                            | Potential effect on WFD element                                                                                                                                                                                                                                                                                                                            | Embedded environmental measure to manage potential effect – for full description see Table 7.16 of Chapter 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                        |                                                                                                                                                                                                                                                                                                                                                            | C-29 Temporary construction access watercourse crossings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Chemical and Physico – chemical</b> | <p>Mobilisation of sediment or contaminated sediment / material in the catchment that has the potential to enter the watercourse network.</p> <p>Introduction and / or mobilisation of sediment or contaminated sediment / material within the channel that has the potential to be transported downstream</p> <p>Alteration to surface water quality.</p> | <p>D-4 Temporary access track design</p> <p>C-1 A Code of Construction practice (CoCP)</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> |

| <b>WFD element</b>        | <b>Potential effect on WFD element</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Embedded environmental measure to manage potential effect – for full description see Table 7.16 of Chapter 7</b>                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | C-20 Foul drainage from temporary compounds                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Chemical</b>           | Release of pollutants into surface or groundwater has the potential to impact Chemical Status.                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p>                                                                                                |
| <b>Biological Quality</b> | <p>Mobilisation of sediment or contaminated sediment / material in the catchment that has the potential to enter the watercourse network and have a potential knock-on impact on the habitats of fish, macrophytes, phytobenthos and invertebrates.</p> <p>Introduction and / or mobilisation of sediment or contaminated sediment / material within the channel that has the potential to be transported downstream and have potential knock-on impact on the habitats of fish, macrophytes, phytobenthos and invertebrates.</p> | <p>D-4 Temporary access track design</p> <p>C-1 A Code of Construction practice (CoCP)</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> |

| <b>WFD element</b>          | <b>Potential effect on WFD element</b>                                                                                                | <b>Embedded environmental measure to manage potential effect – for full description see Table 7.16 of Chapter 7</b>                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             | Release of pollutants into water bodies has the potential to negatively impact biological quality through harming plants and animals. | <p>C-13 Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-16 Handling and processing of concrete</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> <p>C-20 Foul drainage from temporary compounds</p> |
| <b>Groundwater Quantity</b> | Alteration to groundwater quantity                                                                                                    | <p>D-1 Management of subsurface flow pathways</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-5 Private abstraction risk assessment and mitigation strategy</p> <p>C-7 Management of dewatering of excavations</p> <p>C-11 Permitting of discharges</p>                                                                                                                                                                                                                            |
| <b>Groundwater Chemical</b> | Alteration to groundwater quality.                                                                                                    | <p>C-1 Code of Construction Practice</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-7 Management of dewatering of excavations</p>                                                                                                                                                                                                                                                                 |

| WFD element | Potential effect on WFD element | Embedded environmental measure to manage potential effect – for full description see Table 7.16 of Chapter 7                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                 | <p>C-11 Permitting of discharges</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-16 Handling and processing of concrete</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> <p>C-20 Foul drainage from temporary compounds</p> |

## 6.3 North West River Basin Management Programme of Measures

6.3.1 The main programmes aimed at water body enhancement in the North West RBMP (Cycle 2)<sup>22</sup> are:

- water company investment programme;
- Countryside Stewardship;
- Highways England's environment fund;
- flood risk management investment programme;
- catchment level government funded improvements;
- abandoned metal mines programme; and

<sup>22</sup> When the Cycle 3 RBMP is available, it will be fully taken into account.

- water resources sustainability measures.

6.3.2 None of the proposed project activities are anticipated to have any negative impact on the RBMP programme of measures. Conversely, none of the proposed project activities are anticipated to contribute to any of the program of measures either.

## 6.4 Preliminary Further Assessment

6.4.1 Following on from the scoping assessment, the activities and water bodies identified in need of further assessment are considered here against the identified embedded environmental measures.

6.4.2 This section provides a preliminary summary of findings, including consideration of both the WFD requirement for no deterioration in WFD class and the need to ensure the Project does not prevent the achievement of future target status.

6.4.3 As the design of the Project, in many cases, is not proposed to vary significantly from water body to water body, the approach adopted here provides one assessment for each activity/infrastructure type per water body category (i.e. river, canal, transitional, groundwater). Based on the screening and scoping assessment presented in **Sections 4 and 5**, those water bodies that have been identified as not requiring detailed assessment are not considered here.

6.4.4 The screening and scoping of activities/infrastructure types that was undertaken in **Section 4 and Section 5** did not include a consideration of any embedded environmental measures that would be implemented as part of the Project. However, in practice these measures would be incorporated to manage any potential effects on the water environment to an acceptable level.

6.4.5 **Table 6.3 to Table 6.8** present an assessment of each proposed project activity with the inclusion of the embedded environmental measures and assess the likelihood of there being any effect on the WFD elements of the scoped in WFD water body groups.

6.4.6 In order to assess the magnitude of change, an approach has been taken to be consistent with the assessment of effects in **Chapter 7**. The magnitude of change from baseline conditions includes consideration of the duration and reversibility of the change, relevant legislation, policy standards and guidance.

6.4.7 Magnitude of change may be either positive or negative. The criteria and examples in **Table 6.2** focus on negative changes, but positive changes may also occur and will be considered on a case-by-case basis as required.

**Table 6.2 Definitions of magnitude of change**

| <b>Magnitude</b>  | <b>Examples</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>High</b>       | <p>Deterioration in river flow regime, morphology or water quality, leading to sustained, permanent or long-term or non-temporary downgrading (deterioration) of WFD Surface Water Body Status (including downgrading of individual WFD elements), or resulting in the inability of the surface water body to attain Good Ecological Potential as well as Good Ecological Status by the relevant deadline in line with the measures identified in the RBMP.</p> <p>Deterioration in groundwater levels, flows or water quality, leading to non-temporary downgrading of WFD Groundwater Body Status, or the inability of the groundwater body to attain Good Status in line with the measures identified in the RBMP.</p> |
| <b>Medium</b>     | <p>Deterioration in river flow regime, morphology or water quality, leading to periodic, short-term and reversible, or potential temporary downgrading of Surface Water Body Status (including potential temporary downgrading of individual WFD elements), although not affecting the ability of the surface water body to achieve future WFD objectives.</p> <p>Deterioration in groundwater levels, flows or water quality, leading to potential temporary downgrading of WFD Groundwater Body Status, although not affecting the ability of the groundwater body to achieve future WFD objectives.</p>                                                                                                                |
| <b>Low</b>        | <p>Measurable effect on river flow regime, morphology or water quality with no short-term or permanent change to WFD Surface Water Body Status (of overall Status or element Status).</p> <p>Measurable effect on groundwater levels, flows or water quality, but with no short-term or permanent downgrading of WFD Groundwater Body Status.</p>                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Negligible</b> | <p>No measurable effect on river flow regime, morphology or water quality, and no consequences in terms of Surface Water Body Status.</p> <p>No measurable effect on groundwater levels, flows or water quality, and no consequences in terms of WFD Groundwater Body Status.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                         |

Table 6.3 Preliminary impact assessment for pipeline corridor laying

| Water Framework Directive (WFD) element       | WFD sub-element               | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                             | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>River water bodies</b>                     |                               |                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hydromorphological Supporting Elements</b> | Quantity and dynamics of flow | <p>D-1 Underground pipeline</p> <p>D-5 Management of subsurface flow pathways</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-4 Diversion and reinstatement of existing drainage networks</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-7 Management of dewatering excavations</p> <p>C-10 Timely reinstatement following completion of works</p> | <p>Any dewatering requirements to facilitate the necessary conditions for pipeline installation would be of shallow depth and low volume (typically dewatering would not take place at one individual location for more than several days) such that there would be negligible effects on adjacent watercourse baseflow. Should the low quantities of dewatered groundwater be discharged to an adjacent watercourse any effects on the baseline flow volume would be low to negligible, depending on the size of the watercourse relative to the volumes discharged.</p> <p>The Drainage Management Plan will ensure that all surface water runoff associated with pipeline corridor laying is managed using SuDS principles to ensure surface runoff is managed and discharge volumes are limited to greenfield rates, ensuring negligible change in the surface runoff to water bodies.</p> <p>Hydrostatic testing of the pipeline will be required which will involve water being sourced, used for testing and then discharged. While the overall volume of water required may be substantial, only small sections of the pipeline will be tested at any one time, limiting the volumes required for each test,</p> |

| <b>Water Framework Directive (WFD) element</b> | <b>WFD sub-element</b>                      | <b>Embedded environmental measures (described further in Chapter 7)</b> | <b>Assessment of effects on WFD</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                |                                             | C-11 Permitting of discharges                                           | <p>thereby minimising any impact. All water will be sourced and discharged in accordance with Environment Agency Permits and it will therefore be ensured that the impact is Low and will only result in a one-time effect on each water body, with no long-term effect on the baseline.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the localised and short duration changes in the quantity and dynamics of flow would only have a negligible effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there could be a negligible magnitude of change on quantity and dynamics of flow. However, this would be for a very short duration and would be fully reversible. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |
| <b>Hydromorphological Supporting Elements</b>  | River continuity (lateral and longitudinal) | None required                                                           | There would no effects on river continuity as there would be no in-channel works associated with this proposed activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hydromorphological Supporting Elements</b>  | River width and depth variation             | None required                                                           | There would no effects on river continuity as there would be no in-channel works associated with this proposed activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Water Framework Directive (WFD) element       | WFD sub-element                          | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                                      | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphological Supporting Elements</b> | Structure and substrate of the river bed | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design | <p>The measures designed to prevent silty runoff from entering watercourses will work to ensure that there is minimal change to the sediment load entering watercourses and therefore there would be negligible impact on the structure and substrate of the river bed.</p> <p>Considering the implementation of the embedded environmental measures, there would be a negligible magnitude of change on the substrate and structure of the river bed. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |
| <b>Hydromorphological Supporting Elements</b> | Connectivity with groundwater            | D-5 Management of subsurface flow pathways<br>C-4 Diversion and reinstatement of existing drainage networks<br>C-7 Management of dewatering excavations                                                                                                                                               | <p>The works associated with pipeline corridor laying in floodplains and/or adjacent to watercourses would not result in any significant alteration of the connectivity of river and groundwater bodies, as there would be no in-channel works or structures introduced to the channel boundary. Embedded silt management measures to prevent silty runoff from reaching the channel would ensure that there is no change in the composition of the channel substrate which may reduce connectivity. The implementation of clay stanks or cross-</p>                  |

| Water Framework Directive (WFD) element                                          | WFD sub-element                                                                                                                                       | Embedded environmental measures (described further in Chapter 7)                                                                                                                                          | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                  |                                                                                                                                                       | C-8 Silt management measures                                                                                                                                                                              | <p>drainage along the route of the trench would prevent significant alteration to the existing groundwater flow patterns. Furthermore, any dewatering requirements to facilitate the necessary conditions for pipeline installation would be of shallow depth, low volume and short duration such that there would be no effects on adjacent watercourse baseflow.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Negligible magnitude of change on connectivity with groundwater. There would therefore be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p>                                                                    |
| <b>Physico-chemical quality elements</b><br><br><b>Chemical quality elements</b> | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature<br><br>Specific Pollutants, Priority substances and Priority Hazardous substances | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures | <p>Impacts on the existing baseline water quality could occur via the disturbance of contaminated sediments during pipeline laying activities leading to them being washed into watercourses via runoff. It could also potentially occur as a result of the short-term soil stockpiling alongside the pipeline corridor adjacent to watercourses. Considering the embedded environmental measures put in place to manage silty runoff reaching watercourses and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on water quality would have a negligible effect on WFD Water Body Status.</p> |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                                                                                                                      | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                 | <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> | <p>Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of Polycyclic Aromatic Hydrocarbons (PAHs) associated with vehicle / machinery fuels and oils, or metals (from machinery itself) at or adjacent to the location of the pipeline route. Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) cannot be discounted. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would be of a Low magnitude and therefore not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Negligible to Low magnitude of change associated with physico-chemical and chemical quality elements. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |

| Water Framework Directive (WFD) element | WFD sub-element                                             | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                                                                                | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Biological quality elements</b>      | Fish, Eels, macrophytes and phytobenthos, and invertebrates | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-13 A Pollution Prevention Plan (PPP) | <p>Potential effects from pipeline laying on biological quality elements would be primarily associated with changes to the hydromorphology and/or water quality of a watercourse that collectively make up the habitat upon which fish, macrophytes, phytobenthos and invertebrates are dependent. The main potential effect would be specifically related to the ingress of sediments from excavations and any short-term soil stockpiling to watercourses. This could result in a short term pulse of sediments downstream, which could in turn harm the habitats of fish, macrophytes and phytobenthos, and invertebrates. However, the embedded mitigation measures in place to manage silty runoff will prevent this from occurring as much as is practicable, meaning the impact is expected to be negligible. Furthermore, there is potential for pollutants to enter the water body, also having the potential to negatively impact biological quality elements. However, the pollution prevention measures are deemed sufficient to mitigate this risk and prevent any deterioration of water quality and therefore biological quality.</p> <p>Considering the implementation of embedded environmental measures and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on biological quality elements would not have any effect on WFD Water Body Status.</p> |

| Water Framework Directive (WFD) element  | WFD sub-element                                                            | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                                                                                       | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                                                                            |                                                                                                                                                                                                                                                                                                                                                        | Considering the implementation of the embedded environmental measures, there would be a negligible magnitude of change associated with pipeline corridor laying. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Canal water bodies</b>                |                                                                            |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Physico-chemical quality elements</b> | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature        | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from | Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse), of low magnitude cannot be discounted. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD Water Body Status. |
| <b>Chemical quality elements</b>         | Specific Pollutants, Priority substances and Priority Hazardous substances |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Water Framework Directive (WFD) element  | WFD sub-element                                                     | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                                                                                    | Assessment of effects on WFD                                                                                                                                                                                                                                                                                  |
|------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                                                                     | <p>disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> |                                                                                                                                                                                                                                                                                                               |
| <b>Transitional water bodies</b>         |                                                                     |                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                               |
| <b>Physico-chemical quality elements</b> | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature | C-1 A Code of Construction practice (CoCP)                                                                                                                                                                                                                                                                                                          | Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are |

| Water Framework Directive (WFD) element | WFD sub-element                                                            | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                                                                                                                            | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Chemical quality elements</b>        | Specific Pollutants, Priority substances and Priority Hazardous substances | <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> | <p>expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be discounted.</p> <p>However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the impact of any effects would be negligible and would not have any effect on WFD Water Body Status.</p> |

| Water Framework Directive (WFD) element       | WFD sub-element               | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                              | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                               | <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p>                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hydromorphological Supporting Elements</b> | Quantity and dynamics of flow | <p>D-1 Underground pipeline</p> <p>D-5 Management of subsurface flow pathways</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-4 Diversion and reinstatement of existing drainage networks</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> | <p>The Drainage Management Plan will ensure that all surface water runoff associated with pipeline corridor laying is managed using SuDS principles to ensure surface runoff is managed and discharge volumes are limited to greenfield rates, ensuring negligible change in the surface runoff to the tributaries of the Mersey and the Mersey itself.</p> <p>Hydrostatic testing of the pipeline will be required, which will involve water being sourced, used for testing and then discharged. While the overall volume of water required may be substantial, only small sections of the pipeline will be tested at any one time, limiting the volumes required for each test, thereby minimising any impact. All water will be sourced and discharged in accordance with Environment Agency Permits and it will therefore be ensured that the impact is Low and will only result in a one-time effect on each water body, with no long term effect on the baseline.</p> |

| Water Framework Directive (WFD) element | WFD sub-element                            | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                                                                                | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                                            | C-7 Management of dewatering excavations<br>C-10 Timely reinstatement following completion of works<br>C-11 Permitting of discharges                                                                                                                                                                                                            | Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the localised and short duration changes in the quantity and dynamics of flow would only have a negligible effect on WFD Water Body Status.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Biological quality elements             | Macrophytes<br>Macroalgae<br>Phytoplankton | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-13 A Pollution Prevention Plan (PPP) | Effects on biological quality elements are almost exclusively associated with changes to the hydromorphology and/or water quality of a watercourse that collectively make up the habitat upon which, macrophytes macroalgae and phytoplankton are dependent. The main potential effect would be specifically related to the mobilisation of sediments from short term soil stockpiling adjacent to the watercourse. This could result in a short term pulse of sediments downstream, which could in turn harm the habitats of macrophytes macroalgae and phytoplankton. Embedded silt management measures would ensure that sediment runoff into the Mersey (or its tributaries) is minimised as much as possible so the magnitude of impact would be Negligible. Furthermore, there is a potential for pollutants to enter the water body also having the potential to negatively impact biological quality elements. However, the pollution prevention measures are deemed sufficient to mitigate this risk and prevent any deterioration of water quality and therefore biological quality. |

| Water Framework Directive (WFD) element | WFD sub-element                                  | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                 | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                                                  |                                                                                                                                                                                                                                                  | Assuming the successful implementation of embedded environmental measures and considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on biological quality elements would not have any effect on WFD Water Body Status                                                                                                                                                                                                                                                                                                                                                         |
| <b>Groundwater bodies</b>               |                                                  |                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Groundwater level elements</b>       | Quantitative dependent surface water body Status | D-1 Management of subsurface flow pathways<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-5 Private abstraction risk assessment and mitigation strategy<br>C-7 Management of dewatering of excavations<br>C-11 Permitting of discharges | During pipeline corridor laying, trenches may require dewatering to remove shallow inflows of groundwater. The trench itself would be shallow and therefore the volumes of water to be dewatered would be negligible compared to the size of the WFD groundwater bodies and the impacts would be localised and temporary, and of negligible magnitude.<br><br>On this basis, considering the scale and duration of works in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that any localised and short duration changes in local groundwater levels would have a negligible magnitude of impact and would not have any effect on WFD Water Body Status. |
| <b>Groundwater chemical elements</b>    | General chemical test                            | C-1 Code of Construction Practice                                                                                                                                                                                                                | Earth movements during excavation have the potential to remobilise contaminants and, if a suitable pathway exists,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                 | <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-7 Management of dewatering of excavations</p> <p>C-11 Permitting of discharges</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-16 Handling and processing of concrete</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land</p> | <p>contaminate groundwater. There is also the potential that removal of superficial materials in the trench could create pathways to shallow aquifers.</p> <p>However, potential effects will be mitigated by embedded good practice construction methods (such as the Materials Management Plan, Unexpected Contamination Protocol and a Pollution Prevention Plan) to prevent deterioration in Status due to contamination of aquifers. Therefore, it can be considered that the risk would be low and the magnitude of impact would also be low.</p> <p>On the basis of embedded environmental measures being implemented, this effect is considered to be of low magnitude and unlikely to cause a deterioration in Chemical Status for WFD groundwater bodies.</p> |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (described further in Chapter 7)                                                                           | Assessment of effects on WFD |
|-----------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|                                         |                 | (Materials Management Plan, MMP)<br>C-18 Treatment and discharge of contaminated groundwater<br>C-19 A monitoring and inspection programme |                              |

**Table 6.4 Preliminary impact assessment for pipeline corridor watercourse crossings – open cut**

| Water Framework Directive (WFD) element       | WFD sub-element               | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                    | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>River water bodies</b>                     |                               |                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hydromorphological Supporting Elements</b> | Quantity and dynamics of flow | D-5 Management of subsurface flow pathways<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-4 Diversion and reinstatement of existing drainage networks<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-7 Management of dewatering excavations<br>C-10 Timely reinstatement following completion of works<br>C-11 Permitting of discharges | <p>Any dewatering requirements to facilitate the necessary conditions for pipeline installation would be of shallow depth and low volume (both depending on ground conditions, but a typical depth of 2 to 3m to the base of the trench is assumed) and short duration (typically dewatering would not take place at one individual location for more than several days) such that there would be only a low magnitude temporary effect on adjacent watercourse baseflow. Should the low quantities of dewatered groundwater be discharged to an adjacent watercourse, any effects on the baseline flow volume would also be low and temporary.</p> <p>The installation of open cut watercourse crossings via fluming or damming would only occur on relatively minor watercourses and would not be used for any WFD river water bodies. The trenching process would lead to a period of flow regime alteration for a localised extent up and downstream of the crossing location, However, as this process is likely to last less than one day in duration, whilst these local alterations to the quantity and dynamics of flow are not insignificant, the effects would be fully reversible once the flow is re-connected</p> |

| Water Framework Directive (WFD) element       | WFD sub-element                             | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7) | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                             |                                                                                                                 | <p>following pipeline installation, meaning the magnitude of impact would be Low.</p> <p>Once the pipelines are installed, the baseline quantity of water within the channel and morphological conditions of the channel cross-section would be re-established. Therefore, the baseline quantity and dynamics of flow would be restored.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the localised and short duration changes in the quantity and dynamics of flow would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Low magnitude of change on quantity and dynamics of flow. However, this would be for a very short duration and would be fully reversible. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |
| <b>Hydromorphological Supporting Elements</b> | River continuity (lateral and longitudinal) | C-9 Stand-off distances from watercourses<br>C-25 A Watercourse Crossing Plan (WCP)                             | While damming or fluming associated with open cut crossings would present a barrier to longitudinal connectivity, this would only be for a period of up to two days and is only proposed to occur on minor watercourses. During this time water would be                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7) | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                 | C-27 Trenched crossings of minor watercourses                                                                   | <p>overpumped or flumed across the excavation and therefore there would still be hydraulic conductivity. There would be an impact of ecological connectivity, however this would be temporary and the channel would be fully restored after the pipeline has been laid beneath the crossing location, therefore the magnitude is considered to be Low.</p> <p>The construction works to facilitate pipeline watercourse crossings would not result in any permanent reduction in the lateral connectivity of river flow and the adjacent floodplain, as the topsoil and sediment that is removed in the trenching process would be reinstated on completion of the pipeline installation. Similarly, the interruption of longitudinal river continuity as a result of the temporary damming and overpumping of water (for a period of less than two days) would be fully reversed on completion of pipeline installation.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the effects of these localised changes in the river continuity would not have any effect on WFD Water Body Status. Considering the implementation of the embedded environmental measures, there would be a Low magnitude of change on river continuity. There would be no need to provide</p> |

| Water Framework Directive (WFD) element       | WFD sub-element                          | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7) | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                          |                                                                                                                 | additional mitigation to facilitate compliance with WFD for the Project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hydromorphological Supporting Elements</b> | River width and depth variation          | C-27 Trenched crossings of minor watercourses                                                                   | <p>The construction works to facilitate open cut crossings would result in no perceptible alteration of the baseline river width and depth variation as the sediment and cross-sectional form that is removed in the trenching process would be reinstated on completion of the pipeline installation (a period of less than two days duration). The crossings would have the working width reduced as far as is practicable.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the effects of these localised changes in the river width and depth variation would not have any effect on WFD water body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Low magnitude of change on river width and depth variation. There would be no need to provide mitigation to facilitate compliance with WFD for the Project.</p> |
| <b>Hydromorphological Supporting Elements</b> | Structure and substrate of the river bed | C-1 A Code of Construction practice (CoCP)                                                                      | The construction works to facilitate open cut watercourse crossings would result in no perceptible alteration of the substrate of the river bed as the sediment and cross-sectional                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                       | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                 | <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> | <p>form that is removed in the trenching process would be reinstated on completion of the pipeline installation.</p> <p>It is possible that, following the reconnection of watercourse flow once the pipeline is installed, there would be a minor pulse of fine-grained sediment transported downstream associated with any loose/unconsolidated sediment that remains following the covering of the trench. However, this is likely to be very short-lived and would be within the normal range of suspended sediment transport rates associated with natural bed/bank disturbance (e.g. small-scale bank erosion).</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the effects of these localised changes in the structure and substrate of the river bed would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Low magnitude of change on the structure and substrate of the river bed. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |

| Water Framework Directive (WFD) element       | WFD sub-element                | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                          | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphological Supporting Elements</b> | Connectivity with groundwater  | D-5 Management of subsurface flow pathways<br>C-4 Diversion and reinstatement of existing drainage networks<br>C-7 Management of dewatering excavations<br>C-8 Silt management measures<br>C-27 Trenched crossings of minor watercourses | <p>Given the localised scale of the trenched underground pipeline installations (below the baseline river bed level) and the fact that the pipeline itself would not provide any perceptible alteration of the pathway from watercourses to the hyporheic zone, there is a high degree of confidence that any localised disturbance of the connectivity between watercourses and the underlying groundwater bodies would be negligible.</p> <p>During trench excavation, the implementation of clay stanks or cross-drainage along the route of the trench would prevent significant alteration to the existing groundwater flow patterns.</p> <p>Considering the scale and duration of any effects in the context of WFD water body size (both river and groundwater), there is a high degree of confidence that the effects of these localised changes on the connectivity with groundwater would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Negligible magnitude of change on connectivity with groundwater. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |
| <b>Hydromorphological Supporting Elements</b> | Structure of the riparian zone | C-27 Trenched crossings of minor watercourses                                                                                                                                                                                            | The construction of open cut crossings would require excavations within riparian areas for the purposes of pipeline laying. However, these would be of a limited width, temporary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| Water Framework Directive (WFD) element                                          | WFD sub-element                                                                                                                                       | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                    | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                  |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                    | <p>duration and will be returned to their previous state upon completion of the works.</p> <p>As the disruption to narrow sections of the riparian zone on only some minor watercourses would only be temporary with the riparian zone reinstated to baseline conditions the magnitude of change is considered to be Low. There is therefore not expected to be any effect on WFD Status of the water bodies. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Physico-chemical quality elements</b><br><br><b>Chemical quality elements</b> | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature<br><br>Specific Pollutants, Priority substances and Priority Hazardous substances | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from disturbance of contaminated | <p>Impacts on the existing baseline water quality could occur via the disturbance of contaminated sediments. This could be within the channel and / or on the river banks at the location of open cut watercourse crossing locations. There is a risk where a short term 'pulse' of contaminated water quality could propagate downstream once the flow is reconnected following the completion of pipeline installation and the reinstatement of bed and bank materials. However, it could also potentially occur as a result of the short-term soil stockpiling alongside the trenched pipeline corridor adjacent to watercourses. Considering the embedded environmental measures to mitigate against the release of silty sediment into watercourses and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes</p> |

| <b>Water Framework Directive (WFD) element</b> | <b>WFD sub-element</b> | <b>Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)</b> | <b>Assessment of effects on WFD</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                |                        | land (Materials Management Plan, MMP)                                                                                  | on water quality would not have any effect on WFD Water Body Status.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                |                        | C-13 A Pollution Prevention Plan (PPP)                                                                                 | Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself) at or adjacent to the location of the pipeline watercourse crossing. Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be discounted. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD Water Body Status. |
|                                                |                        | C-14 Storage or hydrocarbons and other chemicals                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                |                        | C-15 Refuelling, inspection and maintenance                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                |                        | C-18 Treatment and discharge of contaminated groundwater                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                |                        | C-19 A monitoring and inspection programme                                                                             | Considering the implementation of the embedded environmental measures, there would be only a low magnitude of change associated with water quality. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Biological quality elements</b>             | Fish, Macrophytes      | C-1 A Code of Construction practice (CoCP)                                                                             | Effects on biological quality elements are associated with changes to the hydromorphology and/or water quality of a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Water Framework Directive (WFD) element | WFD sub-element                              | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                              | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | and<br>phytobenthos,<br>and<br>invertebrates | <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> | <p>watercourse that collectively make up the habitat upon which fish, macrophytes / phytobenthos and invertebrates are dependent, however in this instance there is also a direct loss of aquatic habitat during the crossing process. This would be of a temporary nature and would be reinstated following completion of the crossing, so the magnitude is considered to be Low. In addition, the construction of the crossing would cause a barrier to fish and eel migration. Further work would be required to identify the sensitive watercourses and ensure that construction timing takes this into account to minimise the impact. Construction timings will need to be programmed to avoid seasonal fish spawning/migration periods.</p> <p>Aquatic habitats may also be affected by the mobilisation of sediments from open cut crossings and short term soil stockpiling adjacent to the watercourses. This could result in a short term pulse of sediments downstream, which could in turn harm the habitats of fish, macrophytes and phytobenthos, and invertebrates. This will be mitigated through the embedded silt prevention measures. With the potential for pollutants to enter the water body also having the potential to negatively impact biological quality elements. However, the pollution prevention measures are deemed sufficient to mitigate this risk and prevent any deterioration of water quality and therefore biological quality.</p> |

| Water Framework Directive (WFD) element | WFD sub-element                                  | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                  | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                                                  |                                                                                                                                                                                                                                                  | <p>Considering the successful implementation of embedded environmental measures and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on biological quality elements would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Low magnitude of change associated with biological quality. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |
| <b>Groundwater bodies</b>               |                                                  |                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Groundwater Level elements</b>       | Quantitative dependent surface water body Status | D-1 Management of subsurface flow pathways<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-5 Private abstraction risk assessment and mitigation strategy<br>C-7 Management of dewatering of excavations<br>C-11 Permitting of discharges | <p>During open cut watercourse crossing methods may require dewatering to remove shallow inflows of groundwater. The trench itself would be shallow and therefore the volumes of water to be dewatered would be negligible compared to the size of the WFD groundwater bodies and the impacts would be localised and temporary.</p> <p>On this basis, considering the scale and duration of works in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that any localised and short duration changes in local groundwater</p>                                            |

| Water Framework Directive (WFD) element | WFD sub-element       | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                                                                                        | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | levels would have a negligible magnitude of impact and would not have any effect on WFD Water Body Status.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Groundwater chemical elements</b>    | General chemical test | C-1 Code of Construction Practice<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-7 Management of dewatering of excavations<br>C-11 Permitting of discharges<br>C-13 A Pollution Prevention Plan (PPP)<br>C-14 Storage or hydrocarbons and other chemicals<br>C-15 Refuelling, inspection and maintenance<br>C-16 Handling and processing of concrete<br>C-17 Measures to avoid pollution impacts from disturbance of contaminated | <p>Earth movements during excavation have the potential to re-mobilise contaminants and, if a suitable pathway exists, contaminate groundwater. There is also the potential that removal of superficial materials in the trench could create pathways to shallow aquifers.</p> <p>However, potential effects would be mitigated by embedded good practice construction methods (such as the Materials Management Plan, Unexpected Contamination Protocol and a Pollution Prevention Plan) to prevent deterioration in Status, due to contamination of aquifers. Therefore, it can be considered that the risk would be low and the magnitude of impact would also be low.</p> <p>On the basis of embedded environmental measures being implemented, this effect is considered to be insignificant and unlikely to cause a deterioration in Chemical Status for WFD groundwater bodies.</p> |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                 | Assessment of effects on WFD |
|-----------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|                                         |                 | land (Materials Management Plan, MMP)<br>C-18 Treatment and discharge of contaminated groundwater<br>C-19 A monitoring and inspection programme |                              |

Table 6.5 Preliminary impact assessment for pipeline corridor watercourse crossings – trenchless

| Water Framework Directive (WFD) element       | WFD sub-element               | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7) | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>River water bodies</b>                     |                               |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hydromorphological Supporting Elements</b> | Quantity and dynamics of flow | D-5 Management of subsurface flow pathways<br>C-2 A Drainage and Water Management Plan (DWMP)                   | Any dewatering requirements for trenchless crossings would be associated solely with the tunnelling/drilling drive and reception pits at either end of the crossing. As such, dewatering volumes would be of low volume and short duration such that there would be Low to Negligible effects on adjacent watercourse baseflow. Should the small quantities of |

| Water Framework Directive (WFD) element       | WFD sub-element                             | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                          | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                             | <p>C-4 Diversion and reinstatement of existing drainage networks</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-7 Management of dewatering excavations</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-11 Permitting of discharges</p> | <p>dewatered groundwater be discharged to an adjacent watercourse there would be only a negligible change on flow regime, on account of the fact that trenchless crossings are associated with large watercourses with substantial baseline flow volumes.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the localised and short duration changes in the quantity and dynamics of flow would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Low magnitude of change on quantity and dynamics of flow. However, this would be for a very short duration and would be fully reversible. There would be no need to provide additional mitigation to facilitate compliance with WFD the Project.</p> |
| <b>Hydromorphological Supporting Elements</b> | River continuity (lateral and longitudinal) | <p>C-9 Stand-off distances from watercourses</p> <p>C-25 A Watercourse Crossing Plan (WCP)</p> <p>C-26 Trenchless pipeline crossings</p>                                                                                                                                                                 | <p>There would no effects on longitudinal continuity as there would be no in-channel works.</p> <p>The construction works to facilitate trenchless crossings would not result in any permanent reduction in the lateral connectivity of river flow and the adjacent floodplain, as the</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Water Framework Directive (WFD) element       | WFD sub-element                 | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)           | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                 |                                                                                                                           | <p>topsoil and sediment that is removed in the process of entry and reception pit excavations would be reinstated on completion of the pipeline installation, therefore the impact would be low.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the effects of these localised changes in the river continuity would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a negligible to low magnitude of change on river continuity. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |
| <b>Hydromorphological Supporting Elements</b> | River width and depth variation | C-9 Stand-off distances from watercourses<br>C-25 A Watercourse Crossing Plan (WCP)<br>C-26 Trenchless pipeline crossings | <p>There would be no effects on river width and depth variation as there would be no in-channel works and the implementation of embedded environmental measures to ensure that that trenchless drive and reception pits are located sufficiently clear of river banks so there is no impact on them.</p> <p>Considering the implementation of the embedded environmental measures, there would be a negligible magnitude of change on river width and depth variation. There</p>                                                                                                                                                                                                                                                                                              |

| Water Framework Directive (WFD) element       | WFD sub-element                          | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                          | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphological Supporting Elements</b> | Structure and substrate of the river bed | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP) | <p>would be no need to provide mitigation to facilitate compliance with WFD for the Project.</p> <p>The construction works associated with the excavation of tunnelling/drilling drive and reception pits, either side of a crossing, would result in the short-term exposure and disturbance of ground resulting in the possible generation of sediment in run-off. This is expected to be managed by embedded environmental measures designed to prevent silty runoff from reaching watercourses such that the levels of fine-grained sediment delivered to adjacent watercourses would be minimised as far as practicable. However, there may be a low magnitude, short-duration and localised change in the structure and substrate of the river bed associated with delivery and transfer of fine-grained sediment as a result of the works that is temporarily elevated relative to baseline levels.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the effects of these localised changes in structure and substrate of the river bed would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a low magnitude of</p> |

| Water Framework Directive (WFD) element       | WFD sub-element               | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                               | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                               |                                                                                                                                                                                                                               | change on the structure and substrate of the river bed. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hydromorphological Supporting Elements</b> | Connectivity with groundwater | D-5 Management of subsurface flow pathways<br>C-4 Diversion and reinstatement of existing drainage networks<br>C-7 Management of dewatering excavations<br>C-8 Silt management measures<br>C-26 Trenchless pipeline crossings | <p>It is possible that the trenchless tunnelling/drilling process may alter the baseline pathway between the river and the hyporheic zone. However, given sufficient depth of the trenchless crossings below river beds (on the basis of the embedded environmental measures) and the very localised scale of this effect in the context of both river and groundwater bodies, it is logical to conclude that any change would be negligible relative to baseline conditions.</p> <p>Considering the scale and duration of any effects in the context of WFD water body size (both river and groundwater), there is a high degree of confidence that the effects of these localised changes on the connectivity with groundwater would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a negligible magnitude of change on connectivity with groundwater. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |

| Water Framework Directive (WFD) element       | WFD sub-element                                                            | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                           | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphological Supporting Elements</b> | Structure of the riparian zone                                             | C-9 Stand-off distances from watercourses<br>C-25 A Watercourse Crossing Plan (WCP)<br>C-26 Trenchless pipeline crossings                                                                                 | <p>There would be no works affecting the riparian zone as the tunnelling/drilling drive and reception pits will be located suitably far from the bank so as to not affect riparian structure or vegetation.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Negligible magnitude of change on the structure of the riparian zone. There would be no need to provide additional mitigation to facilitate compliance with WFD for all the Project.</p>                                                                                                                                                         |
| <b>Physico-chemical quality elements</b>      | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature        | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures | Impacts on the existing baseline water quality could occur via the disturbance of contaminated sediments. This could occur at trenchless crossing tunnelling/drilling drive and reception pits or where the pipeline is trenched through the floodplain and / or close to watercourses. Considering the embedded environmental measures put in place to manage silty runoff reaching watercourses and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on water quality would not have any effect on WFD Water Body Status. |
| <b>Chemical quality elements</b>              | Specific Pollutants, Priority substances and Priority Hazardous substances | C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from disturbance of contaminated                                     | Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                         | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                 | <p>land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> | <p>(from machinery itself) at or adjacent to the location tunnelling/drilling drive and reception pits. Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be discounted. In addition, should HDD be used there is the potential for leakage of bentonite, which could reach surface waters through cracks or fissures in strata. This would be mitigated through the use of best practice drilling methods and the implementation of the Pollution Prevention Plan. These include the use of competent contractors, frequent visual inspections and having a pump on standby to remove bentonite back to the extraction pit. Borehole Downhole Annular Pressure Monitoring would also enable contractors to ensure they are not over-pressuring surrounding ground to further reduce breakout risk as far as reasonably practicable. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a low magnitude of</p> |

| Water Framework Directive (WFD) element | WFD sub-element                                       | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                 | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Biological quality elements</b>      | Fish, Macrophytes and phytobenthos, and invertebrates | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-13 A Pollution Prevention Plan (PPP) | <p>change associated with trenchless crossings. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> <p>Effects on biological quality elements would be associated with changes to the hydromorphology and/or water quality of a watercourse that collectively make up the habitat upon which fish, macrophytes, phytobenthos and invertebrates are dependent. As the trenchless crossings would not directly alter riverine habitat, the main potential effect would be specifically related to the mobilisation of sediments from pipeline crossings and short term soil stockpiling adjacent to the watercourses. This could result in a short term pulse of sediments downstream, which could in turn harm the habitats of fish, macrophytes and phytobenthos, and invertebrates. However, the embedded silt management measures would ensure that the risk of occurrence is reduced.</p> <p>Considering the successful implementation of embedded environmental measures and the scale/duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on biological quality elements would not have any effect on WFD Water Body Status.</p> |

| Water Framework Directive (WFD) element  | WFD sub-element                                                            | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                          | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                          | Considering the implementation of the embedded environmental measures, there would be a Low magnitude of change associated with biological quality elements, and soil stockpiling. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.                                                                                                                                                                                                                                |
| <b>Canal water bodies</b>                |                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Physico-chemical quality elements</b> | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature        | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP) | Direct effects, specifically on WFD chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse), of low magnitude cannot be discounted. |
| <b>Chemical quality elements</b>         | Specific Pollutants, Priority substances and Priority Hazardous substances |                                                                                                                                                                                                                                                                                                                                                                                                                          | However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD Water Body Status.                                                                                                                                                                                                                                                         |

| Water Framework Directive (WFD) element  | WFD sub-element                                                     | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                             | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                                                                     | <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p>                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Transitional water bodies</b>         |                                                                     |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Physico-chemical quality elements</b> | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature | <p>C-1 A Code of Construction practice (CoCP)</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p> | Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be discounted. |
| <b>Chemical quality elements</b>         | Specific Pollutants, Priority                                       |                                                                                                                                                                                                                                                                                             | However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of                                                                                                                                                                                                                                                                                                                                                                                                 |

| <b>Water Framework Directive (WFD) element</b> | <b>WFD sub-element</b>                       | <b>Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)</b>                                                                                                                                                                                                                                                                                                                 | <b>Assessment of effects on WFD</b>                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                | substances and Priority Hazardous substances | <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> | confidence that the impact of any effects would be negligible and would not have any effect on WFD Water Body Status.                                                                                                                                                                                                                                       |
| <b>Hydromorphological Supporting Elements</b>  | Quantity and dynamics of flow                | <p>D-1 Underground pipeline</p> <p>D-5 Management of subsurface flow pathways</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p>                                                                                                                                                                                                                                                                                               | The Drainage Management Plan would ensure that all surface water runoff associated with pipeline corridor laying is managed using SuDS principles to ensure surface runoff is managed and discharge volumes are limited to greenfield rates, ensuring negligible change in the surface runoff to the tributaries of the River Mersey and the Mersey itself. |

| Water Framework Directive (WFD) element | WFD sub-element                                           | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                          | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                                                           | <p>C-4 Diversion and reinstatement of existing drainage networks</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-7 Management of dewatering excavations</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-11 Permitting of discharges</p> | <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the localised and short duration changes in the quantity and dynamics of flow would only have a negligible effect on WFD Water Body Status.</p>                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Biological quality elements</b>      | <p>Macrophytes</p> <p>Macroalgae</p> <p>Phytoplankton</p> | <p>C-1 A Code of Construction practice (CoCP)</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p>              | <p>Effects on biological quality elements are associated with changes to the hydromorphology and/or water quality of a watercourse that collectively make up the habitat upon which macrophytes macroalgae and phytoplankton are dependent. The main potential effect would be specifically related to the mobilisation of sediments from short term soil stockpiling adjacent to the watercourse. This could result in a short term pulse of sediments downstream, which could in turn harm the habitats of macrophytes macroalgae and phytoplankton. Embedded silt management measures would ensure that sediment runoff into the River Mersey (or its tributaries) is minimised as much as possible so the magnitude of impact would be Negligible.</p> |

| Water Framework Directive (WFD) element | WFD sub-element                                  | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                  | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                                                  | C-12 Discharge outfall design<br>C-13 A Pollution Prevention Plan (PPP)                                                                                                                                                                          | Considering the successful implementation of embedded environmental measures and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on biological quality elements would not have any effect on WFD Water Body Status                                                                                                                                                                                                                                                                                                                                                             |
| <b>Groundwater bodies</b>               |                                                  |                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Groundwater Level elements</b>       | Quantitative dependent surface water body Status | D-1 Management of subsurface flow pathways<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-5 Private abstraction risk assessment and mitigation strategy<br>C-7 Management of dewatering of excavations<br>C-11 Permitting of discharges | During excavation the tunnelling/drilling drive and reception pits may require dewatering to remove shallow inflows of groundwater. The trench itself would be shallow and therefore the volumes of water to be dewatered would be negligible compared to the size of the WFD groundwater bodies and the impacts will be localised and temporary.<br><br>On this basis, considering the scale and duration of works in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that any localised and short duration changes in local groundwater levels would have a negligible magnitude of impact and would not have any effect on WFD Water Body Status. |
| <b>Groundwater chemical elements</b>    | General chemical test                            | C-1 Code of Construction Practice                                                                                                                                                                                                                | Earth movements during excavation of the drive and reception pits crossings have the potential to re-mobilise contaminants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                 | <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-7 Management of dewatering of excavations</p> <p>C-11 Permitting of discharges</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-16 Handling and processing of concrete</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> | <p>and, if a suitable pathway exists, contaminate groundwater. Potential effects would be mitigated by embedded good practice construction methods (such as the Materials Management Plan, Unexpected Contamination Protocol and a Pollution Prevention Plan) to prevent deterioration in Status due to contamination of aquifers.</p> <p>In addition, should HDD be used there is the potential for leakage of bentonite which could reach groundwater through cracks or fissures in strata. This would be mitigated through use of best practice drilling methods and the implementation of the Pollution Prevention Plan. These include the use of competent contractors, frequent visual inspections and having a pump on standby to remove bentonite back to the extraction pit. Borehole Downhole Annular Pressure Monitoring would also enable contractors to ensure they are not over-pressuring surrounding ground to further reduce breakout risk as far as reasonably practicable.</p> <p>On the basis of embedded environmental measures being implemented, this effect is considered to be insignificant and unlikely to cause a deterioration in Chemical Status of groundwater bodies.</p> |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7) | Assessment of effects on WFD |
|-----------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------|------------------------------|
|                                         |                 | C-19 A monitoring and inspection programme                                                                      |                              |

Table 6.6 Preliminary impact assessment for temporary construction haul roads

| Water Framework Directive (WFD) element       | WFD sub-element               | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RIVER WATER BODIES</b>                     |                               |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hydromorphological Supporting Elements</b> | Quantity and dynamics of flow | D-5 Management of subsurface flow pathways<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-4 Diversion and reinstatement of existing drainage networks | The construction of the temporary haul roads would be accompanied by a Drainage Management Plan which would ensure that the dynamics of surface water flow reaching watercourses is not affected as the natural flow regime would be maintained through the use of SuDS, which would attenuate flows to greenfield rates and reflect baseline drainage catchments. Following the end of construction the haul roads would be removed and the land returned to the previous state. |

| Water Framework Directive (WFD) element       | WFD sub-element                             | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                     | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                             | <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-7 Management of dewatering excavations</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-11 Permitting of discharges</p> | <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that any localised and short duration changes in the quantity and dynamics of flow will be negligible and would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a negligible magnitude of change on quantity and dynamics of flow. However, this would be for a very short duration and would be fully reversible. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |
| <b>Hydromorphological Supporting Elements</b> | River continuity (lateral and longitudinal) | <p>C-9 Stand-off distances from watercourses</p> <p>C-25 A Watercourse Crossing Plan (WCP)</p> <p>C-29 Temporary construction access watercourse crossings</p>                                                                      | Where temporary culverts are to be installed for minor watercourse crossings, these would have a small, localised impact on lateral and longitudinal connectivity. Culverts would only be installed on minor watercourses, with larger watercourses being crossed by bridges which would have no impact on longitudinal connectivity. Where temporary culverts are proposed, they would be covering a very small area of minor watercourse relative to the whole WFD river catchment and would only be in place for a limited duration and would be                                                                                                                                                  |

| Water Framework Directive (WFD) element       | WFD sub-element                 | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7) | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                 |                                                                                                                 | <p>fully returned to baseline conditions following removal of the temporary haul road.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the effects of these localised changes in the river continuity would not have any effect on WFD Water Body Status. Considering the implementation of the embedded environmental measures, there would be a Low magnitude of change on river continuity. There would be no need to provide additional mitigation to facilitate compliance with WFD for all phases of the Project.</p> |
| <b>Hydromorphological Supporting Elements</b> | River width and depth variation | C-29 Temporary construction access watercourse crossings                                                        | <p>Where temporary culverts are to be installed for minor watercourse crossings, these would have a small, localised impact on the river width and depth variation. However, they would be of a very small scale relative to the size of the WFD river water bodies and would only be in place for a limited duration and would be fully returned to the previous state following removal of the temporary haul road.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the</p>                                               |

| Water Framework Directive (WFD) element       | WFD sub-element                          | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                          |                                                                                                                                                                                                                                                | <p>effects of these localised changes in the river width and depth variation would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a low magnitude of change on river width and depth variation. There would be no need to provide mitigation to facilitate compliance with WFD for all the Project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hydromorphological Supporting Elements</b> | Structure and substrate of the river bed | D-4 Temporary access track design<br>C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures | <p>Where temporary culverts are to be installed for minor watercourse crossings, these would have a small, localised impact on the substrate of the river bed. However, they would be of a very small scale relative to the size of the WFD river water bodies and would only be in place for a limited duration.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the effects of these localised changes in the structure and substrate of the river bed would not have any effect on WFD Water Body Status.</p> <p>There would therefore only be a temporary, low magnitude of change on the structure and substrate of the river bed. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |

| Water Framework Directive (WFD) element       | WFD sub-element               | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                            | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                               | <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hydromorphological Supporting Elements</b> | Connectivity with groundwater | <p>D-5 Management of subsurface flow pathways</p> <p>C-4 Diversion and reinstatement of existing drainage networks</p> <p>C-8 Silt management measures</p> <p>C-29 Temporary construction access watercourse crossings</p> | <p>Where temporary culverts are to be installed for minor watercourse crossings, these would have a small, localised impact on groundwater connectivity. However, they would be of a very small scale relative to the size of the WFD groundwater bodies and would only be in place for a limited duration and would be fully returned to the previous state following removal of the temporary haul road.</p> <p>Considering the scale and duration of any effects in the context of WFD water body size (both river and groundwater), there is a high degree of confidence that the effects of these localised changes on the connectivity with groundwater would</p> |

| Water Framework Directive (WFD) element       | WFD sub-element                                                     | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                           | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                                                     |                                                                                                                                                                           | be negligible and not have any effect on WFD Water Body Status.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Hydromorphological Supporting Elements</b> | Structure of the riparian zone                                      | C-29 Temporary construction access watercourse crossings                                                                                                                  | <p>Where the haul roads cross watercourses there may be impacts to the riparian zone. However, these would be of a limited width, temporary duration and would be returned to their previous state upon completion of the works.</p> <p>Considering the implementation of the embedded environmental measures, there would be a temporary, low magnitude of change on the structure of the riparian zone. There would be no need to provide additional mitigation to facilitate compliance with WFD for all phases of the Project.</p>                                                                                |
| <b>Physico-chemical quality elements</b>      | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas | <p>Low magnitude effects on the existing baseline water quality could occur via the disturbance of contaminated sediments. This could occur during construction of the haul roads. However, embedded mitigations to manage silty runoff during construction would minimise this risk as far as possible.</p> <p>Impacts on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHS associated with vehicle / machinery fuels and oils, or metals (from machinery itself) used during construction. Whilst the embedded environmental measures relating to pollution prevention and</p> |
| <b>Chemical quality elements</b>              | Specific Pollutants, Priority substances and Priority               |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Water Framework Directive (WFD) element | WFD sub-element      | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                                | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | Hazardous substances | <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of</p> | <p>remediation are expected to manage the occurrence of such effects as far as practicable, small, low magnitude residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be discounted. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a negligible to low magnitude of change associated with temporary haul road construction. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p> |

| Water Framework Directive (WFD) element | WFD sub-element                                       | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                 | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                                                       | contaminated groundwater<br>C-19 A monitoring and inspection programme                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Biological quality elements</b>      | Fish, Macrophytes and phytobenthos, and invertebrates | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-13 A Pollution Prevention Plan (PPP) | Effects on biological quality elements are associated with changes to the hydromorphology and/or water quality of a watercourse that collectively make up the habitat upon which fish, macrophytes / phytobenthos and invertebrates are dependent. The main potential effect would be specifically related to the mobilisation of sediments from road construction. However, embedded measures to manage silty runoff will ensure that this risk is minimised as far as is practicable. This could result in a short-term pulse of sediments downstream, which could in turn harm the habitats of fish, macrophytes and phytobenthos, and invertebrates, with the potential for pollutants to enter the water body also having the potential to negatively impact biological quality elements. However, the pollution prevention measures are deemed sufficient to mitigate this risk and prevent any deterioration of water quality and therefore biological quality<br><br>Considering the successful implementation of embedded environmental measures and the scale and duration of any |

| Water Framework Directive (WFD) element  | WFD sub-element                                                            | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                           | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                                                                            |                                                                                                                                                                                                           | <p>effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on biological quality elements would not have any effect on WFD Water Body Status.</p> <p>Considering the implementation of the embedded environmental measures, there would be a Low magnitude of change associated with biological quality. There would be no need to provide additional mitigation to facilitate compliance with WFD for the Project.</p>                                                                                                                                                                     |
| <b>Canal water bodies</b>                |                                                                            |                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Physico-chemical quality elements</b> | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature        | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures | Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be discounted. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of |
| <b>Chemical quality elements</b>         | Specific Pollutants, Priority substances and Priority Hazardous substances |                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Water Framework Directive (WFD) element | WFD sub-element | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                                                                       | Assessment of effects on WFD                                                                                     |
|-----------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
|                                         |                 | <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> | <p>localised and short duration changes in water quality would not have any effect on WFD Water Body Status.</p> |

Table 6.7 Preliminary impact assessment for temporary construction compounds

| Water Framework Directive (WFD) element       | WFD sub-element                             | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                    | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>River water bodies</b>                     |                                             |                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hydromorphological Supporting Elements</b> | Quantity and dynamics of flow               | D-5 Management of subsurface flow pathways<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-4 Diversion and reinstatement of existing drainage networks<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-7 Management of dewatering excavations<br>C-10 Timely reinstatement following completion of works<br>C-11 Permitting of discharges | <p>A Drainage Management Plan during construction would ensure that the construction of the compound does not have any adverse effect on flowpaths. Therefore there would be no impact on the water entering watercourses and no impact on the quantity and dynamics of flow.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the River Basin Management Plan (RBMP) reporting timescales, there is a high degree of confidence that the localised and short duration changes in the quantity and dynamics of flow would have a negligible magnitude of impact and not have any effect on WFD Water Body Status.</p> |
| <b>Hydromorphological Supporting Elements</b> | River continuity (lateral and longitudinal) | None required                                                                                                                                                                                                                                                                                                                                                                      | There would be no effects on river continuity as there would be no in-channel works associated with this activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Water Framework Directive (WFD) element       | WFD sub-element                          | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                          | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphological Supporting Elements</b> | River width and depth variation          | None required                                                                                                                                                                                                                                                                                                                                                                                                            | There would be no effects on river width and depth variation as there would be no in-channel works associated with this activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hydromorphological Supporting Elements</b> | Structure and substrate of the river bed | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP) | <p>The construction works associated with the temporary construction compounds may result in the short-term exposure and disturbance of ground resulting in the generation of sediment in run-off. This is expected to be managed by embedded environmental measures such that the levels of fine-grained sediment delivered to adjacent watercourses would be minimised as far as practicable. However, there may be a low magnitude, short-duration and localised change in the structure and substrate of the river bed associated with delivery and transfer of fine-grained sediment as a result of the works that is temporarily elevated relative to baseline levels.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the River Basin Management Plan (RBMP) reporting timescales, there is a high degree of confidence that the localised and short duration changes in the structure and substrate of the river bed would be of low magnitude and would not have any effect on WFD Water Body Status.</p> |

| Water Framework Directive (WFD) element                                          | WFD sub-element                                                                                                                                       | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                          | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphological Supporting Elements</b>                                    | Connectivity with groundwater                                                                                                                         | None required                                                                                                                                                                                                                                                                                                                                                                                                            | The proposed works would have no impact on connectivity with groundwater.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hydromorphological Supporting Elements</b>                                    | Structure of the riparian zone                                                                                                                        | C-9 Stand-off distances from watercourses                                                                                                                                                                                                                                                                                                                                                                                | There would be no works affecting the riparian zone as the temporary construction compounds will be located suitably far from the bank so as to not affect riparian vegetation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Physico-chemical quality elements</b><br><br><b>Chemical quality elements</b> | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature<br><br>Specific Pollutants, Priority substances and Priority Hazardous substances | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP) | Impacts on the existing baseline water quality could occur via the disturbance of contaminated sediments during construction. Considering the embedded environmental measures and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on water quality would not have any effect on WFD Water Body Status.<br><br>Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude |

| Water Framework Directive (WFD) element | WFD sub-element                                       | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                             | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                                                       | <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p>                  | <p>cannot be discounted. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD Water Body Status.</p>                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Biological quality elements</b>      | Fish, Macrophytes and phytobenthos, and invertebrates | <p>C-1 A Code of Construction practice (CoCP)</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p> | <p>Effects on biological quality elements are associated with changes to the hydromorphology and/or water quality of a watercourse that collectively make up the habitat upon which fish, macrophytes / phytobenthos and invertebrates are dependent. The main potential effect would be specifically related to the mobilisation of sediments from short term soil stockpiling adjacent to the watercourses. This could result in a short term pulse of sediments downstream, which could in turn harm the habitats of fish, macrophytes and phytobenthos, and invertebrates. The embedded silt management mitigation measures would ensure that this risk is managed as far as is practicable.</p> |

| Water Framework Directive (WFD) element  | WFD sub-element                                                     | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                           | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                                                                     | C-12 Discharge outfall design<br>C-13 A Pollution Prevention Plan (PPP)                                                                                                                                   | <p>In addition, the potential for pollutants to enter the water body from construction machinery also has the potential to negatively impact biological quality elements. However, the pollution prevention measures are deemed sufficient to mitigate this risk and prevent any deterioration of water quality and therefore biological quality.</p> <p>Considering the successful implementation of embedded environmental measures and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on biological quality elements would not have any effect on WFD Water Body Status.</p> |
| <b>Canal water bodies</b>                |                                                                     |                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Physico-chemical quality elements</b> | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures | Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be discounted. However, considering the scale and duration of any effects in the context of WFD water body size,                                                                                     |
| <b>Chemical quality elements</b>         | Specific Pollutants,                                                |                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Water Framework Directive (WFD) element | WFD sub-element                                       | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                                                                       | Assessment of effects on WFD                                                                                                                                       |
|-----------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | Priority substances and Priority Hazardous substances | <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> | there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD Water Body Status. |
| <b>Transitional water bodies</b>        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                    |

| Water Framework Directive (WFD) element | WFD sub-element                            | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                 | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Biological quality elements             | Macrophytes<br>Macroalgae<br>Phytoplankton | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-13 A Pollution Prevention Plan (PPP) | <p>Effects on biological quality elements are almost exclusively associated with changes to the hydromorphology and/or water quality of a watercourse that collectively make up the habitat upon which, macrophytes macroalgae and phytoplankton are dependent. The main potential effect would be specifically related to the mobilisation of sediments from short term soil stockpiling adjacent to the watercourses. This could result in a short term pulse of sediments downstream, which could in turn harm the habitats of fish, macrophytes macroalgae and phytoplankton. The embedded silt management mitigation measures would ensure that this risk is managed as far as is practicable. In addition, the potential for pollutants to enter the water body from construction machinery also has the potential to negatively impact biological quality elements. However, the pollution prevention measures are deemed sufficient to mitigate this risk and prevent any deterioration of water quality and therefore biological quality</p> <p>Considering the successful implementation of embedded environmental measures and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on biological quality elements would not have any effect on WFD Water Body Status</p> |

| Water Framework Directive (WFD) element       | WFD sub-element                                                     | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                   | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphological Supporting Elements</b> | Quantity and dynamics of flow                                       | <p>D-5 Management of subsurface flow pathways</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-4 Diversion and reinstatement of existing drainage networks</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-7 Management of dewatering excavations</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-11 Permitting of discharges</p> | <p>The Drainage Management Plan would ensure that all surface water runoff associated with pipeline corridor laying is managed using SuDS principles to ensure surface runoff is managed and discharge volumes are limited to greenfield rates, ensuring negligible change in the surface runoff to the tributaries of the River Mersey and the Mersey itself.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the localised and short duration changes in the quantity and dynamics of flow would only have a negligible effect on WFD Water Body Status.</p> |
| <b>Physico-chemical quality elements</b>      | Ammonia (Phys-Chem)<br>Phosphate<br>Dissolved oxygen<br>Temperature | <p>C-1 A Code of Construction practice (CoCP)</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p>                                                                                                                                                                                      | <p>Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of Polycyclic Aromatic Hydrocarbons PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be</p>                                                                                                                                         |

| Water Framework Directive (WFD) element | WFD sub-element                                                            | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7)                                                                                                                                                                                                                                                                                                                                                                                       | Assessment of effects on WFD                                                                                                                                                                                                                                                     |
|-----------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chemical quality elements               | Specific Pollutants, Priority substances and Priority Hazardous substances | <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> | discounted. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD Water Body Status. |

Table 6.8 Preliminary impact assessment for permanent above ground infrastructure

| Water Framework Directive (WFD) element       | WFD sub-element                             | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7.                                                                                                                                                                                                                                                                    | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>River water bodies</b>                     |                                             |                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hydromorphological Supporting Elements</b> | Quantity and dynamics of flow               | D-5 Management of subsurface flow pathways<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-4 Diversion and reinstatement of existing drainage networks<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-7 Management of dewatering excavations<br>C-10 Timely reinstatement following completion of works<br>C-11 Permitting of discharges | <p>The implementation of a Drainage Management Plan during construction would ensure that the construction of the compounds do not have any adverse effect on flowpaths. Therefore, there would be no impact on the water entering watercourses and no impact on the quantity and dynamics of flow. The HAGIs and Block Valves would also have a suitable SuDS system incorporated into their design so as to avoid any permanent impacts of flow.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the localised and short duration changes in the quantity and dynamics of flow would be of negligible magnitude and would not have any effect on WFD Water Body Status.</p> |
| <b>Hydromorphological Supporting Elements</b> | River continuity (lateral and longitudinal) | None required                                                                                                                                                                                                                                                                                                                                                                      | There would no effects on river continuity as there would be no in-channel works associated with this activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| Water Framework Directive (WFD) element       | WFD sub-element                          | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7.                                                                                                                                                                                                                                                                                                          | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphological Supporting Elements</b> | River width and depth variation          | None required                                                                                                                                                                                                                                                                                                                                                                                                            | There would no effects on river width and depth variation as there would be no in-channel works associated with this activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hydromorphological Supporting Elements</b> | Structure and substrate of the river bed | C-1 A Code of Construction practice (CoCP)<br>C-2 A Drainage and Water Management Plan (DWMP)<br>C-6 Temporary provision of surface water drainage for construction areas<br>C-8 Silt management measures<br>C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP) | <p>The construction works associated with the permanent above ground infrastructure may result in the short-term exposure and disturbance of ground resulting in the generation of sediment in run-off. This is expected to be managed by embedded environmental measures such that the levels of fine-grained sediment delivered to adjacent watercourses would be minimised as far as practicable. However, there may be a very low magnitude, short-duration and localised change in the structure and substrate of the river bed associated with delivery and transfer of fine-grained sediment as a result of the works, that is temporarily elevated relative to baseline levels.</p> <p>Considering the scale and duration of these activities in the context of WFD water body size and the RBMP reporting timescales, there is a high degree of confidence that the localised and short duration changes in the quantity and dynamics of flow would not have any effect on WFD Water Body Status</p> |
| <b>Hydromorphological Supporting Elements</b> | Connectivity with groundwater            | None required                                                                                                                                                                                                                                                                                                                                                                                                            | The proposed works will have no impact on connectivity with groundwater.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Water Framework Directive (WFD) element       | WFD sub-element                                                            | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7.                                                                                             | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydromorphological Supporting Elements</b> | Structure of the riparian zone                                             | None required                                                                                                                                                                                               | There will be no works affecting the riparian zone as the temporary construction compounds will be located suitably far from the bank so as to not affect riparian vegetation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Physico-chemical quality elements</b>      | Ammonia (Phys-Chem)                                                        | C-1 A Code of Construction practice (CoCP)                                                                                                                                                                  | Impacts on the existing baseline water quality could occur via the disturbance of contaminated sediments during construction. Considering the embedded environmental measures and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on water quality would not have any effect on WFD Water Body Status.                                                                                                                                                                                                                                                                                                                                                          |
| <b>Chemical quality elements</b>              | Phosphate                                                                  | C-2 A Drainage and Water Management Plan (DWMP)                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                               | Dissolved oxygen                                                           | C-6 Temporary provision of surface water drainage for construction areas                                                                                                                                    | Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be discounted. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD water body Status. |
|                                               | Temperature                                                                | C-8 Silt management measures                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                               | Specific Pollutants, Priority substances and Priority Hazardous substances | C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from disturbance of contaminated land (Materials Management Plan, MMP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                               |                                                                            | C-13 A Pollution Prevention Plan (PPP)                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Water Framework Directive (WFD) element | WFD sub-element                                       | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7.                                                                                                                                                                                                                                                                | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                                                       | <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p>                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Biological quality elements</b>      | Fish, Macrophytes and phytobenthos, and invertebrates | <p>C-1 A Code of Construction practice (CoCP)</p> <p>C-2 A Drainage and Water Management Plan (DWMP)</p> <p>C-6 Temporary provision of surface water drainage for construction areas</p> <p>C-8 Silt management measures</p> <p>C-10 Timely reinstatement following completion of works</p> <p>C-12 Discharge outfall design</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> | Effects on biological quality elements are associated with changes to the hydromorphology and/or water quality of a watercourse that collectively make up the habitat upon which fish, macrophytes / phytobenthos and invertebrates are dependent. The main potential effect would be specifically related to the mobilisation of sediments from short term soil stockpiling adjacent to the watercourses. This could result in a short term pulse of sediments downstream, which could in turn harm the habitats of fish, macrophytes and phytobenthos, and invertebrates. The embedded silt management mitigation measures would ensure that this risk is managed as far as is practicable. In addition, the potential for pollutants to enter the water body from construction machinery also has the potential to negatively impact biological quality elements. However, the pollution prevention measures are deemed sufficient to |

| Water Framework Directive (WFD) element  | WFD sub-element                                       | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7.                           | Assessment of effects on WFD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                                                       |                                                                                                                                           | <p>mitigate this risk and prevent any deterioration of water quality and therefore biological quality.</p> <p>Considering the successful implementation of embedded environmental measures and the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of these localised and short duration changes on biological quality elements would not have any effect on WFD Water Body Status.</p>                                                                                                                                                                                                                                                                                                                           |
| <b>Canal water bodies</b>                |                                                       |                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Physico-chemical quality elements</b> | Ammonia (Phys-Chem)                                   | C-1 A Code of Construction practice (CoCP)                                                                                                | Direct effects, specifically on WFD Chemical Status, could occur as a result of accidental spillage or leakage of PAHs associated with vehicle / machinery fuels and oils, or metals (from machinery itself). Whilst the embedded environmental measures relating to pollution prevention and remediation are expected to manage the occurrence of such effects as far as practicable, small residual effects (e.g. slow/gradual leaks directly into or adjacent to the watercourse) of low magnitude cannot be discounted. However, considering the scale and duration of any effects in the context of WFD water body size, there is a high degree of confidence that the effects of localised and short duration changes in water quality would not have any effect on WFD Water Body Status. |
| <b>Chemical quality elements</b>         | Phosphate                                             | C-2 A Drainage and Water Management Plan (DWMP)                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                          | Dissolved oxygen                                      | C-6 Temporary provision of surface water drainage for construction areas                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                          | Temperature                                           | C-8 Silt management measures                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                          | Specific Pollutants, Priority substances and Priority | C-10 Timely reinstatement following completion of works<br>C-12 Discharge outfall design<br>C-17 Measures to avoid pollution impacts from |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Water Framework Directive (WFD) element | WFD sub-element      | Embedded environmental measures (C) and their subjects of particular relevance (described further in Chapter 7.                                                                                                                                                                                                                                     | Assessment of effects on WFD |
|-----------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|                                         | Hazardous substances | <p>disturbance of contaminated land (Materials Management Plan, MMP)</p> <p>C-13 A Pollution Prevention Plan (PPP)</p> <p>C-14 Storage or hydrocarbons and other chemicals</p> <p>C-15 Refuelling, inspection and maintenance</p> <p>C-18 Treatment and discharge of contaminated groundwater</p> <p>C-19 A monitoring and inspection programme</p> |                              |

## Summary of impacts

- 6.4.8 For all of the assessed development activities the incorporation of the embedded environmental measures would largely remove the sources of any adverse effects that may have potential to cause deterioration in WFD Status/Potential for all of the assessed WFD water bodies. Any further mitigation which may still be required is listed below.
- 6.4.9 All residual effects are considered to be of low magnitude, short duration in relation to the RBMP planning timescales (six years) and / or negligible and therefore the Project is considered to be compliant with the objectives of the WFD.

## Further mitigation required

- 6.4.10 The following mitigation will be required at the ES stage:
- Identification of potentially sensitive watercourses which are important for fish spawning or fish and eel migration and may be subject to open cut crossings or temporary access watercourse crossing installation or removal. The timing of the migrations for the relevant species will also need to be identified so that works can be planned to avoid these times on the identified water bodies; and
  - Further details of the design of all watercourse crossings for the temporary access haul road will be required to ensure that they are suitable for lateral connectivity.
- 6.4.11 The Environment Agency have not yet provided confirmation on how they would like the non-reportable water bodies to be assessed within this assessment. This will therefore be re-visited at the ES stage. However, the application of the environmental measures is expected to effectively mitigate any reduction in any WFD classification elements for these water bodies.

## 6.5 Assessment of the Risk of Deterioration

- 6.5.1 The preliminary assessment above has concluded that the embedded environmental measures would be sufficient for preventing any reduction in the Status/Potential of all WFD classification elements for all screened in WFD water bodies for all elements of the Project. It can therefore be concluded that it is not anticipated that the Project would result in any WFD deterioration for any WFD water body.

## 6.6 Enhancements or Positive Contributions to WFD Water Body Objectives

- 6.6.1 The reasons for not achieving Good for all screened in WFD water bodies are included in **Appendix 7A**.
- 6.6.2 With the inclusion of the embedded environmental measures, none of the proposed Project activities are expected to have any impact, positive or negative

on the reasons for not achieving good for any of the WFD water bodies in the Study Area.

- 6.6.3 It is therefore not anticipated that the Project would result in any positive contributions to the objectives of any WFD water bodies.

## 7. Article 4.7 Considerations

- 7.1.1 On the basis that no deterioration to the WFD classifications of any of the screened in WFD water bodies, no Article 4.7 consideration is required at this time. This will be revisited at the ES stage.
- 7.1.2 The provisions of Article 4.7 would only apply where:
- failure to meet Good groundwater Status, Good Ecological Status or Good Ecological Potential or to prevent deterioration in Status arises from new modifications to the physical characteristics of the water body or alteration of groundwater levels; or
  - failure to prevent deterioration from high to good overall Status of a surface water body is the result of new sustainable human development activities.
- 7.1.3 If further assessment concludes that the Project is not compliant with WFD requirements, documentation would be prepared to justify permitting of the development under the provisions of Article 4.7 of the WFD. This would need to demonstrate that the following conditions are met:
- all practicable mitigation has been incorporated;
  - there are no significantly better environmental options;
  - the Project is of overriding public interest and/or the benefits of the Project outweigh the benefits of WFD compliance; and
  - the reasons for the modifications to the water body are flagged to the Environment Agency for reporting in the next RBMP.
- 7.1.4 PINS and the Environment Agency would be responsible in deciding whether the Article 4.7 conditions have been met, should this be necessary.

## 8. Preliminary Conclusions

### 8.1 Overview

- 8.1.1 Twenty one river, five canal, one transitional and five WFD groundwater bodies were considered to have project activities/ infrastructure types within them or in close enough proximity that will cause some degree of risk to the delivery of WFD objectives. Upon further preliminary assessment of these activities and infrastructure types, plus consideration of the effectiveness of the embedded environmental measures to manage any effects, it is concluded that the Project is compliant with the WFD.

### 8.2 Will the Project Lead to Deterioration in WFD Status of any WFD Water Body in the Study Area?

- 8.2.1 Based on the preliminary assessment provided in this Appendix (within **Section 6**), no components or phases of the Project would lead to a deterioration in WFD Status.

### 8.3 Will the Project Compromise the Achievement of Good Status in any WFD Water Body in the Study Area?

- 8.3.1 Based on the assessment provided in this Appendix (within **Section 6**) no components or phases of the Project would compromise the ability of any WFD water body to attain WFD target Status.

### 8.4 Statement of WFD Compliance

- 8.4.1 The preliminary assessment provided in this Appendix demonstrates that the Project is compliant with the objectives of the WFD. Therefore, there is no requirement for an Article 4.7 assessment. These conclusions will be considered at the ES stage within a final WFD Assessment, which will be based on the final outline design parameters and set of embedded environmental measures.

## 9. Glossary of Terms and Abbreviations

| Term (Acronym) | Definition                                |
|----------------|-------------------------------------------|
| <b>AWBs</b>    | Artificial water bodies                   |
| <b>BW</b>      | Bathing Water                             |
| <b>cBWD</b>    | current Bathing Water Directive           |
| <b>CoCP</b>    | Code of Construction Practice             |
| <b>DCO</b>     | Development Consent Order                 |
| <b>DWMP</b>    | Drainage and Water Management Plan        |
| <b>DWPA</b>    | Drinking Water Protected Area             |
| <b>EIA</b>     | Environmental Impact Assessment           |
| <b>EQS</b>     | Environmental Quality Standards           |
| <b>EQSD</b>    | Environmental Quality Standards Directive |
| <b>ES</b>      | Environmental Statement                   |
| <b>EU</b>      | European Union                            |
| <b>GEP</b>     | Good Ecological Potential                 |
| <b>GES</b>     | Good Ecological Status                    |
| <b>HAGI</b>    | Hydrogen Above Ground Installation        |
| <b>HDD</b>     | Horizontal Directional Drill              |
| <b>HMWBs</b>   | Heavily modified water bodies             |
| <b>km</b>      | kilometre                                 |
| <b>LLFA</b>    | Lead Local Flood Authority                |

| Term (Acronym) | Definition                                    |
|----------------|-----------------------------------------------|
| m              | metre                                         |
| MMP            | Materials Management Plan                     |
| N/A            | Not applicable                                |
| NSIP           | Nationally Significant Infrastructure Project |
| NVZ            | Nitrate Vulnerable Zone                       |
| PEIR           | Preliminary Environmental Information Report  |
| PINS           | Planning Inspectorate                         |
| PPP            | Pollution Prevention Plan                     |
| RBMP           | River Basin Management Plan                   |
| rBWD           | revised Bathing Water Directive               |
| SuDS           | Sustainable Drainage System                   |
| TBC            | To Be Confirmed                               |
| TraC           | Transitional and Coastal Waters               |
| UK             | United Kingdom                                |
| UKTAG          | UK Technical Advisory Group                   |
| WCP            | Watercourse Crossing Plan                     |
| WFD            | Water Framework Directive                     |

# HyNet North West Hydrogen Pipeline

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