

A585 Windy Harbour to Skippool Improvement Scheme

TR010035

5.6 Water Framework Directive Assessment

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Procedure) Regulations 2009

**A585 Windy Harbour to Skippool
Improvement Scheme
Development Consent Order**

WATER FRAMEWORK DIRECTIVE ASSESSMENT

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1 EXECUTIVE SUMMARY

- 1.1.1 This report documents the approach taken to screening, scoping and assessing the A585 Windy Harbour to Skippool Improvement Scheme (the Scheme) for compliance with the objectives of the Water Framework Directive (WFD).
- 1.1.2 The Scheme comprises:
- A 4.85km (3 miles) long dual 2-lane carriageway bypass from Windy Harbour Junction to the Skippool Junction.
 - Four new junctions including: conversion of Skippool Junction to a traffic signal-controlled crossroads with A588 Breck Road and B5412 Skippool Road; Skippool Bridge Junction in the form of a three-arm traffic signal-controlled junction with the existing Mains Lane; Poulton Junction in the form of a signal-controlled crossroads connecting the new bypass to A586 Garstang Road East and modification to Little Singleton Junction (also known as Five Lane Ends) to accommodate U-turning traffic including buses. Between Skippool Bridge Junction and Poulton Junction the bypass is on embankment. East of Poulton Junction through to east of Lodge Lane the bypass is mostly in cutting.
 - Three new major structures including: replacement of Skippool Bridge; Lodge Lane Bridge and Grange Footbridge.
 - Alterations to the existing road network on completion of the bypass include: detrunking the A585 between Skippool Bridge Junction and the end of Garstang New Road east of Little Singleton; applying a reduction in speed limit to 30mph and providing a combined footway/cycleway along Mains Lane between Shard Road Junction and Little Singleton; altering Garstang New Road east of Little Singleton to allow restricted access to farmers' fields and provide a shared footway/cycleway route between Windy Harbour Junction and Little Singleton; applying a reduced speed limit of 30mph along Garstang Road East between the proposed Poulton Junction and Little Singleton and upgrading the lighting along Mains Lane and Garstang Road East.
- 1.1.3 The Scheme is situated within the North West River Basin District (RBD), within the Wyre surface water and north west groundwater management catchments. This assessment has been informed by the North West River Basin Management Plan (RBMP), last updated by the Environment Agency in 2015.
- 1.1.4 A staged approach has been followed as to screening, scoping and impact assessment, as advocated by Planning Inspectorate WFD Advice Note (Advice Note 18, June 2017) and Environment Agency Technical Guidance.
- 1.1.5 During Stage 1 Zones of Influence (Zol) for surface, transitional and groundwater bodies were agreed in consultation with the Environment Agency and those waterbodies situated within the Zol where identified. In Stage 2 their baseline WFD status was characterised using published data sources. Surface (Hillylaid Pool – Tidal Wyre) and transitional (Wyre) waterbodies share Moderate overall status. The groundwater body underlying the Scheme (the West Lancashire Quaternary Sand and Gravels) is classified as having Good overall status. WFD objectives and mitigation measures were also established at this Stage of the assessment, drawing on information from the RBMP.

- 1.1.6 During Stage 3, each of the components of the Scheme, during both construction and operation, were screened to determine those elements with the potential to affect the WFD objectives of waterbodies within the agreed ZoI. Activities such as groundwater control, establishment of construction site compounds and general construction activities, in-channel works to create new or modify existing watercourse crossings and discharges of highway runoff during operation of the Scheme were considered. Following consideration of factors such as the Scheme design, proposed mitigation measures and the proximity of activities to waterbodies, several components were screened in and taken forward to Stage 4 of the assessment.
- 1.1.7 At Stage 4 a preliminary assessment was made of the components of the Scheme identified as relevant to the WFD (Stage 3), against the waterbodies in the study area (Stage 1). The assessment was undertaken on the basis of whether the works would likely result in:
- Deterioration in the current ecological status (or potential) of surface waterbodies or of groundwater status
 - Failure to achieve WFD objectives set for each waterbody
 - Non-compliance or compromised implementation of other environmental legislation
- 1.1.8 The preliminary assessment concluded that the design of the Scheme and measures committed to in an Outline CEMP (document reference TR010035/APP/7.2) and REAC (document reference TR010025/APP/7.3), would prevent any works causing deterioration of the current status of WFD surface waterbodies or groundwater bodies. Also, it was concluded that there is no risk of the Scheme contributing to failure to achieve WFD set objectives for each waterbody, nor cause non-compliance/compromise implementation of any other environmental legislation.

2 INTRODUCTION

2.1 Background

2.1.1 The Water Framework Directive (WFD) 2000/60/EC was given effect in the UK by the Water Environment (WFD) (England and Wales) Regulations 2003. Since coming into effect the purpose of the WFD has been to:

- Enhance the status and prevent further deterioration of surface waterbodies, groundwater bodies and their dependent ecosystems
- Reduce pollution of water, especially by priority substances
- Ensure progressive reduction of groundwater pollution
- Promote the sustainable use of water
- Contribute to mitigating the effects of floods and droughts

2.1.2 Under these regulations the Environment Agency requires the screening and, if necessary, subsequent assessment of schemes with the potential to impact on the achievement of any of these aims.

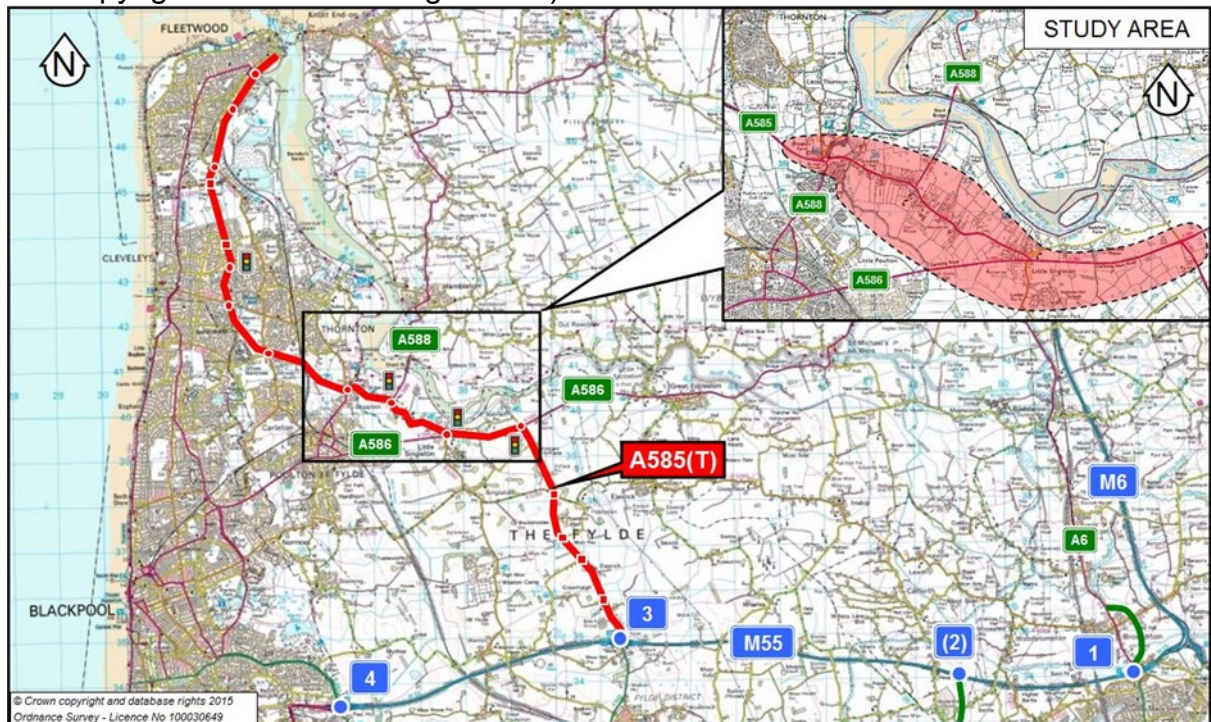
2.1.3 This report documents the approach taken to screening, scoping and assessing the Scheme for compliance with the objectives of the WFD. The findings of the assessment have both informed Scheme design and mitigation requirements.

2.2 Scheme Location and Need

2.2.1 The A585 is a single carriageway trunk road, which provides the only viable access from the motorway network, in particular the M6 and M55, into Fleetwood and surrounding urban areas in west Lancashire.

2.2.2 The A585 suffers from congestion, in particular during peak travel times. The Government's Autumn Statement in 2014 identified the need for an improvement scheme along the road between Windy Harbour and Skippool, illustrated in Figure 1.

Figure 2-1: Scheme Location (Contains Ordnance Survey data © Crown copyright and database right 2016)



2.2.3 Under the WFD, waterbodies are managed in units referred to as River Basin Districts (RBDs). For each RBD, the WFD requires a River Basin Management Plan (RBMP) to be published. These plans set out the environmental baseline and objectives for all the waterbodies within the RBD and provide a summary of the programme of measures that will be taken to achieve those objectives.

2.2.4 The Scheme is situated within the North West RBD, within the Wyre surface water and North West groundwater management catchments. This assessment has been informed by the North West RBMP. The first plan was published by the Environment Agency in 2009 and was last updated in 2015.

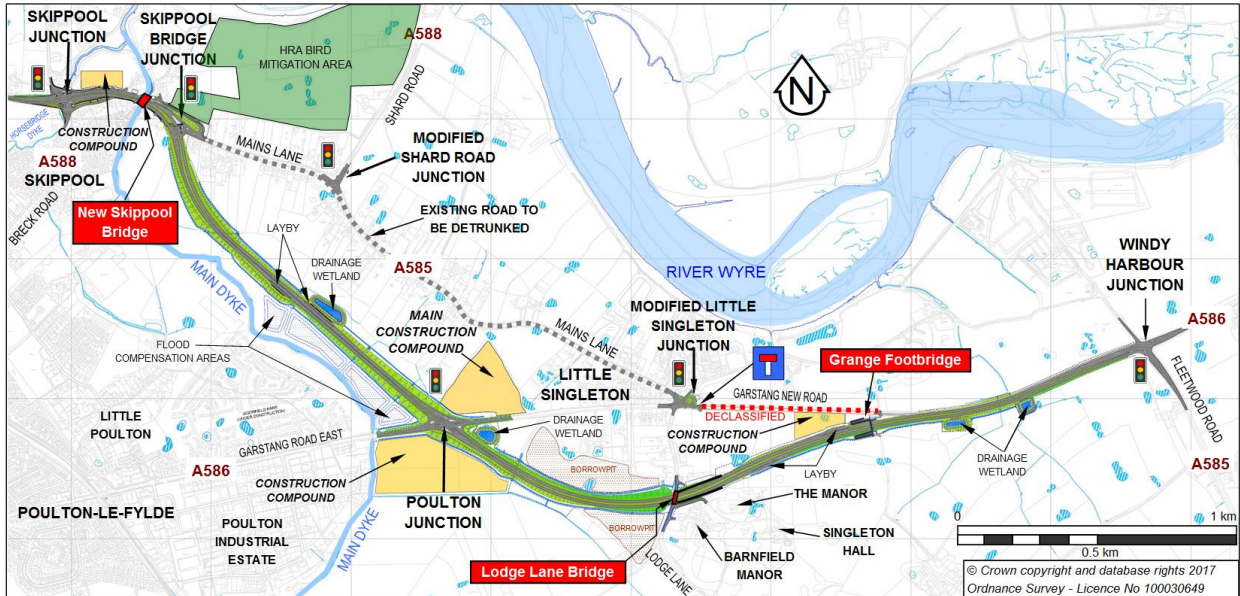
2.3 Scheme Description

2.3.1 The Scheme comprises 4.85km of new 2 lane dual carriageway bypass, several new junctions and structures. Details of the Scheme of relevance to WFD waterbodies are provided from west to east below and the Scheme in the context of its local water environment is illustrated in Figure 2.

2.3.2 From Skippool junction to Skippool Bridge junction the Scheme would comprise widening of Amounderness Way on the west approach to Skippool junction and reconstruction of the junction from a roundabout to a 4-way traffic signal controlled crossroads. Passing under the existing footprint of Skippool junction roundabout is Skippool Clough culvert. This culvert conveys the Horsebridge Dyke (not a designated WFD waterbody) northwards towards the Wyre Estuary (WFD waterbody ID: GB531207212200). It has been identified that this culvert is approaching the end of its useful life and would be replaced by a new culvert immediately east of the existing location, with the existing one either backfilled or demolished. One new drainage outfall and replacement of one existing drainage outfall arrangement is proposed on the Horsebridge Dyke.

- 2.3.3 From the new Skippool junction the alignment follows the same direction as the existing A585 Mains Lane but as a dual 2 lane all-purpose carriageway. The Scheme would cross the Main Dyke watercourse (part of WFD waterbody ID: GB112072066120). The existing bridge supporting the A585 over Main Dyke would be demolished and a new, wider bridge would be constructed to accommodate the Scheme. Existing road drainage outfalls cannot be retained and two new outfalls to the Main Dyke in this location are proposed.
- 2.3.4 East of Skippool Bridge junction the dual 2 lane bypass commences and would head in a south easterly direction. The route reaches a high point of 11.0m Above Ordnance Datum (AOD) southeast of Skippool Bridge junction and from this high-point the bypass would be on an embankment up to about 3.8m in height. The Scheme then descends to cross over several ditches (none of which are designated WFD waterbodies) until it eventually reaches a low point at 6.9mAOD about 800m southeast of the junction. The alignment then climbs towards A586 Garstang Road East. In this section discharges of road drainage to a number of tributaries of the Main Dyke are proposed.
- 2.3.5 A new 4-arm signalised crossroads (Poulton junction) would provide a connection to the A586 Garstang Road East allowing access to Poulton-le-Fylde and Little Singleton. From Poulton junction the bypass section would climb in an eastward direction where, in deep cutting (8.6m at its deepest) the route would pass under the B5260 Lodge Lane, potentially interacting with the underlying WFD groundwater body ID GB41202G912700). This section of the Scheme would also be drained to the Main Dyke catchment via new drainage infrastructure.
- 2.3.6 About 200m east of the retained cutting at Lodge Lane Bridge, the Scheme would continue to rise on shallow embankment to the high point of the alignment at 18.1mAOD. East of the high point, the bypass would continue on shallow embankment on a gentle right-hand curve to join the alignment of the existing Garstang New Road that would be converted to a dual carriageway by the provision of an additional carriageway on the south side of the existing road for the remainder of the route to the existing Windy Harbour junction. The Scheme in this section would discharge to the Wyre via a small tributary.
- 2.3.7 The Scheme would therefore directly modify a number of surface waterbodies through the building of structures including bridges, culverts and drainage outfalls. The Scheme would also interact with the underlying groundwater body in a localised area. There is also the potential for direct and indirect effects; for example, associated with receipt of highway drainage discharges.

Figure 2-2: Scheme Details and Overview of Water Features (Contains Ordnance Survey data © Crown copyright and database right 2016)



3 METHODOLOGY

3.1 Stages of Assessment

3.1.1 To assess whether the Scheme is compliant with the objectives set out in the WFD, a staged approach has been followed as to screening, scoping and impact assessment. This approach is advocated by Planning Inspectorate WFD Advice Note (Advice Note 18, June 2017) and Environment Agency Technical Guidance (488_10_SD06, 2014) and Operational Instructions (488_10, 2010).

3.1.2 The following steps have been undertaken:

- Stage 1 – defining the study area or Zone of Influence (Zoi) based on the distance of waterbodies from the Scheme and the hydrological connectivity of waterbodies to the Scheme. Any waterbodies not considered to be relevant are discounted (screened out) at this stage
- Stage 2 – collating baseline data on the screened in waterbodies, defining their current WFD status, their specific objectives and any mitigation measures set in the current river basin management planning cycle
- Stage 3 – defining the relationship between the Scheme components and the included waterbodies, screening out components of the Scheme that are not considered to be relevant
- Stage 4 – undertaking a preliminary assessment of the remaining components of the Scheme against the WFD elements (biological, chemical and hydromorphological) that make up the overall WFD status of the included waterbodies. This is to identify whether any components could have an impact and where more detailed assessment is required

3.1.3 Should the preliminary assessment at Stage 4 conclude that there could be impacts on the WFD elements of the waterbodies then the below steps are also applicable:

- Stage 5 – detailed assessment in respect of any components of the Scheme identified as likely to have an impact upon WFD elements. This assessment would also consider any conflicts between the Scheme and relevant RBMP mitigation measures and any cumulative effects of the development
- Stage 6 – proposed programme of compliance of development, required in accordance with Article 4.7 of the WFD

4 STAGE 1

4.1 Defining the Study Area

- 4.1.1 Zols for surface, transitional and groundwater bodies have been agreed in consultation with the Environment Agency. These areas were selected following consideration of the physical nature and catchment hydrology of surface waterbodies local to the Scheme and the distance over which project activities can reasonably have the potential to influence WFD status. WFD waterbodies and Zols are illustrated in Figure 1 in Appendix A.
- 4.1.2 The agreed Zol for surface waterbodies is a buffer 500m from the Draft Order Limits. The following WFD surface waterbodies are located within this area:
- Hillylaid Pool – Tidal Wyre (GB112072066120)
 - Thistleton Brook (GB112072066110)
- 4.1.3 For the one estuarine (transitional) waterbody with potential to be affected (Wyre GB531207212200), a Zol encompassing the reach of the waterbody neighbouring and extending upstream and downstream of the Scheme alignment has been agreed. Scheme activities would have no direct impact on this waterbody, however some localised works below the Mean High Water Springs boundary are necessary which are very small in scale in the estuarine context. The estuary would also, indirectly, receive discharges of road drainage runoff along the length of the Scheme.
- 4.1.4 Groundwater bodies that have direct and indirect connectivity to the proposed Scheme activities have been included, within a Zol radiating 1km from the draft order limits. This has been agreed with the Environment Agency as sufficient to capture any influence of Scheme activities on groundwater bodies. The entire Zol is underlain by one WFD groundwater body, the West Lancashire Quaternary Sand and Gravel Aquifer (GB41202G912700).
- 4.1.5 Those waterbodies that are not assigned a WFD ID within the North West RBMP but are located within the Zol (mainly unnamed land drains and ditches, as well as the Horsebridge Dyke), have been omitted from the WFDA. An assessment of the potential effects of the Scheme on these water bodies has been made in the Environmental Statement (ES) (Chapter 12: Road Drainage and the Water Environment, document reference TR010035/APP/6.12).
- 4.1.6 Table 4-1 highlights the hydrological relationship between each of the waterbodies identified and the Scheme.

Table 4-1: Hydrological Relationship between the Scheme and Waterbodies within the North West RBMP

Waterbody	Hydrological Relationship to the Scheme
Hillylaid Pool – Tidal Wyre	The waterbody would be crossed by the Scheme and would receive discharges of highway runoff from several outfalls. This surface waterbody is also likely to be in hydraulic connection with the underlying shallow aquifer within the Quaternary Tidal Flat Deposits, where groundwater at 1m below ground level (bgl) has been recorded.

Waterbody	Hydrological Relationship to the Scheme
Thistleton Brook	The waterbody has a minimum distance from the Scheme and any construction activity of 570m. The waterbody would not be crossed by the Scheme, nor directly or indirectly receive drainage discharges from the Scheme. It is therefore considered that there is no potential for direct or indirect effects on any of its WFD elements. This waterbody is screened out of any further assessment.
Wyre (Estuarine) Transitional Waterbody	The waterbody is located at its closest 335m from the Scheme and an area of localised construction is required below the MHWS boundary. The waterbody accepts flows from several watercourses that would receive discharges of runoff from the operational Scheme.
West Lancashire Quaternary Sand and Gravel Aquifers	The Scheme is underlain by this waterbody. A section of the Scheme comprises a cutting (maximum depth of 8.6m) into an aquifer within the superficial geology. Groundwater levels at this location have been recorded ranging between 1.5m and 4.5m bgl, so groundwater control would be required during construction and a permanent drainage solution for the cutting is also required during operation of the Scheme.

4.1.7 The WFD brings together the planning processes of a range of other European Directives established to manage water and safeguard water interests. Meeting the requirements of these Directives would also help to achieve WFD objectives. Two protected areas within the Zols have been identified that have a surface or groundwater dependency:

- Site of Special Scientific Interest Risk Zone (from the Wyre Estuary Site of Special Scientist Interest, this site is part of the Morecambe Bay and Duddon Estuary Special Protection Area (SPA) and Morecambe Bay Ramsar site)
- Urban Waste Water Treatment Directive (Wyre)

4.1.8 This assessment also considers Scheme compliance with the objectives of these protected areas.

5 STAGE 2

5.1 Collating Baseline Data

5.1.1 WFD data defining baseline conditions for those waterbodies within the Zols and screened into the assessment have been collected from the Environment Agency Catchment Data Explorer website (<https://environment.data.gov.uk/catchment-planning/>) and the North West RBMP (Environment Agency, 2015).

5.2 Baseline Status of Surface Waterbodies

5.2.1 The WFD indicator of the health of the water environment is whether a water body is at good status (or potential). This overall status considers a range of quality elements relating to the biology and chemical quality of surface waters which are assessed through information gathered via Environment Agency monitoring programmes. Surface waterbodies can be classed as having high, good, moderate, poor or bad status.

5.2.2 To achieve good status (or potential) every single element assessed must be at good status or better. If one element is below its threshold for good status then the whole waterbody status is classed as less than good.

5.2.3 Data for the Hillylaid Pool – Tidal Wyre is presented in Table 5-1. As a heavily modified waterbody, WFD targets the achievement of good potential, rather than good status.

Table 5-1: Summary of WFD Baseline Data for the Hillylaid Pool – Tidal Wyre

Waterbody	GB112072066120
Hillylaid Pool – Tidal Wyre	
Hydromorphological designation	Heavily Modified (by human activity)
Length	11.3km
Catchment Area	30.5km ²
Overall Waterbody Status	Moderate
Ecological Status	Moderate
Supporting elements	Moderate
Biological quality elements	Poor
Macrophytes and Phytobenthos	High
Invertebrates	Poor
Hydromorphological Supporting Elements – hydrological regimes	Supports Good
Physico-chemical quality elements	Moderate
Ammonia	Moderate
Dissolved Oxygen	Poor
pH	High

Waterbody	GB112072066120
Phosphate	Moderate
Temperature	High
Chemical Status*	Good

**does not require assessment for priority substances, priority hazardous substances and other pollutants as no known discharges of these substances are made to the watercourse.*

5.2.4 The data in Table 5-1 represent the baseline from which, to achieve compliance with the WFD, deterioration must not occur. Reasons for not achieving good potential are cited in the RBMP as:

- Poor nutrient management on agricultural and rural land generating diffuse sources of pollution (ammonia, phosphates) that deplete dissolved oxygen concentrations and impact on aquatic invertebrate diversity
- Physical modifications for flood protection

5.3 Baseline Status of Transitional Waters

5.3.1 Transitional (estuarine) waterbodies are monitored for a similar suite of parameters. Data for the Wyre is presented in Table 5-2. As a heavily modified waterbody, the WFD targets the achievement of good potential, rather than good status.

Table 5-2: Summary of WFD Baseline Data for the Wyre

Waterbody	GB531207212200
Wyre	
Hydromorphological designation	Heavily Modified (by human activity)
Surface Area	6.38km ²
Overall Waterbody Status	Moderate
Ecological Status	Moderate
Supporting elements	Moderate
Biological quality elements	Moderate
Angiosperms*	Moderate
Fish	High
Invertebrates	Good
Macroalgae	Moderate
Phytoplankton	Moderate
Hydromorphological Supporting Elements – hydrological regimes	Supports Good
Physico-chemical quality elements	Moderate
Dissolved Inorganic Nitrogen*	Moderate

Waterbody	GB531207212200
Dissolved Oxygen	High
Specific Pollutants	High
Chemical Status	Fail

*investigations into these classifications have concluded that there is uncertainty that there is a problem.

5.3.2 The overall status of this waterbody is classed as Moderate, despite a Fail for chemical status. This is because all chemical elements are considered Good, with the exception of Tributyltin compounds (a priority hazardous substance). This chemical compound has a status of below good and is therefore contributing to the overall moderate ecological potential for the waterbody.

5.3.3 Reasons for not achieving good potential are cited in the RBMP as:

- Physical modification for coastal protection
- Nutrient loading from sewage discharges (probable)

5.4 **Baseline Status of Groundwater Bodies**

5.4.1 There are two elements of groundwater classification, considering water quantity (quantitative status) and water quality (chemical status). For each of these elements a groundwater body can achieve good or poor status and both must achieve good for the groundwater body overall to achieve good status. In the classification of groundwater bodies the WFD also assesses the interaction between groundwater, surface water and linked terrestrial ecosystems.

Table 5-3: Summary of WFD Baseline Data for the Groundwater body in the Zol

Waterbody	GB41202G912700
West Lancashire Quaternary Sand and Gravel	
Surface Area	565.8km ²
Overall Waterbody Status	Good
Quantitative	Good
Quantitative status elements	
Saline Intrusion	Good
Water Balance	Good
GWDTEs* test	Good
Dependent Surface Waterbody status	Good
Chemical Status	Good
Chemical status elements	Good
Drinking water protected area	Good
General chemical test	Good

Waterbody	GB41202G912700
Chemical GWDTE*s test	Good
Chemical Dependent surface water body status	Good
Chemical saline intrusion	Good

*Groundwater Dependent Terrestrial Ecosystems

5.5 WFD Objectives

5.5.1 Tables 5-1, 5-2 and 5-3 document the current status of the waterbodies screened in to this assessment. The North West RBMP also sets out objectives for the future status of surface and groundwater bodies and targets a date for these objectives to be reached. Status objectives are set to take account of the implementation of technically feasible and cost effective mitigation measures. Achieving good status or potential by 2021 is the default objective for the North West RBMP, with alternative objectives set where there are reasons for doing so.

5.5.2 Table 5-4 presents a summary of the objectives for screened-in WFD waterbodies.

Table 5-4: Summary of WFD Objectives for Screened-in Waterbodies

Waterbody	Objective
Hillylaid Pool – Tidal Wyre	Maintain Moderate overall status to 2021, achieving Good overall status by 2027
Wyre	Maintain Moderate overall status, with no known technical solutions available and disproportionate burdens on achieving Good overall status.
West Lancashire Quaternary Sand and Gravel	Maintain Good quantitative and chemical status (2021)

5.6 WFD Mitigation Measures for Waterbodies

5.6.1 Information has been gathered from the Environment Agency Catchment Data Explorer website.

5.6.2 Within the Fleetwood Peninsular Tributaries operational catchment, which the Hillylaid Pool – Tidal Wyre waterbody is located in, there are currently no measures in place to achieve the 2021 target status for this waterbody. It is noted that measures may be being implemented but there is not enough confidence to predict specific status outcomes based upon them. It is also noted that measures may have been identified and shown to be worthwhile, but funding has not yet been secured to progress with them. This also applies to the Wyre and West Lancashire Quaternary Sand and Gravel operational catchments. Measures to achieve 2027 target statuses will be reported in the next cycle of river basin management plans.

6 STAGE 3

6.1 Relationship of the Proposed Scheme to WFD Waterbodies

- 6.1.1 This section provides more information about the components of the Scheme and their relationship to the WFD waterbodies included in this assessment. This section determines which components of the Scheme have the potential to affect the WFD objectives of these waterbodies.
- 6.1.2 Where the components of the Scheme are relevant to the WFD's objectives, those components are taken forward to Stage 4 of the assessment. If the components are not considered relevant, they are screened out.
- 6.1.3 It is considered that impacts associated with the Scheme could occur during both construction and operation of the Scheme. Table 6-1 presents further details of the elements of the Scheme and their relationship to the WFD waterbodies that have been screened into the assessment.

Table 6-1: Scheme Components and Risks to WFD Waterbodies

Development Component and Details	WFD Waterbody Potentially Affected	Details	Component Screened In?
Groundwater control during construction and operation of the Lodge Lane bridge and associated cutting	West Lancashire Quaternary Sand and Gravel Hillyaid Pool – Tidal Wyre	270m of the Scheme would be constructed in a cutting that is below the water table within the near surface Glaciofluvial deposits. Groundwater would infiltrate and be collected by a passive, longitudinal drainage system installed within the cutting. This would cause local dewatering (quantitative status) of the shallow aquifer and could impact on base flow (an ecological status supporting element) in hydraulically connected surface waterbodies.	Yes
Site compounds, construction waste handling and general construction activity	Hillyaid Pool – Tidal Wyre West Lancashire Quaternary Sand and Gravel	There would be minimal impacts on water receptors arising from establishment of construction compounds and general construction activities, given the	No

Development Component and Details	WFD Waterbody Potentially Affected	Details	Component Screened In?
	Wyre and SSSI Risk Zone	application of suitable SuDS and works site drainage design. A Construction Environmental Management Plan (CEMP) would be produced together with a Record of Environmental Actions and Commitments (REAC) (document reference TR010035/APP/7.3). The CEMP and REAC require a Pollution Control Plan to be prepared by the Contractor prior to the start of construction to safeguard the quality of surface water and groundwater and the downstream protected areas, drawing on best practices and relevant CIRIA ¹ publications (a draft is appended to the Outline CEMP (document reference TR010035/APP/7.2). An Emergency Spillage Response Plan would also be put in place to prevent pollutants migrating downstream if accidentally released to a surface waterbody or infiltrating into the soils beneath the site and reaching underlying groundwater.	

¹ CIRIA (2001) *Control of water pollution from construction sites: guidance for consultants and contractors (C532)* and CIRIA (2015) *Environmental Good Practice on Site' (C741)*

Development Component and Details	WFD Waterbody Potentially Affected	Details	Component Screened In?
<p>In-channel works to modify existing watercourse crossings and construct new or modify existing highway drainage outfalls</p>	<p>Hillylaid Pool – Tidal Wyre</p>	<p>One new open span crossing would be constructed, with the associated removal of an existing twin culvert structure. These works would take place on the Main Dyke, 660m upstream of its confluence with the Wyre. Several new outfalls/headwalls are also proposed on the Main Dyke. These works have the potential to modify the flow regime of the waterbody (the hydromorphological supporting element). Physico-chemical and biological attributes, supporting ecological status, may also be impacted.</p>	<p>Yes</p>
<p>Discharge of highway drainage (routine and during accidental spillage events)</p>	<p>Hillylaid Pool – Tidal Wyre Wyre Transitional and protected areas</p>	<p>The Scheme would discharge operational drainage directly to the Main Dyke via several outfalls, as well as indirectly to the Main Dyke and Wyre transitional waterbody via watercourses that are not designated WFD waterbodies. Routine runoff may have elevated levels of sediment, metals, hydrocarbons and other pollutants. There is also risk of a pollution incident associated with an accident and subsequent spillage onto the carriageway,</p>	<p>Yes</p>

Development Component and Details	WFD Waterbody Potentially Affected	Details	Component Screened In?
		with pollutants reaching watercourses via the drainage system. There is therefore potential for impacts on several elements that support ecological status, as well as on the chemical status of these waterbodies.	

6.1.4 A number of components of the Scheme have therefore been screened in and taken forward to Stage 4 of the assessment. All other components are considered to have no potential to inhibit the achievement of the WFD objectives of relevant WFD waterbodies.

7 STAGE 4

7.1.1 A preliminary assessment has been made of the components of the Scheme identified as relevant to the WFD (Stage 3), against the waterbodies in the study area (Stage 1). The assessment has been undertaken on the basis of whether the works undertaken as part of the Scheme are likely to result in:

- Deterioration in the current ecological status (or potential) of surface waterbodies or of groundwater status
- Failure to achieve WFD objectives set for each waterbody
- Non-compliance or compromised implementation of other environmental legislation

7.1.2 This preliminary assessment is detailed in Table 7-1.

Table 7-1: WFD Preliminary Assessment

Waterbody and WFD Element	Preliminary Assessment
West Lancashire Quaternary Sand and Gravel: Quantitative Elements (see Table 5-3)	<p>Based on a very conservative assessment that has been informed by site specific ground investigation data, a radius of influence of the groundwater control Scheme activity has been calculated as 350m. Glacial Till lies beneath the Glaciofluvial deposits and is a non-aquifer and a barrier to any effects on deeper bedrock aquifers.</p> <p>A worst-case volume of groundwater discharging from the cutting has been calculated as approximately 4 L/s. The appointed Contractor would prepare, in consultation with the Environment Agency, a Dewatering Management Plan (as required by the Outline CEMP (document reference TR010035/APP/7.2)). This plan would detail measures to limit the minor effects on groundwater levels and flows described above. It would include method statements detailing dewatering techniques, proposals to maximise reuse of dewatering effluents collected by the cutting drainage system and a monitoring plan to ensure compliance with Environment Agency permits for dewatering and the subsequent discharge of dewatering effluents.</p> <p>The assessment therefore concludes that the Scheme could result in a small and localised effect that would not compromise the current WFD status nor the achievement of set WFD objectives for this waterbody.</p> <p>Given the small radius of influence there is no potential for this activity to impact on the flow regime</p>

Waterbody and WFD Element	Preliminary Assessment
	<p>of the Hillylaid Pool – Tidal Wyre waterbody, which is located just over 1km away from the activity.</p>
<p>West Lancashire Quaternary Sand and Gravel: Chemical Elements (see Table 5-3)</p>	<p>Best practice pollution control measures would be employed during construction to avoid contamination of the waterbody.</p> <p>The relevant best practice documents are identified in ES Chapter 12 (document reference TR010035/APP/6.12) and Chapter 13 (document reference TR010035/APP/6.13) and these would be adopted as appropriate. This would minimise the risk of any deterioration in the current chemical status of this waterbody.</p>
<p>Hillylaid Pool – Tidal Wyre: Biological elements supporting Ecological Status (namely biological quality, physico-chemical and hydromorphological elements)</p>	<p>In-channel works for drainage outfalls/headwalls and the proposed new crossing would be undertaken in accordance with the requirements of Environment Agency Flood Risk Activity Permits.</p> <p>To reduce the risk of impacts on biological and physico-chemical elements, where practicable, in-channel works would be undertaken in dry conditions (e.g. creating an in-channel dry working area by using coffer dams and overpumping, flume arrangements or similar). This would significantly reduce the potential for downstream pollution, safeguarding downstream WFD waterbodies (Wyre) and protected areas. Where dry working conditions are not practicable, measures such as silt curtains would be deployed to prevent downstream pollution.</p> <p>As detailed in the Flood Risk Assessment (document reference TR010035/APP/5.2), removal of an existing twin culvert and its replacement with a clear spanning bridge causes an improvement in flow conveyance causing a reduction in the extent of the Main Dyke floodplain. This brings benefit in terms of a reduction in river flooding risk upstream of the Scheme. This accords with the WFD objective of contributing to mitigating the effects of flooding.</p> <p>Removal of an existing constriction to flow and improving flow conveyance along the stretch of the waterbody local to the new structure may also contribute to improving dissolved oxygen levels, bringing benefits to in stream biology.</p>

Waterbody and WFD Element	Preliminary Assessment
	<p>The assessment therefore concludes that the Scheme would not compromise the current WFD status nor the achievement of set WFD objectives for this waterbody. The works positively contribute to mitigating the effects of flooding and may locally improve biological supporting elements.</p>
<p>Hillylaid Pool – Tidal Wyre: Biological elements supporting Ecological Status (namely biological quality, physico-chemical and hydromorphological elements) and Chemical Status</p>	<p>Attenuation would be provided to achieve agreed discharge rates, inclusive of an allowance for climate change resilience. Discharge of drainage at these attenuated rates would prevent compromise of existing flow regimes and would safeguard against the potential for scour.</p> <p>The drainage design also includes appropriate measures to manage the quality of highway runoff. Measures include vortex oils and grit separators, vegetation treatment systems (constructed wetlands) and shut off valves to contain pollutants in the event of an accidental spillage. These treatment measures have been tested using Methods A and C of part HD45/09 of the Design Manual for Roads and Bridges. With the designed treatment measures in place, all of the proposed outfalls achieve a Pass for both sediments and soluble pollutants. The risk of an accidental spillage resulting in pollution has also been assessed as less than 1%.</p> <p>The assessment therefore concludes that the Scheme would not compromise the current WFD status nor the achievement of set WFD objectives for this waterbody.</p> <p>These embedded design measures would also protect the Wyre and its current chemical status.</p>

7.1.3 From Table 7-1 the preliminary assessment concludes that the design of the Scheme and measures committed to in an Outline CEMP (document reference TR010035/APP/7.2) and REAC (document reference TR010025/APP/7.3), would prevent any works causing deterioration of the current status of surface waterbodies or groundwater bodies. Also, it is assessed that there is no risk of the Scheme contributing to failure to achieve WFD set objectives for each waterbody. It is also considered that the Scheme would not cause non-compliance nor compromise implementation of any other environmental legislation. No mitigation measures are defined in the current North West RBMP for the waterbodies that were screened in at Stage 1.

8 SUMMARY

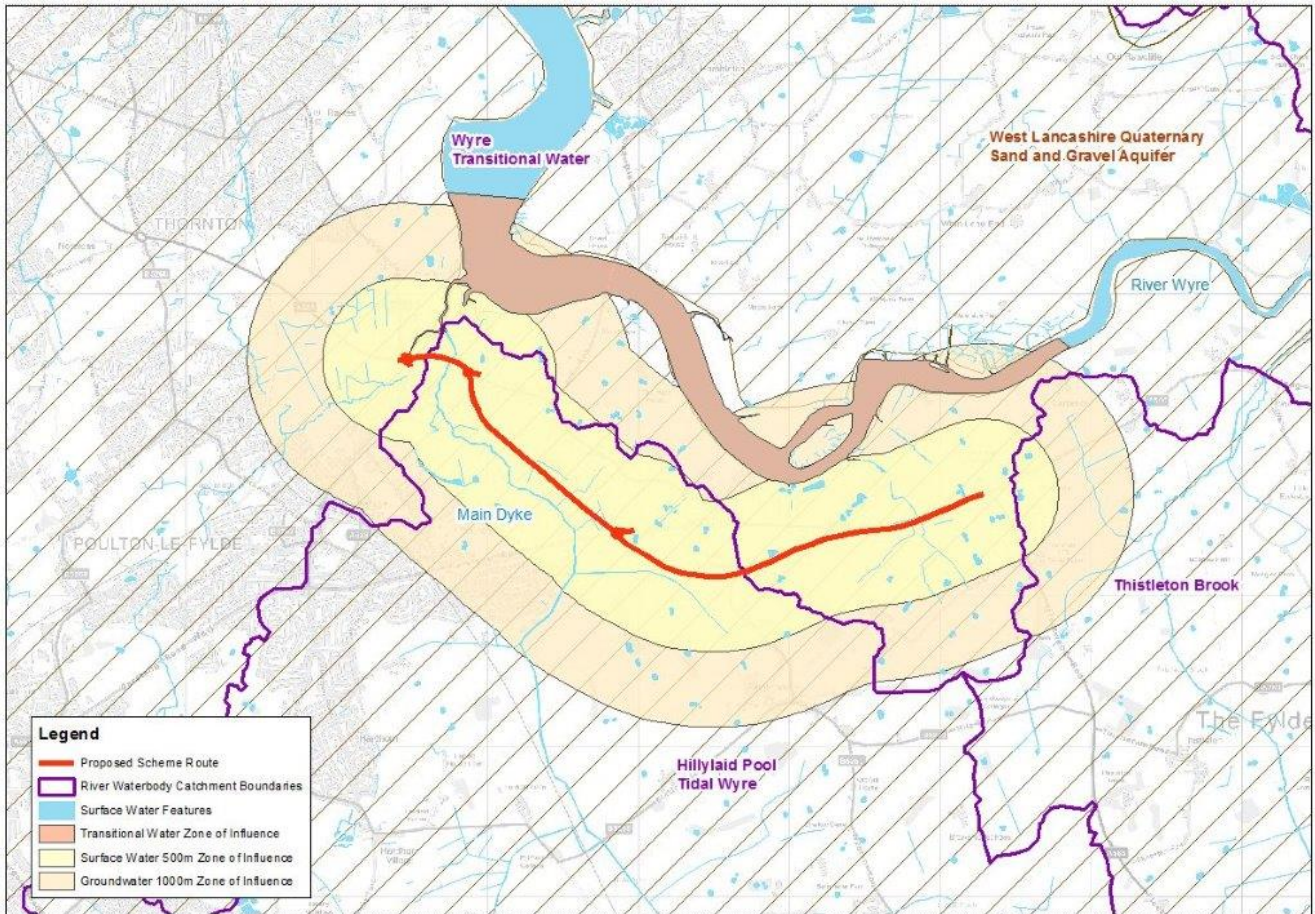
8.1 Concluding Statements

- 8.1.1 The WFDA has assessed the Scheme against WFD objectives, taking a staged approach, to ensure that the associated construction and its operation would have no detriment to the WFD status of waterbodies with the study area.
- 8.1.2 The assessment has identified a number of waterbodies within and in close proximity to the draft order limits, which may potentially be impacted by work carried out during construction of the Scheme and by operational drainage of the Scheme. These comprise one surface waterbody, the Hillylaid Pool – Tidal Wyre, and one transitional waterbody, the Wyre. In addition, the assessment screened in one groundwater body, the West Lancashire Quaternary Sand and Gravel aquifer.
- 8.1.3 Baseline information was obtained to determine the quality of these waterbodies. The Hillylaid Pool – Tidal Wyre was characterised as having an overall ecological potential for Moderate, with a chemical status of Good. The Wyre has Moderate ecological status but fails against the chemical parameters set out in the WFD. The groundwater unit is considered Good in both its chemical and quantitative status. There are no mitigation measures set out in the current RBMP for these waterbodies.
- 8.1.4 A number of components of the Scheme were screened in and taken forward to Stage 4 of the assessment. This stage evaluated the effects of Scheme activities on relevant WFD supporting elements of overall waterbody status.
- 8.1.5 It has been concluded that the Scheme would not compromise the current WFD status nor the achievement of set WFD objectives for waterbodies within the study area.

8.2 Cumulative Assessment

- 8.2.1 A detailed assessment of the cumulative effects of other local development in conjunction with the Scheme on water receptors was carried out in Chapter 16: Cumulative Effects (document reference TR010035/APP/6.16). Any potential effects on water receptors would be controlled through the appropriate measures already incorporated within the design and implementation of the Scheme.
- 8.2.2 Given the findings of the cumulative assessment, it is concluded that there would be no cumulative impact on WFD objectives.

Appendix A – Figure 1 WFD Waterbodies and Zones of Influence



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